Sesame Credit and the Social Compliance Gamification in China

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***Abstract*—Sesame Credit is the most important gamified Chinese social credit model. It aims at monitoring and regulating 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; 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- Gamification; Social Credit; China.

I. INTRODUCTION

Digital technologies 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 developed by a private company and 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 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.

Given the geographical impossibility of direct observation, (as well other procedures as testing with Chinese subjects or analysis of data collected by the Chinese government), this work is based on 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. SOCIAL CREDIT SYSTEM IN CHINA

In the present subsection, the grounds for the Chinese social credit will be demonstrated.

A. The Chinese context

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 [4]. 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 the most important, which makes "*credit / faith / sincerity*" the key concept in Chinese governance [5].

The concept of meritocracy is highly present in the history of China. From the 5th to the 2nd century BC. Chinese way of governance was influenced by Mohism, a philosophy that *"unified ethical and political order grounded in a utilitarian ethic emphasizing impartial concern for all (...) support for a centralized, authoritarian state led by a virtuous, benevolent sovereign and managed by a hierarchical, merit-based bureaucracy"* [6]. During the Han Dynasty, in the second century BC, one of the earliest meritocratic administrative systems in the world was created, which *"idea of replacing nobility of blood with one of virtue and honesty, and thereby calling for administraticve appointments to be based solely on merit"* [7].

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 [8]. The subject record *dàng'àn* can be seen as Sesame Credit's forerunner, however different from before *dàng'án* access was restricted to the government, while the Sesame Credit discloses the information to the whole of the population [5].

The Chinese government publicized the Sesame Credit to *"strengthen the sincerity in government businesses: commercial sincerity, social sincerity, and judicial credibility*" [9]. 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). In other words, with the social credit system, the Chinese government intends to encourage honesty in the population (Mainly exposing dishonest individuals).

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 [10] studies show the Sesame Credit's high index of approval by part of the population, especially those urban and younger citizens. These young and urban people from China, still accordingly to [1], claim commercial and financial advantages originated from social credit to explain the voluntary and enthusiastic accession to the credit system.

Currently, the country has approximately 1.4 billion inhabitants [11]. Chinese economic growth, intensified in the 1980s, has led to drastic changes in the population, which has become more urban, scholarly, and without a sense of traditional community. According to [12], in her 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.

China has a dynamic urban environment, which is molded by the internet. China's urban centers are highly technological regions where the entire population has easy access to digital media, which are used for all kinds of communications and commercial transactions. China's internet access is, however, controlled by its government through what is called a "Cyber Sovereignty" model [13]. Such model advocates internet content filtering through criteria given by each country's government. This explains why China has its own social networks, (such as You-Ku for video sharing and WeChat for social media and e-commerce). That way, the government efficiently monitors and regulates the social, financial and commercial activities of all internet users within the country.

B. Sesame Credit

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 [14]. According to [15], the traditional way to evaluate an individual's credit is by its financial history, considering payments, debts, default payments, etc. These 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).

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 AliPay, the e-Commerce branch of the Alibaba Group. 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*" [16]. However, [1] indicates the system targets to *"generating benefits and promote honest transactions in economy and society instead of violation of privacy*" (p.2).

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"* [15]. Sesame Credit's scoring system is based on five indicators, as Fig. 1 shows below:

Figure 1. Graphical User Interface of the Sesame Credit indicators used to evaluate citizens. SOURCE: [17].

In Fig. 1 is possible to observe, on the left-hand part of the image, the general scoring expressed as number and as gauge viewer. It varies between 350 and 950 points in 5 colored quality bands. On the right-hand part of the image, the five indicators which form the general scoring which, according to [17] functions in an opposite fashion to Table I:

TABLE I. SESAME CREDIT INDICADOTORS. SOURCE: Adapted from [17].

Indicator	Associated variables
1 – Demographic Data	Age, gender, address, etc.
2 – Economic growth potential	Forecast based on educational and professional history.
3 – Financial History	Payments, investments, debts, etc.
4 – Consumer Preferences	Consumption based on lifestyle choices. Purchasing Chinese products rather than

	imported products, for example, increases this indicator. The opposite also applies.
5 - Relationships	This indicator is given according to the average of people in which the user connects online and the compliance of user posts in Chinese social media.

Table I demonstrates how, beyond objective criteria on credit analysis (elements 1, 2 and 3 mentioned above), the Sesame Credit also uses data related to personal habits (element 4) as well as social relationships (element 5). Still, according to [17], 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 [18]. According to [19], the Sesame Credit represents the gamification of reliability present in social and political ties.

Fig. 2 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 I, and; also the consequences of the scoring regarding rewards and punishments:

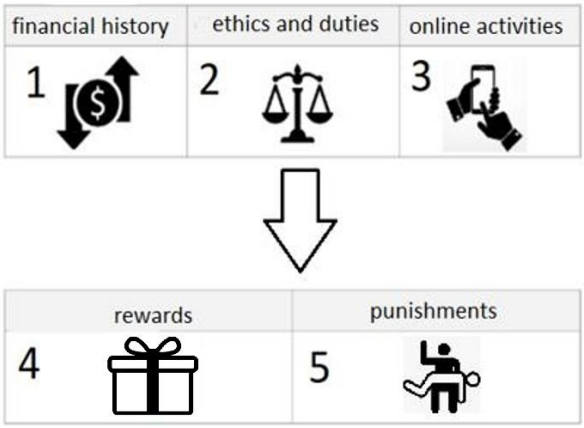

Figure 2. Sesame Credit mechanics. SOURCE: adapted from [20].

The generating items in each of the five fields in Fig. 2, still according to [20] are: **1) Financial history:** tax payment history, existence of debt, default payments, accounts receivable, etc.; **2) Ethics and duties:** compliance with local and national regulations and laws, partaking in voluntary work, accession to government programs, etc.; **3) Online Activities:** online purchase history, friendship and connections on social networks, "reliability" in social media posting, etc.; **4) Rewards:** access to certain public services, facilitation to get loans, discounts on vehicles rentals, priority in customer services in stores as well as in hospitals, high speed Internet access, university admission, etc.; **5) Punishments:** hindrance to participating in civil service examinations, barred from purchasing airline and/or railway tickets, barred from seeking accommodation in luxury hotels, etc.

As can be seen, Sesame Credit has game elements (rules, goals, points, rewards), but can hardly be classified as a fun experience for the user. Not only because it will be compulsory for the entire Chinese population, while games as entertainment presuppose voluntary participation, but its rules represent real risks to the financial and commercial life of some participants.

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. On the other hand, [21] prefers to demonstrate that the Sesame Credit represents a revolution in trust in Chinese society, since commercial and financial transactions are based on reputation. Indeed, [5] remark that 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 occurs. Similarly, [22] 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. 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.

A. Definition

"*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 [23]. Pelling referred to techniques such as scoring, medal progress bars, missions, etc. Gamification can be defined as the process of *"making services and products attractive as games is"* [24]. Yu-kai Chou, a pioneer in gamification, prefers to emphasize the role of motivational psychology in the field, and for such, explaining it as *"human-centered design*" [25], that is, a procedure to forecast services and products using scientific knowledge about human behavior. Gamification uses **fun** to motivate, but it is necessary to understand "fun" in a broad sense. According to [26], there are four types of fun: a) *Easy Fun*, based on the curiosity to try things; b) *Serious Fun*, based on the excitement of getting things of value; c) *People Fun*, based on social bonding and d) *Hard Fun*, based on challenges that demand strategy and skill. Therefore, the concept of "fun experience" can be associated with different emotional states, ranging from joy to anxiety.

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 [27]. As an example of the gamification of the second style is present in the [28] study, about the use of playful techniques to aid people who wish to stop smoking. Gamification, therefore, aims to affect people's motivation [25], engaging them in desired behaviors or disengaging them from unwanted behaviors. The way a gamification strategy affects motivation is by associating user actions with rewarding or punitive consequences. Hence a gamification strategy can be understood as a process of behavior modification.

The study of [29] explains how the efficiency of a gamification 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. In other words, to function well a gamification strategy needs to have adequate rules and rewards (or punishments) appropriate to the public, as well as efficient monitoring of the behaviors that are subject to modification.

According to [30], gamification strategies that exploit people, compelling them to do contrary to their desires, (which he calls "exploitationware"), eventually, provoke insurgency and users sabotage, being effective only as short-term strategies. However, this negative aspect of gamification is explained by [31] with the concept of "pointsification", coined by game developer Margaret Robertson, which refers to the superficial use of game mechanics to deceive people into acting in a certain way in exchange for often worthless points. This can be considered the main criticism of gamification: that it comes down to pointsification, without involving authentic motivation or even providing a positive behavioral modification for its users.

B. Octalysis Model

The authors of this article adopt in a professional scope the Octalysis method for the design of gamification strategies. For this reason, this model was also chosen as a theoretical tool to analyze Sesame Credit. Developed by [25], the Octalysis consists of a methodology of generation and development of gamification strategies. The author, who was, for years a game designer in the USA, works currently as a famous and prestigious gamification adviser, draws a set of eight essential motivations. In other words, ways to engage a user presented visually as an octagon:

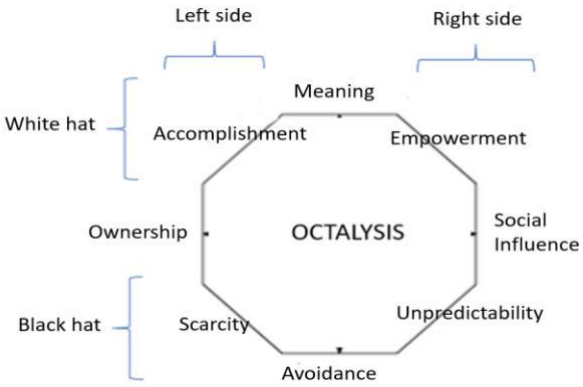

Figure 3. The Octalysis model. Source: The author, based on [25].

Each of the eight forms of engagement presented in Fig. 3, has in itself its own series of techniques, amassing to ninety-two techniques indexed by [25]. 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 elicits 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, employs motivation techniques appealing mostly 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.

C. Self-Determination Theory

This subsection presents a theoretical model widely used by professionals of gamification, also chosen professionally by the authors of this article and as a tool to analyze Sesame Credit.

According to [32], 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. For [33], 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. 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. In other words, extrinsic motivation has some objective and universal value (such as food and water); and intrinsic motivation depends on subjective, individual factors.

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 [34]. 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. 4 introduces the six motivational level bands according to the SDT:

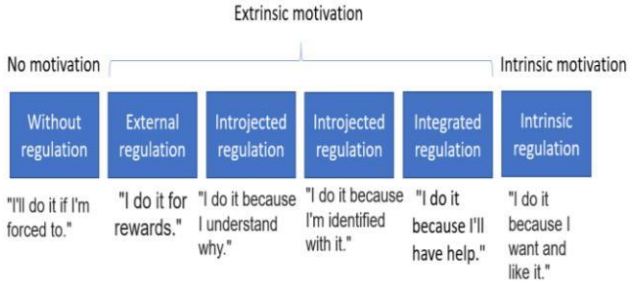

Figure 4. The six bands of motivation in terms of rule compliance. SOURCE: Adapted from [33].

The SDT stipulates that motivation and extrinsic can co-exist. For instance, a person may work both motivated because it loves its work (in Fig. 2, the "Intrinsic Regulation" band) and for the salary (in Fig. 4, the "External Regulation" band). Yet, according to the SDT, it is more desirable to promote intrinsic motivation in most cases [33], to promote the individual pursues autonomy, attain mastery and strengthening of social connections.

D. Gamification and Surveillance

The practice of surveillance of citizens' behavior by authorities is usually associated with two concepts: crime prevention and risks to the individual's privacy. According to [35], the third factor comes on the scene: fun. With technological innovations and the advent of gamification, vigilance gains an aspect of entertainment whereby citizens end up not caring about the collection and use of their personal data. According to [36]: "*Gamification practices, operating under the umbrella of play, foster the quantification of the self; collecting, collating and analyzing minute data and providing feedback on how to better care for one's self* " (p.167). Data collected by social networks and applications that promise entertainment can be used, for example, for purposes of profiling users. This is the case, for example, of bracelets that quantify steps taken in a day, or well-spent hours of night. The visualization of this personal data amuses the user, who in turn accepts that they are collected (and treated). This type of knowledge about medical history, habits, preferences, and attitudes of citizens is strictly related to the power of organizations to exercise control: *"Quantification is an essential tool in governance, the conduct of conduct" (*p.179). Indeed, [36] comments on how the gamification of public and private spaces, especially workspaces, promotes a new form of Taylorism where each action, involving work, sports, sleep, fun, eating, etc., can be measured, analyzed and corrected in name of better efficiency or compliance with standards.

When it comes to the gamification of the work, [37] states that the current wave of gamification at work had two precursors. One in the Soviet Union, between 1930 and 1970, called the "Socialist Competition". Lenin and Stalin explained that socialist competition was supposed to only motivate everyone, not provoke discord: *"Points and banners were not payment, but just encouragement and recognition for engaged workers, providing indication and acknowledgment of progress, and a comradely way to guide workers towards where they should be going"* (p.2). The second wave, called "Fun at work", was from the USA, in the decades of 1990-2000. Employees were encouraged to, for example, *"express their creativity and the fun of their workplace by wearing 'pieces of flair' pinned to their clothing"* (p. 2). It was a compulsory fun based on self-expression as a source of motivational energy. Both movements, in the Soviet Union and in the USA, have announced the need to make work more fun and appeasing through goals, awards, rankings, and other common Game Design techniques. Indeed, [37] comments on how the authors of the current wave of gamification, that is, the third, usually do not know their precursors: *"The current assumption of many gamification proponents appears to be that few precursors to their efforts, which obscures such historical lessons"* (p.3).

The facts point to a tendency of industrial and highly technological societies, be they socialists or capitalists, to promote vigilance of the behaviors of their citizens for their better governance. Such surveillance aims at greater economic productivity, as highlighted by [37], or health and well-being, as highlighted by Whitson. But such surveillance usually involves, thanks to digital technologies, an aspect of entertainment and pleasure in being seen, that is, having your data collected. In this

sense, the gamification of the surveillance and optimization of work and life can be a part of life in modern industrial societies.

IV. 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 to describe and understand [38]. The following procedures are being used:

- **Bibliographical research** which, according to [39], *"is developed based on material which has already been elaborated, comprised mainly of books and scientific articles*" (p. 44). The bibliographical research was made on Scopus, 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. For [40], 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 trends and characteristics.

Just as the collected data aimed at accomplishing a **case study** 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"* [41]. 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.

V. SESAME CREDIT ANALYSIS

First, we must analyze if the Sesame Credit is really a gamification case. The authors of this article understand that it is, as the gamification mostly involves to engaging people with common game technics [2] and not *necessarily* entertaining them. Taking into account the concept of fun from [26], Sesame Credit does not provide a fun experience in the sense of Easy Fun (curiosity), or Hard Fun (strategy and skill) or People Fun (social bond), but involves Serious Fun: the excitement in earning points and competing for rewards as well as relieving tension by getting rid of punishments [17]. Loyalty programs can also provide Serious Fun. But, unlike them, Sesame Credit involves other game techniques such as ranking and competition, since some prizes are given only to people with higher scores [20]. Going in this way, Sesame Credit can be classified as a case of **pointsification** [31], because of its emphasis on exchanging points for rewards; but not as an example of **exploitationware** [30] since it demands only compliance with social rules without the intention of selling products or demanding extra hours of work per day.

On the efficiency of Sesame Credit, we can highlight that this strategy of gamification concentrates the three factors of successful gamification, pointed out by [29]:

a) rules that determine positive and negative consequences for user's actions;

b) the understanding of the target audience to support coherent rules. This understanding was created from the digital monitoring of Chinese population behavior;

c) It's an environment that allows uninterrupted monitoring and control of gamification users to confirm that the rules are achieving the desired effect. In this case, the high technological social environment in China.

Talking about the relationship between Sesame Credit and population surveillance [37], we can say that this system represents the **third wave of surveillance gamification** (the first wave happened in the middle of the 20th century, in the communist Soviet Union; the second, at the end of the 20th century, in the USA capitalist society). This third wave begins in the 21st century, starting in China's "Market Socialism" regime. This third wave seems to emphasize commercial and financial rewards and advantages rather than explicit competition (USSR) and self-expression and amusement (USA). And this is exactly why it can be more powerful than the previous waves. In other words, the power of this Third Wave may not be only in the entertainment aspect of data exposure [35], but in the material rewards provided by the rules of the government and corporate standards. In this way, the Third Wave would create a hedonistic and consumerist control system rather than an aversive control based one. And this system depends on continuous external regulation for its effectiveness, since it acts weakly on intrinsically motivated items (such as sense of purpose and subjective fulfillment).

As analyzing how Sesame Credit affects the motivation of users to engage them in social compliance, we apply the SDT. Fig. 5 summarizes the analysis stemmed from the application of the SDT as Sesame Credit's analytical instrument.

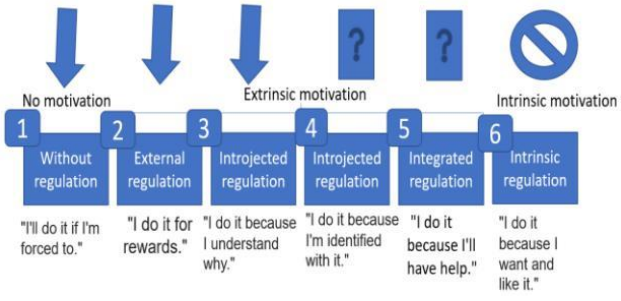

Figure 5. Description of the Sesame Credit, according to the SDT. Source: the authors.

Five aspects of Fig. 5 can be highlighted:

- **Band 1 coercive treatment** - Sesame Credit presents punitive rules (see Fig. 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 just for the sake of habit. The majority of the regulations of the Sesame Credit are in Bands 1, 2 and 3, indicated in Fig. 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 [22].

The Sesame Credit mostly explores the extrinsic motivation related to awards and financial and commercial benefits, and it is careful to be effective also for non-motivated people as it is mandatory. The Sesame Credit does not depend on intrinsically motivated citizens to cooperate with the government following laws and rules, perhaps because these wouldn't be the majority. What stands out is the thesis that the third wave of gamification for vigilance is based on material rewards, not on playful competition and creative fun, as the previous ones.

To have a better understanding of the game tactics that Sesame Credit uses, and what it says about this system, the Octalysis model was used as an analytical tool. As follows, the application of the Octalysis methodology as Sesame Credit's analytical instrument. Fig. 6 summarizes such analysis:

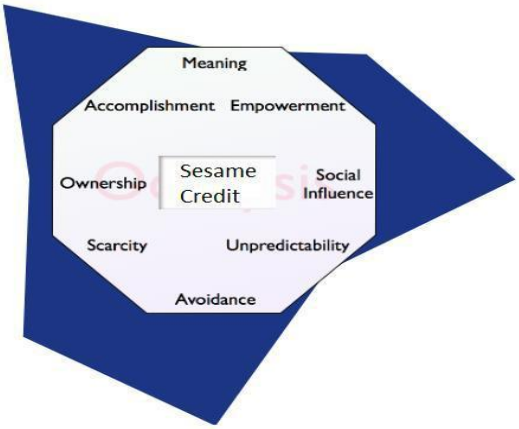

Figure 6. Sesame Credit analysis through the Octalysis methodology. Source: the author.

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 center: obtaining rewards for earned credit points is the essence of the system, aiming at material advantages [22], but also the social-climbing [12]; "Social Influence: Act accordingly to government and society expectations, and also connect only to those people with high scores [20]; Scarcity: try to earn rewards in a competitive system, likewise the reward, "receive priority service" [18]; and Avoidance: behave well in order to avoid the punishments indicated in Fig. 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 (due to the explicit and predictable nature of the regulations, which generate foreseeable results when followed);
- **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 [25] 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 [10], dimmed because of the rewards and leverage promises;
- **Left-hand side & Right-hand side** - Predominantly part of rational incentives,

expressed in financial weigh figures. However, on 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.

The Sesame Credit walks in a thin line between winning rewards and avoiding punishments. Alongside this tension is the *Social Influence factor* as a driving force. The fact that it doesn't employ techniques involving surprises (such as prize draws) or that are based on intrinsic motivation reveals that the system has mechanics based on **predictability and the continuous reinforcement of short-term behaviors**. This takes that the mechanics of Sesame Credit depends on continuous and frequent use to be effective in introjecting the rules in users' daily lives (the third motivational band expressed in Fig. 5).

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 [5]; 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 [30].

However, it still seems to us that Sesame Credit can encourage the commercial and financial honesty of its users. Part of it because it will promote social exposure of those who do not act right with laws and rules (which can lead to cases of unfair treatment). Besides that, the Chinese population, historically familiar to meritocracy [7] and compliance with the authorities [6], tends to see in Sesame Credit a positive exposure opportunity that will help in terms of socioeconomic rise [1]. This seems to be confirmed by the high acceptance rate of the system: approximately 80% of the populatin supports social credit [12].

VI. 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.

This Chinese experiment reveals much about the third wave of gamification. Especially in how it engages people through rewards to maintain social conformity to laws and rules. But also, the power of gamification both for citizen surveillance and to increase (and control) various aspects of life beyond education and work.

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) mapping the present moment, possibilities and risks for the gamified social credit systems; 2) a research of Chinese social credit systems for several years after 2020, when it is to become mandatory to all Chinese citizens; 3) debate and establishment of ethical gamification protocols, as well as in other projects of behavioral modification in social scale.

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