

How Does Commercial and Personal Use of Metrics and Data Influence and Shape Notions of Worth and Value?

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Abstract

Nowadays, metrics and data are widely used to make decisions and predications, give targeted recommendation, track personal health as the overwhelming belief of data being objective and trustworthy grows. However, the excessive trust on data also leads to its devaluation as people tend to enumerate almost everything, including body, reputation, relationship and even their own value. Our physical and mental world is changed with the use of data. This article tries to analyse the process of how metrics and data are used in our daily life by individuals, enterprises and social media. Furthermore, we also try to analyse the influencing mechanism of metrics and data on people's behaviour and their notion of value and worth.

Keywords

Metrics, Data, Behaviour, Value and Worth

1. Introduction

In “Hang the D.J.”, Black Mirror season 4 episode 4, people use “the System”, a dating app to find their soulmate. The system has well-designed algorithms and calculates data through people's reaction to every assigned task. The matching rate is as high as 99.98%. People have blind faith in the system and truly believe they can find their true love by it. Well, since statistics has proved the system can almost never go wrong, why should they have doubts on data and metrics anymore? People seem to see such data as a valuable thing and tend to believe whatever it presents. Such a design to predict people and match one another is of course still a fantasy. However, data are already used to predict in many areas,

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such as stock price, product needs and possibility of illness.

People believe in data and metrics because they have profound trust in them, which they think are more objective, straightforward, and convincing. With such a belief, metrics and data gain the power to help guide people to do certain things such as predicting or making decisions, which in turn changes and shapes people's notion of value and worth as metrics and data carries particular values in them by nature. The notion of value and worth, in this article, does not solely mean commercial one, but also includes the perception of relationship, how we view ourselves and our behaviour. This article argues that the use of metrics and data enumerates our relationships in social media platforms, changes people's thinking by setting new measurement standards in the commercial world, leads people's preference and behaviour by rendering precise recommendation possible, decides what is worthwhile by making some people and things more visible than others and affects people's knowledge and judgment of themselves by letting self-monitoring plausible.

2. How Metrics and Data Gain Its Trust and Popularity

Data collection and analysis were very costly and needed skills of statisticians in the old days and the validity of data needs careful check and examination [1]. However, nowadays, access to data becomes handier and no expertness is required in the interpretation of data due to the development of technology. The doubt in validity also vanishes as the accuracy of data acquisition improves [2]. Personal data can be produced, shared or utilized through digital devices. We can even analyse data by ourselves with the help of certain gadgets.

Big data is changing "our perceptions and institutions were constructed for a world of information scarcity, not surfeit" [2]. The arrival of big data also makes it possible to have access to the whole database of the targeted audience. Compared to the traditional way of sampling and making inference, big data seems to be more reliable and objective as it considers the entire group and has less statistical error [2]. Big data is also valued because it can find connections or patterns that are otherwise unseen or hidden under the surface through a certain calculation process [3]. Given that, the tendency of trusting in the power of metrics emerges.

We have faith in the data also because the use of data may appear to be objective for they stick to the objects or things themselves [3]. Numbers seem to be objective and trustworthy as it creates distance for people to judge and no emotional feelings or biases seem to be attached to it [4]. However, the objectivity of data can be in doubt because it is collected by people with subjective views and selections and the presentation of data is associated with individuals with emotion and even with prejudice [3]. Thus, metrics are not neutral, which always carry a purpose and are the product of certain culture and political contexts [5]. Nevertheless, the propensity to depend on data is still formed and is hard to change once it is embedded.

Numbers have overwhelming power over verbal reasoning in convincing au-

diences as they are more precise and can be tested [1]. The measures gain credibility as they “provide standards against which people judge themselves” [1]. And people are directed and governed by such metrics [1]. When we are choosing a school, we would consider its ranking and reputation. When we are booking a hotel, we base our choice on the ratings and reviews. When we take an exam, a grade is given and we are assessed as pass or fail. Metrics facilitate our life by setting up standards upon which we can make judgment and choice [6]. We are accustomed to use numbers to compare, to make decisions, to act as a form of assessment [1].

As data and metrics are widely believed to be fair, objective, trustworthy and reliable, we begin to use them more often, which in turn makes it rather common. Every day we apply figures to classify, to order, understand the world. We seem to take numbers as facts for granted [7]. The use of metrics and data becomes a common sense. According to Tsay-Vogel *et al.* [8], long-term exposure to certain kinds of messages or practices can affect people’s world view, which can be explained by cultivation theory. Audiences are frequently exposed to different forms of metrics and data, which in turn can influence one’s identity or the notion of value. Gradually, people become used to using number to make judgement and thus a habit is formed. Our old perceptions are overturned. Our notion of value and worth is influenced by data. We tend to enumerate things and monetize them. In the commercial world, we begin to be influenced by the logic of capital, which attaches commercial value to everything and everyone with an aim of extracting profits [9].

3. How Metrics and Data Are Used Personally and Commercially

3.1. Personal Use of Metrics and Data

1) The “Quantified” Self

Our behaviour is changed and re-formed by metrics and data in today’s world. Some behaviour like self-monitoring emerges as the new technologies make it possible. We are informed that through self-monitoring, we can have a better understanding of our own body. Driven by the desire of gaining knowledge of life and having a better understanding of our own body, people conduct self-monitoring. The measurement of life unveils and again, metrics exercise its power.

We quantify ourselves and gain “self-knowledge through self-tracking with technology” [10]. We track ourselves with the hope that values can be brought back to us through the analysis of data. We track our sleep, mood, weight, calories in order to generate more knowledge of our body, which we believe would be helpful in improving health and well-being [10]. For people with chronic diseases, like diabetes, stroke, cancer, health devices seem to be more at work [11]. Self-monitoring can assist us in directing our life by alerting us in case we eat wrong food or blood pressure go too high, giving feedback on the health choice

we make [10]. With the help of these devices, people are empowered as they can take control of their own life. We utilize the data, the measurement system, and devices to change our behaviour.

At the same time, our notion of value and worth is also changed. We adopt new criteria of measuring health in the process, for instance, if we fail to walk 10,000 steps a day, then we may consider ourselves as conducting unhealthy life, as underachieved. And if our blood pressure is not in the normal range, we may think we have misbehaved and be discouraged. These numbers become a source of values and we are constantly influenced by them.

2) Use of Metrics and Data in Social Media

Social media platforms like Facebook, Twitter, LinkedIn are enumerating our relationship [2]. Our notion of value and worth is changed in the process of using social media sites (SNSs). For example, engagement in Facebook, which is one of the most popular social network sites has been found to be influential in the formation of people's perceptions [12]. Facebook (2018) has 1.4 billion daily active users on average for December 2017. It allows users to interact with each other through lots of features, including "status updates, wall posts, sharing photos and commenting on the post of others" [13].

The quantity of Facebook communication such as the number of wall posts and comments is deemed to be important to relational maintenance and satisfaction [8] [12] [14] [15]; while the number of friends, likes received, pictures tagged by others are among the indicators of popularity on Facebook [16].

As users of Facebook judge their popularity through these visible numbers, numbers become an embodiment of power. The larger the number is, the more dominance in the social arena a person can possess, which drives people to more actively participate in the online communicate, such as creating more interesting posts in an attempt to get feedback like receiving more likes in Facebook [17]. People cannot tell the actual message behind the "like" action, whether it being supportive or not. Yet they can count the number of "likes". For these individuals, the number is thus embodied with a different meaning, which reveals recognition, fame, achievements, attraction, and other discernable measures of supportive gestures from others in social media platforms [17]. Friendship is monetized and Facebook generates capitals through the users' behaviour of liking or commenting by the so-called "like economy" [18].

Gaining popularity is a desired thing for people with different traits. Social enhancement hypothesis states that high self-esteem people who are popular offline try to enhance their status by increasing their online popularity [16]. And social compensation hypothesis states low self-esteem people who are less popular offline struggle to be more popular online with an effort to secure their status or to move their status upwards [16]. As such, people's attempt to increase the number becomes prevalent, which intensifies our notion of judging the value through "numerical presence in social media" [4].

In the era of new media, using SNSs have become a necessity. People use SNSs in order to fulfil their needs and gratifications like entertainment, relationship

maintenance, identity building [19]. We are encouraged to create personal profile, disclose personal information and post contents in SNSs [8] [13] [19] [20] [21]. For instance, in the update info of Facebook, it says “it’s been a while since you’ve updated sections of your profile. Take a few moments to make sure it’s all up to date.” According to Vitak [14], willingness to disclose personal information is the prerequisite to attain social capital benefits from use of SNSs, which makes self-display indispensable. The potential benefits brought about by the social media and the potential risk of not obeying this rule make people hard to resist joining it. Under such background, revealing of one’s own data becomes commonplace. The adoption of new technology is influenced by subjective norms [22]. We would see data sharing as a normal behaviour and if you don’t do this, you become an outsider.

People rely heavily on others’ feedback to construct their self-identity. SNSs like Facebook are considered to have influence on people’s perception of themselves [16]. Even though the presented self in public is selective, people continue to display. Individuals deliberately choose what to present and what to conceal from others [14]. When engaging in social media platforms, people have the tendency to protect themselves by trying to avoid showing their shortcomings to the public [16]. In SNSs, people are constructing a virtual self. The display of oneself online also brings lots of issues, including privacy problem, ethical problem, etc. [15]. However, as the temptation outweighs potential dangers, many people still choose to show themselves to the public. Our privacy is less valued and we focus more on pleasing others by showing our information. Both our value and behaviour are changed and influenced by metrics. Metrics have become an embedded part of our life and have profound influence on how we view the world [4]. To some extent, metrics are reconstructing one’s preferences, altering people’s behaviour, changing the ways of identification [5].

3.2. Metrics and Data in the Commercial World

1) Facilitation of competition

Data is produced in an unprecedented speed in today’s world and there are always people with the capital’s logic wanting to monetize it [2]. In the commercial world, metrics are used by companies and industries to facilitate competition [4]. The facilitation is shown in two aspects. First, companies use metrics and data to assess employees’ performance with an aim of improving their productivity. They quantify their goals and set up numerated criteria for the whole group to achieve and they use detailed and operational indexes to measure and improve employees’ performance [6]. Employees’ value is reduced to those indicators and figures. They become more valuable with a higher number. If they fail to complete the goal set for them, they would view themselves as underachieved. With their performance being quantified, it becomes easier to rank it. People are encouraged to compete with each other to make it to the top in order to be seen by the leader and be rewarded with more visible and invisible rewards. As such, their notion of value and worth becomes related to their relevant ranking in the

list. The higher, the better. They value themselves and are being valued more with a better ranking.

Second, companies use data to measure their own performance. They quantify their profits and market performance. These numbers give them a clearer understanding whether they do a good or bad job in a certain period. Their value is associated with these figures. They will have a sense of achievement if the numbers are high and will feel down or anxious if they are low. Companies also compete in the ranking system within the industry, which is based on lots of indexes, such as reputation, capital volume. A higher number means better business outcome. Companies rely on a higher ranking to enjoy more respect and attract more investment. Metrics are also used to measure the effectiveness of business activities and to make decisions [6] [23], for example, companies can check the profits they make after a certain promotion sale. Through having an overall idea of the market performance, decision makers can react quickly and refine what they need to do. The figures become a barometer and can indicate the success or failure of the companies' activities. Companies use metrics and data to improve business outcome. They use metrics to reduce cost and improve profit. As data can be used to "predict the flow of goods" [4], companies analyse it to decide the quantity and distribution of goods. Systems of measurement help locate the needs and demands in the market which can avoid oversupply or undersupply and increase the money gained [24].

2) Data and user analysis

Organizations can excavate data to better understand customers and stakeholders. According to Napoli [25], companies use metrics and audience data to analyse customers' behaviour and thus develop more efficient and targeted strategies. With the development of technology, companies can also study users' behaviour online, such as their preferences, browsing history to find out potential customers [26]. When we browse online, we would also leave cookies or serve logs, which can be mined and analysed by new techniques to detect new commercial opportunities [11].

Metrics and algorithms become important with their ability to measure and analyse users. By studying audiences, companies can make recommendations to them to gain more profits. Users' data becomes a source of capital. People have different needs and different reactions to messages. They are inclined to overlook and delete irrelevant marketing messages [23]. By delivering messages that are tailored and relevant, people would feel like they are valued and important and they may be more likely to remain loyal [23].

Different platforms use different algorithms to make recommendations. According to Yu [26], algorithms used in SNSs can be classified into three types, "content-based algorithm, collaborative filtering, and influential ranking algorithm". Music applications such as the Netease cloud music platform in China rely on users' preference and historical music lists to recommend similar songs while WeChat, a Chinese social network site focuses more on demographic characteristics and past activities [27]. Despite the variance, platforms are con-

stantly improving the algorithm in order to make more precise and accurate recommendations [26]. The systems predict what we may be fond of. By suggesting songs, news feed, etc., our consumption of music, literature works is shaped by the system. Metrics exert the power by making prediction and shaping what is received by us. And we need to know those algorithms are not value free. As from the design, application and distribution of algorithms are completed by people and they are more or less attached to certain value [4]. What is recommended to us, what is rendered visible has its own value. And we are led by the value they instill in us. Our notion of value and worth is changed and influenced as we are exposed to various activities and recommendations.

We allow these apps to track our information and rely on them to make recommendations for us. Otherwise, we must try to dig out new music, movies, books all by ourselves, which is very time-consuming and less efficient. Thus, the idea that they are making our lives more convenient and effective is produced and rooted in our mind. We think the algorithms really know us well and the recommendations are valuable. With the benefits algorithms provide for us, we become more and more dependent on them. Even when they make wrong predications, we may choose to ignore them or believe them. The recommendations are considered to be of high value and we may less believe in our own judgement made via observations or logical thinking. Our notion of value and worth is influenced and changed by metrics as a result.

4. New Gap Created by Metrics and Data

Face-to-face interaction is no longer the only form of making connections. The development of technology and new forms of communication make it possible for people to be visible by others beyond the spatial and time boundaries [28]. However, the rise of electronic media also creates new forms of invisibility. Opportunities to be visible are distributed unevenly. People with power and capital are easier to gain visibility. People without economic property rights are easier to be exploited and disadvantaged [9]. Individuals are both giver and receiver of value.

Competition appears to be fair and open to everyone, and thus people are encouraged to join the field, which, in fact, has differing opportunities for people, and widen the gap of inequality. In today's social media, people seem to have power to make their voice heard by others, however, they are still largely invisible compared to people with power and money. Those people are still more advantaged and they can find numerous ways to increase their visibility. Notions are defined through a series of people's activities, like calculation and exchange, and we live with them once they are formed and widely accepted, in the case of which people with no resources always need to suffer and act within the confines [9]. For instance, in SNSs, the agenda-setting function is employed to its maximum, which restricts what readers can have in view [29]. In China's micro blog platform, Sina Weibo, businessmen make their voice heard through lots of ap-

proaches, and one way is by offering prizes as an intensive. The advertisers ask the users to repost their particular Weibo post and they randomly pick the winner after the end of activity. This is one form of community marketing, which encourages people to promote the institutes' commodities and services to other people [23]. Individuals receive the marketing messages from the organizations and pass on them to another group of audiences who then carry on the process with others. The messages gain value as they are distributed widely. Traffic is directed to the brands or products. Thus, what we see is largely defined by power and capital. Another example in Weibo platform is about the trending topics, which are often condemned to be manipulated by wealthy individuals or organizations [30]. With a certain amount of fee, Weibo can help promote the needed topics to the trending list and gain more exposure of the content to the public. Celebrities and e-commerce companies often use this way to earn more publicity, more fans and more capital. On the contrary, other groups of people like farmers, migrant workers are largely invisible in the list of trending topics. Even they do appear in the list, their images are constructed as poor, disorganized. They don't have control over the system and their complete image cannot be seen by the public. "Measurement functions to define what is valued and what is seen to be worthwhile" [4]. Our notion of value and worth is influenced by metrics as the contents within our view are laden with the value decided by people with power over the system.

5. The Fallacy of Metrics and Data

Metrics are reshaping aspects of people's daily life from how we shop to how we monitor ourselves and our view towards the world is also affected [31]. Metrics have the power to form social results and are essential to determine what is measurable and in what ways they can be measured [4]. We form a numerical way of thinking in the process.

However, it is important to be critical about the connections or patterns dug out by metrics. "Just because something appears to be plausible doesn't mean it is" [32]. As Leinweber [32] stated in his article, metrics might reveal false connections, for example, a false linking was found between the trend of the stock market and the outcome of the Super Bowl using data mining statistics.

The use of metrics and data can also sometimes fall into the oversimplification of complicated issues to a matter of quantity, which would be problematic [33]. People may be too obsessed with numbers and stop finding the reasons behind certain behaviour, phenomenon or connections.

And the behaviour of enumerating things can devalue our relationships and have our view of the important overshadowed by the trivial. Putting everything into figures and money may make us ignore the truly significant things in life. We need to see beyond the boundaries of the capital's logic in order to fully grasp the values that cannot be measured, to appreciate the love, care and treasurable relationships [9].

6. Conclusions and Limitations

This article tries to find the influencing mechanism of metrics and data on people's notion of value and worth. The prevalence and accessibility of data are the prerequisite for people to use them and build their faith on them. People begin to use metrics and data every day as they seem to be objective, testable, trustworthy and have the power of predication and assisting making decisions. The use of metrics and data influences and shapes our notion of value and worth as we use them in SNSs to self-identify and to measure our popularity, etc. In the commercial world, metrics and data are used to facilitate competition by making performance measurable and comparable. The value of individuals and companies are related to their ranking and whether they live up to certain standards. Organizations use metrics to track customers, make recommendations and pose their value in the process. What we can see and cannot see are also determined by metrics and data in SNSs, which in turn changes what we consider to be valuable and what are not. We also use metrics and data to gain knowledge of our body and our feelings and sense of value are influenced if we cannot meet certain quantified criteria.

However, alongside the trend of trust in metrics and data, some problems also occur, like ignoring of privacy in exchange of more "likes" received in Facebook, monetizing relationships, obsession with numbers, etc. While we admit that metrics and data do facilitate our life, we should also bear in mind that they are not the only treasurable things in our life and we need to go beyond the numerical way of thinking. As such, we suggest that personal and commercial use of data should be more conscious and careful.

This article looks at the hot topic of metrics and data in different lens. Instead of discussing how the utilization of big data and new technology can facilitate our life, we focus more on the unnoticed threaten they may pose on leaking people's privacy and changing people's notion of value and worth. Ensuring personal information security is essential and fundamental. People should be more aware of the protection of personal information and privacy. This article provides a different way of thinking regarding the use of metrics and data. Instead of praising and hailing how important metrics and data are, we dig out its influence on changing our thinking mode, our perception of worth and value.

When discussing how metrics and data affect people's notion of value and worth, this article only includes several parts, including how metrics and data are used to measure ourselves, how they are used in social media platforms and in the commercial world. This article also discusses how metrics and data work through in the three aspects. However, further discussion is needed for other possible aspects on which metrics and data have an effect. How the use of metrics and data influences people's notion of value and worth is far more complicated in the real world and this article cannot cover all of them due to limited time and space.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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