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Effects of data-sharing on the power dynamic between farmers and agricultural technology providers and the dependency of farmers on technologies

Background

Who owns, who controls, and who monetizes agricultural data (“ag data”) is a critical issue in the increasingly data-driven agricultural industry in which the use of Smart Information Systems (SIS) has become an integral part of farming operations. Monsanto, the world’s largest seed company, estimated that the data science market in agriculture could be worth as much as \$20 billion (Sykuta). As ag data is set to become a lucrative market, it is accompanied by potential unintended consequences. In turn, the EU created a code of conduct for agricultural data-sharing with 5 key principles: data ownership; data access, control, and portability; data protection and transparency; privacy and security; and liability and intellectual property rights. The goals are laudable, but they remain far and detached from reality (van der Burg). This essay will discuss how the intertwined effect of two of EU code of conduct—data access, control, and portability as well as data protection and transparency—leads to an unequal power relationships between farmers and agricultural technology providers (ATPs) and the dependency of farmers on SIS technologies, along with recommendations.

Data Access, Control, and Portability

The access, control, and portability of data in agriculture is an important ethical concern. The EU code of conduct emphasizes the ideal that ag data can only be accessed, used, stored, and potentially shared with third parties “if the ‘data originator’ explicitly consents to it in the contract”. But in fact, farmers have already started to see restrictions imposed on their access to data collected on their own machinery. Companies such as John Deere have implemented policies that disallow farmers from accessing their own data. Its software licensing agreement sparked controversy among farmers and agricultural technology companies. The updated agreement included language that prohibited farmers from accessing the software’s source code or sharing data collected from their equipment with third-party companies without permission from John Deere (Carolan 2015). Farmers are unable to make informed decisions about their operations. In some cases, contractual restrictions may backfire. Monsanto’s service

agreement specifically states that “FieldScripts® and the related algorithms and documentation are the intellectual property and proprietary information of Monsanto. Growers may not transfer FieldScripts® and its related information to any third party for reverse engineering FieldScripts®. This provision shall survive termination of this Agreement.” (Ryan, M. (2019)) The restrictions placed limit farmers' ability to use the data for their own analysis and decision-making. These limitations put farmers in a vulnerable position, especially as technology continues to advance and data becomes increasingly valuable.

Data Protection and Transparency

Ethical concern about the distribution of farm data to third parties is also critical as it conflicts with the EU code of conduct, which states that “unauthorized ag-data sharing cannot occur with third parties that are not originally referred to in the contract.” Farmers worry that their data may end up in the wrong hands and be used against them in the future. Some farmers fear that surrendering their data may put them in a precarious position, according to Coble et al. (2018). In addition, the dissemination and utilization of farmers' data by regulatory bodies, agencies, and government officials raise concerns about potential adverse impacts. This includes the possibility of the data being used against farmers in regulatory enforcement, and imposition of fines and restrictions. Moreover, there is a legitimate worry that farmers' data could be leaked to commodity traders in the stock market, who may exploit the information to gain an unfair advantage. For instance, traders could leverage specific farm information to purchase products at lower prices or manipulate farmers in negotiations. On the other hand, farmers are also unable to share their data with beneficial external parties, such as researchers, agronomists, or even other farmers. This limits the ability of these parties to conduct research and develop new insights and innovations in the industry.

Unequal Power Relationships

Unequal access to data and a lack of protection lead to unequal power dynamics between farmers and ATPs. These companies have significant resources and expertise in data analysis and management, which can put farmers at a disadvantage when negotiating data ownership and control. This scenario raises questions about the fairness of business relationships and whether farmers are being taken

advantage of by the current system. Previously discussed issues pertaining to data access, control, portability, protection and transparency grant ATPs manipulative, seductive, leadership, coercive, and forceful power over farmers. Given control of data, ATPs exercise manipulative power by acquiring profitable land at reduced price, imposing restrictive and economically aggressive policies on their customers to sell their land at lower rates, and manipulating farmers in negotiations. Seductive power is exerted by ATPs through their ability to influence and control farmers' decision-making processes in the guise of consulting service. Leadership power is evident when farmers are led to enter a data-sharing partnership with ATPs without a comprehensive understanding of the terms and conditions, often due to the implicit trust and confidence they place in ATPs' expertise. Coercive power is exerted when ATPs threaten farmers with economic and legal consequences if they do not comply with specific conditions or attempt to switch to a different ATP. Forceful power is exercised by ATPs through the implementation of changes in pricing and service conditions, with farmers being compelled to comply under the implicit threat of losing access to ATPs' services (Ryan, M. (2020)). All these abusive exercises of powers lead to the next issue to be discussed: the dependency of farmers on technologies.

Dependency of Farmers on Technologies

As farmers increasingly rely on the innovation and services from ATPs, they inadvertently enter the state of modern 'serfdom.' Ageye Tech, a technology that facilitates operation of indoor farms from a remote place, allows farmers to farm from the comfort of their bedroom ("Ageye: Truly Intelligent Farming."). The dependency of farmers on agricultural technology can be a double-edged sword. On one hand, it can give farmers greater freedom to choose when to work and how to manage their farms. With more efficient technology, farmers can save time and energy while making more income to cover higher costs. On the contrary, farmers may develop an excessive reliance on technology, resulting in the erosion of traditional farming skills and a reduction in crop diversity. However, if they were to revert to traditional farming methods, they risk falling behind in the fiercely competitive market, jeopardizing the prosperity of their farms. Seeds, chemicals, and farm machinery have become integral components of modern farming practices. Hence, the encroachment of ATPs and their power can pose a significant threat to the livelihood of farmers.

Recommendations

The formation of a policy framework on data ownership in the agricultural sector is required to protect owners' data rights and data privacy. The current existing legal framework is fragmented and loose, such as contracts and farm data licensing or voluntary codes of conduct.

At the international level, existing data protection and privacy laws such as EU General Data Protection Regulation fail to do much as agricultural data often fall outside the protected scope of 'personal data.' The voluntary codes of conduct, such as EU Code of Conduct on Agricultural data sharing, are voluntary and self-regulatory; thus, the code is not legally binding and is only a set of suggestions to be followed (Jouanjean, M., et al).

At the federal level, the FTC can use its authority under Section 5 to regulate the data privacy and protection practices of companies, and protect consumers against "unfair or deceptive acts or practices in or affecting commerce." However, no minimum enforcement act regarding data protection in the agricultural sector is implemented by the FTC, partly because ATPs are small-scale entities that wield little economic influence on a macroeconomic scale. However, ATPs have a significant presence in the agricultural sector, and their decisions on data are critical and directly impact farmers (Jody L. Ferris). Thus, an agriculture-specific law and regulation are necessary. Under the Robinson-Patman Act, the Federal Trade Commission applies a "rule of reason" when enforcing antitrust concerns related to data ownership, innovation, and product development among ATPS (Jouanjean, M., et al.). This act, enacted in 1936, is outdated and not fully adapted to modern business practices. Therefore, enforcing antitrust laws related to data ownership among ATPs would be able to safeguard the interests of farmers and ensure a fair and competitive agricultural marketplace.

In conclusion, the farmer's lack of data ownership, access, and protection lead to an unequal power dynamic between farmers and ATPs and the dependency of farmers on SIS technologies. Farmers need to have control over their data and to be able to share it with external parties without limitations. The formation of a policy framework on data ownership is necessary to ensure that data ownership is protected, and data access is controlled. Ultimately, by addressing these ethical concerns, the agricultural

industry can continue to benefit from the use of SIS technologies while ensuring that the rights and interests of farmers are protected.

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