Literature Review of Diffusion of Innovation Theory and Fairness Standard

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1 Article Review

[Rog62], [Moo91], [Mas18]

1.1 Learnings - Concepts, Theories, Ideas, Implications, Applications

E.M. Rogers' diffusion of innovation (DOI) theory explains how, over time, an idea or product gains popularity and diffuses through society and can be adopted. However, adoption does not happen simultaneously for everyone. To be specific, some people adopt an innovation earlier than others and those people have different characteristics. Rogers divided those people into five groups: Innovators, Early Adopters, Early Majority, Late Majority, Laggard. Different marketing strategies can be used to target these five groups.

Moore, to complement and criticize Rogers' theory, claims in the DOI theory that there is a chasm between the early adopters and the early majority. Crossing the chasm is making the transition from early adopters and the early majority which Moore believed is the most difficult step. Strategies crucial for this step include choosing a target market, understanding the product's concept, positioning the product, building a marketing strategy, and choosing the distribution channel and pricing. Also, Moore suggests the marketer should target one group at a time and update the strategy based on the prior group as they move on to the next.

Mason claims AI (Artificial Intelligence) can solve poverty by it dealing with problems related to joblessness, education, and welfare. He believes jobs generated by AI outnumber jobs taken over by AI, and AI can match people with jobs better. Moreover, according to Mason, AI can provide tailored education to students according to their preference for learning. Lastly, Mason states AI can optimize welfare by identifying groups that need aid and making fair welfare policy decisions.

1.2 Critique

I believe Rogers' DOI theory would help marketers diffuse their products or researchers investigate the spread of ideas. However, I am skeptical about the specific ratio that Rogers assigned to five groups. For example, I understand that the first 2.5% are defined as innovators and thus they have a risk-taking trait. Therefore, almost no effort is needed on them to appeal to them. This 2.5% will be different by the culture and the characteristic of the innovation. My recommendation for this is to make data-driven decisions. Unlike when Rogers came up with this theory, we have various customer and sales data. If the goal is to divide

users into groups and apply different strategies, this is what data can tell us clearly. For example, purchase data will tell us who is spending money on innovations and who are still consuming old-fashion. Marketers and researchers can still take Rogers' idea that dividing consumers will help them build better strategies. However, they should not make mistakes that Rogers' theory will perfectly apply to any product in any environment. Also, as Moore mentioned, the distribution of groups may not be continuous. Thus, we should not over-trust Rogers' theory.

I mainly agree with Mason's idea that AI can solve poverty because the positive factors that AI can generate for society are larger than the negatives. I also wish that AI provides a fair scale for welfare policy decision-making and will improve welfare. However, he fails to support some of his ideas. For example, according to Mason, millions of unfilled middle-class jobs emerged due to AI and will increase to meet the number of unemployed, also due to AI. There is no statistical support or examples that can justify this argument. AI can replace servers and drivers that usually lack higher education and are most likely not educated enough to fill the middle-class jobs that AI produces. I believe the answer to this situation is to reform education so that people with high school degrees can work in the middle-class jobs that AI generates. Moreover, the government should plan how they can retrain unemployed adults who are replaced by AI.

2 Career Goals

As a data science master's student and an economics bachelor's degree background, I am interested in optimizing and improving user environments using data. This could be applied in using a real-world or virtual product, service, and entertainment. However, setting the best environment for users does not stop with optimization but also includes providing them with a fair experience. For example, some online games assign different roles to users, and users will enjoy the game when they are getting fair rewards proportional to their performance. This is similar to gender and race issues in the real-world setting. Moreover, buyers and sellers from online sales platforms should be in a fair position where one side cannot take advantage of the other side. For this idea to be achievable, I believe defining a measurable fairness scale must become a convention among many applicable fields. Ultimately, providing this fair user environment will benefit both users and service providers. For myself to grow as a data scientist that can solve these kinds of problems, I will experience more hands-on data science projects as a contributing member on top of polishing data science skills such as machine learning and data analysis.

3 Application

The idea that inventing and applying the fairness scale is also an innovation that can be discussed in terms of Rogers' DOI theory. Not only it will not be easy to come up with the master scale without time and effort but it will also be difficult to convince service providers to spend their resources on developing one. However, once those innovators come up with the scale and prove the scale generates a healthy environment and financially benefits them, developing a fairness scale will become a standard convention.

References

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