

## SMU POSTGRADUATE RESEARCH PROGRAMMES' PODCAST SERIES

### THEORY OF CURIOSITY

#### **How Accountancy Can Prevent the Manipulation of Public Information**

Welcome to Theory of Curiosity. In this podcast series, we get inside the inquisitive minds of Singapore Management University's brightest researchers. Combining the power of deep thinking, systematic experimentation, and rigorous investigation, our postgraduate research professors and students reveal their findings on digital transformation, growth in Asia, and sustainable living. Stay tuned for bite-sized insights on big questions that continue to shape our future.

**Richard:** Hello, I'm Richard Crowley and I'm currently serving as a professor of Accounting at SMU. Over the span of my career, I've been working on research projects touching on many disciplines; from accounting and finance to applied machine learning and sociology. I've always been fascinated by information dynamics, especially the creation of, dissemination of and reaction to qualitative information. When people think about accounting information, financial statements and figures usually come to mind. However, much more of the information companies release comes in the form of written text. Much of my research focuses on understanding the information dynamics of non-quantitative information – especially information disclosed through more modern sources such as social media. Due to the quantity and variety of information that companies release, machine learning plays a central role in my research, enabling us to measure more complex and precise constructs.

In our earlier projects, we developed a strong methodological core for handling a variety of data sources with a focus toward social media. In more recent work, we've been applying these techniques to topics of broader interest, such as the effects of government policies and social issues. A big driver in expanding our focus on social media research is I work with PhD students as they bring fresh perspectives on ways of leveraging existing data as well as on new data to investigate.

In this episode of Theory of Curiosity, I'll be having a discussion with Zhao Yue, a first-year PhD student in the SMU Accounting programme. He is a dual -degree PhD student in SMU and Renmin

University of China. Zhao Yue's research focuses on data assets and the governance of corporate digitalisation. He is currently working on several research projects on the accounting of data assets, EU General Data Protection Regulation, known as GDPR, and corporate voluntary disclosure. Today we'll be exploring the intersection between online data, public trust in corporations and accountancy. Hello, Zhao Yue, thanks for joining me today.

**Zhao Yue:** Hi Richard. Thank you for having me today.

**Richard:** Zhao Yue is a PhD student who is in my 'Theory of Economics for Accounting' class. Today we'll be talking a bit about his research as well as a bit about what I do. So, Zhao Yue, you do a bit of research on the GDPR regulation. Can you tell me a bit about that?

**Zhao Yue:** Thank you, Richard. European Union's General Data Protection Regulation, also known as GDPR toughens rules, about how companies can collect and use information about individuals in EU. It is to protect data privacy and personal information of any residents and consumers, even if the data processors or controllers are US firms, Chinese firms, Singapore firms, and even SMU. Probably because we have European students here but GDPR does have some spill over effect on non-EU students. Last week, I just knew that my teaching assistant application form, submitted to programme managers, should also be kept in line with GDPR.

So how does GDPR affect our daily life? I think GDPR is everywhere in our daily life. It's forcing hundreds of thousands of companies – multinationals such as Mastercard, but also some small manufacturers and restaurants to change how they gather and handle personal information. For example, when we open a website, there will be a pop-up related to cookie settings like 'accept cookies' or 'update cookie settings' on a website. Even apps will ask us to choose whether to allow the app to track our activities during the process of purchasing their products and services. So the GDPR creates – or toughens – many obligations for firms, such as minimising the information they collect. And it gives us individuals expanded rights, such as the right to see, correct or delete our personal information.

**Richard:** So that sounds like it adds a lot of burden onto corporations, right? So can you tell me a bit about how this impacts companies in terms of how they deal with individuals' data?

**Zhao Yue:** Well, sure. Any companies or entities who violate GDPR will be fined heavily. GDPR empowers EU data regulators to levy penalties of as much as 4% of a company's global annual

revenue for the most serious violations. For example, Amazon got fined \$888,000,000 over data violations, and WhatsApp was fined around €225,000,000. TikTok was also imposed a fine for violating the privacy of young children. So firms respond to privacy regulations by changing board or management team composition. For example, chief compliance officers, and by disclosing cybersecurity risks and breaches or purchasing cybersecurity insurance.

**Richard:** So it seems like there's pretty wide-reaching effects to this regulation. And in fact, even at home in Singapore, we have some analogous legislation. So we have this act called the Personal Data Protection Act, which acts as a bit of a GDPR drop in even when companies aren't dealing with EU individuals right? So that means that even if the company only interacts with Singaporeans, they still need to respect individuals' privacy. So it's clear that regulations like GDPR and Singapore's PDPA law affect companies' operations and improve individuals' privacy. But as data becomes increasingly core to companies' operations, how should we think about data from an accounting perspective?

**Zhao Yue:** Richard, that is an interesting question. You know, I am supporting the capitalisation of data resources. The world is changing the digital economy, not only how companies disclose their information, but also how they review their business. For example, corporate digital transformation. One of the core competencies in the digital economy is data resources. As economists, the Journal proposed, the most valuable assets in the 21<sup>st</sup> century is no longer oil, but data. Twitter uses their users' information to generate revenues. Alibaba uses personal shopping data in their credit service. Although data resources generate economic benefits for these companies, we cannot find data assets, these accounting accounts, in their financial statements. This is because data cannot be recorded as an asset under current accounting standards, which are revised very frequently.

**Richard:** You bring up some interesting points. So for our listeners at home, let me start by defining what an asset is. Under our current regulations here in Singapore, which we call SFRS, which are, in fact, actually derived from a global set of standards, we define an asset as an economic resource controlled by an entity. And when they talk about an economic resource, they mean something that has the potential to produce economic benefits. To put it more simply, what they mean is something that you own that will have value in the future. Now, I think when we think about data, we can see that for sure data has value, right?

And we see that there are companies that are massive that derive billions of dollars of revenue from data. The question then falls onto ownership or how to actually establish what the actual value is. So Zhao Yue mentioned this concept of capitalisation, which is trying to figure out how exactly we would value these assets. In accounting, we actually have issues with this in a lot of different contexts. So one that's more commonly discussed is how to value research. Again, research clearly has value, but it's very difficult to understand what that future benefit is. And so that's going to be our tricky aspect here with data. How do you think we could put a value on data?

**Zhao Yue:** Yes, I think we can establish a market to trade and exchange data. I think data will be regarded as an asset to trade and exchange in the future, just like stock exchanges. China has established several data exchanges in Beijing, Shanghai and Guangzhou, etc. So I think the capitalisation of data resources, protected by laws and regulations will happen naturally in the future.

**Richard:** Yeah, I think that's an interesting point. So this can help with establishing a value. And this goes back to, again, our discussion of what an asset is. This helps with establishing that future economic benefit. But there's still one other part to what an asset is, which is this part that it's controlled by the entity. And if we think back to our discussion on GDPR, it's not always clear who owns the data. So if you post on, say, Twitter, who owns that tweet, is that Twitter's own data, or is that yours? Is it both? And I think this is still a legal hurdle to really being able to define data as an asset. And it almost is more of a philosophical question than it is an accounting question.

So another issue of online data that's captured the attention of regulators in recent years is the presence of false or misleading information online. In my research, I found that when it comes to financial information, corporations are generally transparent balancing between both positive and negative information. One potential reason for this is that audit of financial information must be released to the public, and thus what corporations post about when it comes to financial information on social media is generally verifiable. However, in our research, we don't find this pattern holds across all types of discussion online. For instance, when it comes to ESG – meaning environmental, social and governance– we see an inverse relationship between what companies do and what they say. That is, the worse a company's impact through ESG, the more they talk about ESG on Twitter. What are your thoughts on this Zhao Yue?

**Zhao Yue:** Well, this asymmetric behaviour between corporate financial disclosure and ESG disclosure is like a shock to me. Investors, especially naive investors like me, may just believe everything this company's disclosed. One important reason is that we regard these disclosures as reliable because of our trust in security regulations and regulators. For example, in US, China and here in Singapore. However, companies may take advantage of our naive beliefs and weak capabilities to interpret financial and non-financial information to seek economic benefits. For instance, when investors hold the belief that green stocks will experience a rise in their prices, then what will investors do? They will buy these green stocks. Then what will the companies with little investment in ESG do? They pretend to be green and sustainable companies.

This is just like in the secondary car market. Every car seller tells the potential buyers that their car is the best, is the most green and sustainable one. Without any verifiable evidence, buyers cannot see through whether the car is good or not. What will they do? They will only accept an average price among the market. Then, car sellers with good cars will quit the market and the remaining cars to sell are worse.

So let's move back to our topic. Companies have to report and disclose financial information under certain rules by US regulators and Chinese regulators, and even Singapore regulators. However, the truthful representativeness of ESG disclosure is not required that much, and companies have incentives to do greenwashing. Even if they disclose some fake news about ESG, they are less likely to be involved in security class-action lawsuits. So I think your findings on the asymmetrical behaviour between financial disclosure and ESG disclosure really make sense to me because companies probably suffer less from litigation risk related to ESG disclosure. But I hope greenwashing may be a good starting point for them. Just like, fake it until you make it.

**Richard:** Yeah, I agree. So essentially what you're saying is if it's something that's pretty clear and pretty regulated, it's hard to really mislead investors. But when it's something that's soft, like these environmental issues or governance issues, it becomes much easier for companies to, as you said, "fake it". So what can regulators do about this?

**Zhao Yue:** I think maybe anti-fake news laws are one possible solution by providing governments with a mechanism to constrain the worst misinformation online. Are you doing some research related to such a topic?

**Richard:** Actually, I am. So together with a team of three other researchers at Singapore Management University. We're investigating globally how these types of anti-fake news laws impact capital markets, companies and investors. Why don't I focus on one of our specific papers where we're looking at the question of: Can misinformation regulation reduce the threat of misinformation in capital markets?

So in this project, what we want to look at is whether companies are reacting to these laws and changing how they post information online. So this goes back to our earlier discussion, where we saw that some companies are posting information that seems to be a bit misleading. So we talked about the ESG information. And so one possibility is that if these laws do have teeth and are effective, companies may proactively stop doing this and it ends up, quite a few countries in the world have implemented laws like this. Singapore is one, with our Protection from Online Falsehoods and Manipulation Act, also known as POFMA. And that's one of the stronger acts in the world. But there are actually a lot of different approaches regulators have taken. For instance, in France, they took an approach where the law only applies under certain context rather than globally. And in Belgium, instead of putting forth a law where they target the actual disclosure, they instead focus on their own citizens' data literacy and information literacy. So they're trying to train their populace to essentially not be misled by information or be able to critically think about this and ignore the information that seems misleading. So what we want to look at in this research is, first, how do companies react to the passage of laws like these? And second, do the different types of laws have differing impacts?

So, for instance, is a stronger law like Singapore more effective, or would a perhaps less strong law like Belgium's be more effective in the end? And we've done some pilot studies. We've looked at, for instance, the investor's reaction to the passage of these laws. We find that investors are generally positive. What we mean by that is that the stock prices in those countries actually increase on the passage of these laws. But on the flip side, when we look at the amount of discussion on social media, we actually see a remarkable drop in social media around the passage of these laws. So it seems as though the laws may, in fact, have teeth and are actually causing people to think twice about discussing certain things online, but in a way that stock markets think is efficient.

So that would actually be encouraging for these types of laws. So to better understand what's going on here, we went out and gathered every single post on Twitter by every public company

across 26 different countries. So that's a lot of data, right? We ended up collecting 100 million posts.

**Zhao Yue:** Wow. That is really a huge work. How do you process such a great amount of data?

**Richard:** That's a great question. It's clearly a lot of data a lot more than we could ever read by hand, right. If it was, say, 1,000 posts or even 10,000 posts, we could do it. But 100 million is well beyond human capabilities. Now, let me tell you a bit about what we want to get out of this data first. So what we'd like to see is whether companies are changing what they discuss on social media before these anti fake news laws come out versus after. What we really need to know about is what is actually discussed, what's the content of this discussion before versus after the law comes into play, and so we really do need someone or something to read all of these and figure out what is in the posts. And so to do that, we have to turn to machine learning. This is where this interdisciplinary aspect of our project comes into play. We're using actually an algorithm developed by some faculty at the School of Computing and Information Systems at Singapore Management University. So they developed an algorithm that's meant to read Tweets and report back on the general distribution of information across them.

So we're essentially going to take our data set of 100 million Tweets, give it all to this machine learning algorithm. It'll read all 100 million, and it will categorise all of them into a set of topics as it sees fit. So based on the actual information discussed in there, and that's what allows us to really dig down, get that construct that we need, and say whether or not companies really are changing how they discuss on social media due to anti-fake news regulation. So I think this project really highlights how breaking disciplinary boundaries can really help move research forward. And in my personal opinion, this is becoming more important in PhD programmes in general in terms of the experience you're getting out of the programme and the types of research you're able to do. So how has your experience been in our programme?

**Zhao Yue:** Well, to be honest, I'm just a first year PhD student here, so maybe in the first term I feel a little bit stressful because we have seminars, reading, group meeting with research mentors, homework, presentation, etc. to do. But in retrospect, I really learned a lot and made some progress. But I think more importantly, I got to know a lot of friends in other schools and even in other universities. That's very beneficial for me. And I think School of Accountancy SMU is among

the best in the world. And I have long admired its joint innovative research culture which emphasises cross disciplinary work and problem driven research.

**Richard:** I'm glad you're enjoying our programme so much. Yeah, I agree that our programme really does emphasise a lot of these sort of newer methodologies and sort of boundary crossing with other social science disciplines. So really, nowadays the boundaries between social science disciplines are pretty fluid.

Which means that we can take measures from other disciplines and feed them back into our own discipline and vice versa so other disciplines can take accounting measures, use them to understand their research as well. And to facilitate this, I actually teach a course called 'Machine Learning for Social Science' where students across the entire University learn how to use some of these techniques like what I discussed earlier to bridge these gaps and use data sources from all across social science in order to further their research and also to meet each other and discuss sort of research ideas. And we've even had some promising research projects come out of that class which I'm quite excited to see the outcomes for. And of course, Zhao Yue, I'm excited to have you in that class next semester.

**Zhao Yue:** Yeah, thank you, Richard,

**Richard:** Zhao Yue, thanks for your time. I really enjoyed our exchange today. To our listeners, what do you think? How do you think corporations will engage with the public going forward? How can accountancy help to protect the public from manipulation? And how can we ensure current and future technologies maintain or enhance the productivity as well as the equitability of information communication? Check out the rest of our podcasts where we have insightful conversations around research work that shapes and informs our world.

If you like what you've heard, please follow the series and share them with your community. We hope this gives you a unique interdisciplinary perspective around Singapore Management University's PhD in Accounting programme. If you'd like to find out more about this programme, visit [smu.sg/phd-accounting](http://smu.sg/phd-accounting). For other academic research PhD programmes, visit [smu.sg/phd](http://smu.sg/phd).

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