

**iLLUminate Blog Transcript: Beibei Dong on the Risks of Letting AI Choose Your News**

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- JACK CROFT: 00:14 Welcome. I'm Jack Croft, host of the iLLUminate podcast for Lehigh University's College of Business. Today is May 20th, 2021. And we're talking with Beibei Dong on research she's been conducting with her College of Business Marketing Department colleague Eric Fang on how artificial intelligence, or AI, is changing the way many of us get our news online. Dr. Dong's research and teaching interests include digital marketing, services marketing, and international marketing. Dr. Dong, thanks for being with us today on the iLLUminate podcast.
- BEIBEI DONG: 00:49 Hi, Jack. Thanks for having me here. It's my pleasure to talk with you and to share about my research. Thank you.
- CROFT: 00:57 Yeah. And I do want to get into this because I do find this fascinating. But I want to start with a little prelude to kind of set the scene. And that's that we've come a long way from the time when most Americans got their news from some combination of their local newspaper, one of the three major TV network news broadcasts, and radio. A recent Pew Research Center survey found that 86% of U.S. adults say they get news from a smartphone, computer, or tablet often or sometimes including 60% who say they do so often. By comparison, 40% say they get news from TV often, and 68% say they do so at least sometimes. And Americans tune the radio and print publications for news far less frequently, with half saying they turn to the radio at least sometimes, with 16% doing so often and about a third saying the same of print, with only 10% getting news from print publications often. So that provides some important context for our discussion, today. When Americans go online to get their news, which again, 86% of U.S. adults are getting news often or sometimes online, how is that news being delivered to them and who decides what they see?
- DONG: 02:26 That's actually a great question. Typically, we say news could be fed in two ways. One is called a user subscription, and the other one is AI recommended. So when we say user subscription, we refer to the situation where news stories are pushed from sources that readers have subscribed to. So, for example, if you use the Google News app, the app allows you to follow various news providers. So this could include local communities, companies, major news outlets, and the media platforms. You could also subscribe to a variety of topics, right? Such as health care, politics, education, technology, and all this news will appear in the tab. That's what we call, the "Following" tab. Alternatively, news feeds could actually be pushed by recommendations, and these recommendations are coming from what we call artificial intelligence algorithms. So basically, the AI would actually produce some algorithms based on the readers' prior clicking or browsing behaviors, and it will be real-time adjusted based on their evolving behavior. So, for example, the Google News app also has a, "For You," page. So when it says, "For You," basically that's where Google uses AI to create digital profiles of its users and then deliver content that would conform to their preferences.

- CROFT: 04:03 All right. So the more you click on certain topics or kinds of news, the more you see of that in the AI-driven ones. Is that correct?
- DONG: 04:14 Yes. That's exactly correct. So they're actually doing real-time adjustment based on your clicking behavior.
- CROFT: 04:21 Right. So those models have evolved now to where Google News, for example, has a mix of both ways to deliver news to news feeds. How does that work?
- DONG: 04:32 That's a very good observation. Actually, most contemporary news platforms, they would start with one type of feeding model and then gradually evolving to a mixed model. So like the Google one you were talking about. Google actually started as an AI-based model. And in the process of pushing those recommendations, readers can choose to subscribe. So it's kind of a recommendation-based model with some recommended or with some subscription feature. Conversely, Facebook started as a subscription model. So, for example, if you'll recall, you could follow your friends' different organizations on those pages. Well, in 2019, Facebook began to integrate the recommendation feature. OK. But they actually allow users to turn off those features if they want. So it's kind of a mixing of both. And then we say the mixing of both models in business practice actually tells us something. It indicates each has its own merits. However, from academic point, that's not a good news because the individual role and the effectiveness remain unknown, and it's very hard to assess them separately. So one of the advantage of our research context that we are going to share today is that we are actually able to provide a clean context while we do not mix in the two models, and that gives us the opportunity to precisely differentiate and to compare their distinct impacts between these two models.
- CROFT: 06:13 Right. So the research you're doing with Dr. Fang actually looks individually at the user subscription model and the AI model, and you are able to judge the merits of each separately without kind of mixing them together?
- DONG: 06:32 Yes. That's exactly what we are trying to do here.
- CROFT: 06:36 OK. Now, one of the things I found fascinating is that the research is looking at the way that we process information, and you discussed that there are two main ways that you're looking at. What are those two ways and what do the differences between them tell us about how people reach conclusions and form opinions about topics?
- DONG: 06:58 OK. Great question. So in our research, basically we are saying when you are reading news on a Google News app, let's say, it's either in the "Following" tab or "For You" tab. We think because there are some fundamental differences between these two models, the way you process information and navigate news would be different. And there are primarily two ways to do it. One is called the central processing, and the other one is called the peripheral processing. So this comes from a classic theory called Elaborated Likelihood Model. The short name is ELM. So ELM basically outlines two ways people process information. So in highly involved situations, people will be engaged in what we call central processing, so when they spend high levels of cognitive resources to digest information in a systematic, rigorous, and comprehensive way. So let's say in the news feed context, we're using central processing. Readers care more about the comprehensiveness, about the news, OK? So they will pay more attention to the core message that news tries to detail, and they will read that news very carefully and process it in a systematic, rigorous way.

Well, in contrast, in low involved situations, people are more likely to adopt what we call peripheral processing. I think peripheral basically says readers care more about the efficiency, and they tend to use heuristics to quickly form conclusions.

DONG: 08:44

So in such a way, they will pay more attention to the peripheral cues. These are typically not directly related to the content to make their judgment. So, for example, in the news feed context, they may actually, instead of going in depth into the news, the news content itself, they may actually look more into the headline, the picture and the author who writes the news. And they would use those simple information to quickly arrive at some conclusions. So these are the two different ways people process information.

CROFT: 09:20

It's interesting. The term, I'm sure you're familiar with, click bait, which is where you get a really provocative headline just so that somebody will click on it just so they can register that and count it and charge their advertisers for it. So when people are doing the click bait thing, that's actually the peripheral processing. Is that correct?

DONG: 09:52

Yes. That's exactly. And that actually is a very good observation because that actually tells a lot of the roles between the platform versus the actual, let's say, the advertisers, right? So, for example, if a company post an ad on your news app platform, the click-based rate actually get to charge them, right, for placing the ad. However, they don't really like it because when user just randomly click on it because they choose the peripheral cue, it doesn't really help with the actual ad because they want them to really read the ad carefully and respond to the ad in a more efficient way that could generate a purchase. But from the platform's perspective, if you simply click on the ad, they get to their business. They generate their revenue. So there is some contradictory, conflicting roles between the two parties when they look at how people process information, read news and respond to ads on the platform.

CROFT: 10:54

All right. We'll get into some of the details of your research now because I think the details in this case are certainly very interesting. And you're focusing on four fundamental differences you've identified between the subscription model and the AI-driven recommendation model. Two of those have to do with the news itself, the what, and two have to do with the way the news is presented, which is the how. So let's talk about each of those, starting with what you call source uncertainty. What do you mean by that? And what differences did you find between people who get their news through a subscription model as opposed to one driven by AI?

DONG: 11:37

Thank you. So the first difference that we look at is called a source uncertainty. So here, basically, we are saying that the news producers are perceived as unknown and uncertain. So we all know that information from a friend is more trustworthy than the mass media. And just talking about the mass media alone, information from a familiar source, right? The Wall Street Journal, for example, is perceived more credible and trustworthy than an unfamiliar one, an unknown source. So applying this to the news feed context, we argue that subscription model forwards news feed from sources with no uncertainty. So this includes news that's shared by our friends, right, and the trusted media outlets. So, for example, as I said earlier, you may follow Wall Street Journal. That is a very familiar source. And the reason you would consider it the more dependable and the reliable partly is because they are in your social networks, partly is because familiarity. And when you are dealing with this type of news from these type of sources, you are more likely to engage in what we called earlier the central processing. So that's a highly involved processing because you take the news more

seriously. You are more motivated to process news from your friends or a trusted media source.

DONG: 13:06

On the contrary, if the sources of news are recommended by AI, typically they are much broader and diversified than the subscribe-to sources. The news app is really good. The AI is really good at collecting news of same topics and viewpoints from a broad variety of news outlets. And many of those outlets actually are unknown to the readers. So, for example, if we do a random Google search of, let's say, side effects of COVID vaccine in the Google News app, you will realize that in the next few days in that "For You" tab, you would see dozens of news reporting negative impact of vaccine coming from a wide variety of media sources. This could include some more reputable, like international and national press like Bloomberg, but it could also include many unknown regional news outlets such as like Cleveland, The Nightly News, Miami Herald. So in such a case, we say readers are less motivated to read the news from those unknown and unfamiliar sources, and peripheral processing is more likely to take place. So basically, we're saying high source uncertainty in the AI model basically will leads to a low involved information processing that's peripheral.

CROFT: 14:31

All right. And the next is content relevance. Again, what does that refer to and what differences did you find between the user and AI models?

DONG: 14:42

So content relevance basically describes to what extent the content of the news feed could be adjusted in real time to best match the viewers' interests. So this probably is the most beautiful things of AI. With the powerful listening and the predicting capability, AI excels at providing the most customized and relevant news to readers that could truly cater for their individual interests. We say there is the dream that a news publisher would create a different copy of its newspaper for each of its readers has really come to real with AI. However, this content of relevance does come at a cost. As AI personalizes the content in almost real time, it gradually narrows and then limits the topics and viewpoints delivered to the readers. It's kind of wrapping them in a filter bubble. So if you search the term, "filter bubble," actually you would see more and then more discussions about it because this has become an increasingly recognized the drawback of AI. So, for example, in the case of political news, right, if you are always reading articles that are left leaning, you will end up with tons of news feeds that are primarily left slanted, and the news with the opposing view will gradually disappear from your media world. Likewise, if you are a big fan of Bitcoins, you will find yourself in a world of news on Bitcoins with either dominantly positive sentiment if AI thinks you like Bitcoins or negative if AI thinks you hate it.

DONG: 16:32

So what would be the downside of that, right? You are really exposed to the filter bubbles. And how would that impact your information processing? We say that when readers are continuously fed with what they like and expect to hear similar stories and a similar side of the stories, one after another, and opposing views and a diversified body of topics are filtered out, we say digesting such information that is consistent with their expectations demands less mental power and cognitive resources. As such, readers become lazy and adopt a low-effort mode. So, for example, you would actually skim through the content rather than doing deep reading and critical thinking. And in that sense, peripheral processing follows. So they would be engaged in a more low-involved mode. In contrast, this is less true for a subscription model. Although the news content you subscribe could also be relevant, it is not subjected to a filtering process dominated by technology like what AI is doing.

As such, readers have greater chances to be exposed to different viewpoints, which may include those disconfirm and a challenge of the expectations. And we say information that violates expectations creates a greater cognitive dissonance and therefore demands more cognitive effort to reconcile the discrepancy in such way you have to spend more effort in reading the information, digesting the information, and to think more critically. So that would be a more highly involved essential processing mode. So in short, we say, AI, although make our life easier by bringing things that we truly love to see, we are interested in looking at, and confirming what we want to see, it actually bring us to a low-involved model and make us be lazier in processing information.

CROFT: 18:40

Yeah. And it would seem that-- you had mentioned critical thinking, and if you're reading stuff quickly, and each thing you read, you go, "Oh, yeah, I knew that. I knew that. Yeah, I'm right," and then you move on, yeah. Over time, that's got to have some kind of effect on the ability to kind of sort through what it is you're reading and whether it's true, so. All right. Now, one of the fundamental differences regarding how news is presented, delivered to consumers, is what you call presentation fluency. So what does that refer to and what differences did that reveal between the subscription and AI models?

DONG: 19:26

So when we say presentation fluency, basically we are saying how news feeds are organized and presented in a smooth, coherent viewing flow. So we propose that the AI model offers greater presentation fluency. What does that mean? That actually means it would request lower demand on the cognitive effort, and it actually is able to create what we call an effortless viewing experience. So the presentation fluency primarily comes from two aspects. One is because of a smooth transition in between topics, and the other is due to the contextual adjustment of the content. So we start with the first one. The first one is the smooth transition. We say, as we discussed early, AI pushes similar topics to you, and they often appear one after another. So the relevance in between those topics provides a smoother topic transition and offers a more coherent viewing experience. This successfully glues readers' attention to the news app, right? So it's like we just wonder why time goes so fast. We read the news like really quickly, one after the other, because the transition between topics is much more coherent. And the other thing is that it relates to the contextual adjustment of the content.

DONG: 20:53

So the traditional subscription model presents news typically in a chronological order with the most recent ones appear at the top while in the AI model, news does not appear in such a way. Instead, the order of the news actually subjects to real time adjustments based on the reaction data of the readers, along with other contextual considerations. So, for example, Facebook said their ranking system uses multiple layers of machine learning models to predict what a user wants to see and then adopts a dedicated system to decide how to present the information in the most contextually relevant way. So, for example, the algorithm would consider your previous viewing history and today's real time viewing behavior and other contextual information, such as the location you are reading the news, the device you use to read the news, the time of the day and the day of the week, etc. So this thoughtful planning offers a much context-relevant browsing experience by best accommodating your preference in the real time. Let's say, for example, if today you feel like you want to learn more about cooking, and then you navigate a few news feeds on cooking, right? And you spend some time clicking on each of them, read them through. That

reaction behavior will send a signal to AI, and then you will realize the next 10 to 20 minutes you will see a lot of cooking news coming up in your app. And that's how they try to provide you with the news that you would really want at that moment. So that helps to ease a lot of your-- it makes you in a really relaxing mental state. You are kind of glued into it, but you process information without much effort. And that's a low-effort mode that you're in.

CROFT: 22:52

All right. The fourth and final areas, lack of content control. Again, what does that mean and what were the differences you found?

DONG: 23:04

So when we say lack of content control, it really describes the decision as to what content is shown. OK. In the AI model, the decision is made by AI, and viewers do not really have much control of the content. So we say that when combined with the wealth of user data and the machine learning algorithms, these AI platforms are better at hijacking your instincts than you are at controlling them. Indeed, shifting the control from the readers to the news app probably is the most defining differentiator between the two models. So when the readers opt for the "For You" page over the "Following" page, literally, they decided to put the steering wheel in the hands of thousands of engineers, some of the world's smartest minds, right, who will guide them to navigate the news world. However, what would be the downside of that? Research says when humans delegate tasks to machines, so, for example, having machines think for them, they are likely to settle for a level of effort that is just good enough. So in other words, they would count on the machine to do the tough work and are less motivated to expand their cognitive effort in processing information. That would result in a low-involved processing mode. That's a peripheral processing. OK. And well, this is a big thing in AI because apparently when you do not have the control, you let the machine do everything for you. Well, this is less of a concern in the subscription model as readers are the ones who decide what they would like to read and from which source. So the decentralized platform offers subscribers greater sense of control and more empowerment over their digital life. As such, they are more likely to exert a mental effort being involved in central processing.

CROFT: 25:10

All right. So when we put these four differences together, the source uncertainty, content relevance, presentation fluency, and lack of content control, what do they combined tell us about the way people process information depending on whether they get their news feed from a user subscriber model or one that's driven by artificial intelligence?

DONG: 25:35

Actually, the four fundamental differences we just talk about like between the two news feed models actually all point to a same prediction that is in the AI model, viewers are less engaged, and they would opt for peripheral processing due to the high source uncertainty, high content relevance, the fluent news presentation, and the less sense of control. In contrast, in the subscription model, viewers are more involved and engaged in central processing because of the low source uncertainty, low content relevance, less fluent news presentation, and a greater sense of control.

CROFT: 26:18

All right. So should we be concerned about the increasing role that AI plays in how people get their news?

DONG: 26:25

Yes. My answer would be yes. Apparently, when we are celebrating what AI has given to us, such as extremely individualized and the personalized news content and the fluent effortless viewing experience that is based on real time adjustment of our



mood, we need to be careful about the downsides. This includes the filter bubble. Our news world could be selective, and biased, and controlled by the engineers who write the algorithms and the platforms who decide what they want us to learn. Ultimately, having machine to make the call for human brains is a bit scary. The other thing is that probably what is even more concerning is that AI uses our cognitive effort in information processing. This could mean that AI actually makes us lazy. AI is also eating up humans' ability in deep reading and critical thinking. While being fed by everything we love to see in our comfort zone, we may gradually lose the ability to discern different views and to think independently and critically, right? Just think about like the pre-teens, right, the teenager kids who are glued to TikTok these days, and TikTok is purely based on AI algorithms. We're kind of worried about the future of a younger generation in terms of their ability to think independently and critically. So this is something we need to think about as to look at how AI is interacting with human.

CROFT: 28:07

Early on, you had mentioned this notion that AI at one time was thought to be exciting because there was this idea that you could actually have individual newspapers based on what readers were interested in seeing. And I'll admit up front to both a personal interest and probably a bias in this area because I worked in newspapers for a couple of decades. But as I mentioned at the beginning of our conversation, only 10% of Americans now say they get their news from print publications. And there's a professor at the University of North Carolina's Hussman School of Journalism and Media, Penny Abernathy, who's been researching the creation of news deserts, which are all these places in the United States that no longer have a local newspaper. And since 2004, about 1,800 newspapers have closed in the United States and 1,700 of those were weeklies, the pure local news. Since the COVID-19 pandemic, 70 local newsrooms have closed. So that's kind of all the bad news. But are there any lessons from your research that you think could have an impact on the future of newspapers?

DONG: 29:30

Sure. The first thing I--

CROFT: 29:31

Whether print or online. I mean, I'll just say that as well.

DONG: 29:35

Yeah, sure. The first thing I can say for sure is that the future of newspapers will not be on printed papers for sure. We are moving away from it. Well, it most likely will be online, but I would say more accurately, it most likely will be on the mobile app, the mobile phone, as our entire world is now in a portable mode in the mobile [inaudible], right? So I think that's where we are heading in terms of the device, the medium that news come from. The other thing is that for the content, I think the news will be different for everyone. It will truly depend on who will read them, at what time of the day, in what mood, use what device, and at what location. It would be truly individualized to the certain extent that would best cater for what you need and what you like. Well, the other thing is that, as we discussed early on, that the bad news for that is now we're kind of in the peripheral processing mode where we actually interact with the news dominated by AI. The news have to be short, colorful, and interactive to best serve our readers who are looking for fast information and light reading. So we need to think about how to present the news in a way that would truly tailor for their reading preference, now. Yeah.

CROFT: 31:03

And finally, is there anything I haven't asked you about your research on how people are getting their news today that you think would be good for listeners to know?

DONG: 31:10

I just want to say one more thing. So I want to use the quote that I really love from Stephen Hawking. He's a famous theoretical physicist and an author, and he said, "Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last unless we learn how to avoid the risks." So I think regardless if we like AI or not, AI is in our life, and it is changing every aspect of our world and our life. So the future of newspaper as we discussed today provides a great example to understand the interplay of AI and the human. But I think there are a lot left for us to explore in many different fields about how AI could influence us in a positive way and hopefully in a controllable way.

CROFT: 32:07

Great. Thank you so much, Dr. Dong. I really enjoyed this. And I think you've given all of us a lot to think about and question on our reading habits as we're all looking at our smartphones, reading things quickly and moving on. So I'd like to thank again our guest Bacy Dong. Her research, has been published in the Journal of Marketing, Journal of the Academy of Marketing Science, Journal of Service Research, Decision Sciences, Journal of International Marketing, Market Letters, and many others. This podcast is brought to you by iLLUminate, the Lehigh Business Blog. To hear more podcasts featuring Lehigh Business thought leaders, please visit us at [business.lehigh.edu/news](http://business.lehigh.edu/news). And don't forget to follow us on Twitter @LehighBusiness. I'm Jack Croft, host of the iLLUminate podcast. Thanks for listening. [music]