

Lameck

BACKGROUND

Good evening, Mr Lameck. How are you this evening?

Good evening. I'm doing well, and you?

Doing well, thank you sir. As part of the consent form that I've already sent to you, it's really to say thank you for agreeing to this interview, and also expressing that you've obviously been purposely chosen to give some insights, because we believe you fit the criteria which we want to explore in this research and get insights from.

The title is per the consent form, Exploring Data-driven Decision-making in Uncertainty, and as you can imagine, it's largely inspired by the 2020 pandemic, called the coronavirus. Most of life as we know it was obviously disrupted, a lot of countries went into lockdown and as we were just chatting prior to this interview, a lot of uncertainty obviously in terms of what the future actually holds. So the reason for, or rather, the main purpose and objective of this research is to explore and understand whether data-driven decision-making, as a technique, can be practically applied to offer value to organisations in times of uncertainty, as opposed to traditional techniques. And in this case, what we know from literature is that heuristics seem to be the most favoured decision-making techniques in times of uncertainty.

The consent form further shows our sub-objectives, but basically this informs the nature of the questions that we will be asking, and as a semi-structured interview, this is exploratory in nature. So I encourage you to speak freely, give as much insight as you can, also taking comfort in knowing that your identity as a provider of this information shall remain confidential. We will be using a transcriber, who is a third party in this whole thing, but we've also issued them with a non-disclosure agreement, which they've already signed, to ensure that we still maintain the confidentiality that we have set out, or want to maintain.

My supervisor is Dr Charlene Lew. Her contact details are available on the consent form I've sent you. If you'll be so kind to sign it and send it as soon as you can, you know, and ideally soon after this meeting. So yeah, let's get into it.

INTRODUCTION

The first question is to just get a feel of your current role, some background information on your organisation as well. So it's mainly just 5 questions. The first one as well is your current role and what are your high-level basic responsibilities?

Okay. Thank you very much. I will sign the consent form. I've seen the consent form. To answer your question, I am the CEO of Orion, which is a consulting firm. Orion is a company that normally looks into actuarial consulting, and it's quite interesting that in my current

role it extends, since it is mainly a start-up, so it extends into strategic, looking at the future and making sure that the strategy is in line with what we want to do and where we want to go. It also involves servicing a couple of clients that I have, and mainly these clients are in an African space. So I would say that would be the main, primary role. Then in terms of the secondary role, I also do consulting with another company, where the main role is - I'm also responsible for clients that are in the African space - in the consulting space. And basically we use data to actually inform what to do.

Lovely.

And yes, given what has just been happening now, I think we had been using quite a lot of data to inform a couple of decisions that are critical to our clients.

Perfect. So I think you've actually covered a lot of the other follow-on questions to that level in the organisation. You've mentioned that you are the CEO. Company age and company size in terms of turnover or staff complement? You mentioned that Orion, a chartered accountants and actuaries, is a start-up. What will be your staff complement there? As well as the other organisation, how big is that? So you can choose whether it's a staff complement measure of size, or you want to use (theoretical? 0:05:51) turnover measure of size, whichever you're comfortable with.

So I'll start: As a start-up we are 5 people, so there is myself, then there is the CFO who is a CA, and 3 individuals who actually support us. And then we also outsource for certain projects. If we have got very huge projects then we outsource to other parties, and we share a venue with regards to that. Then the other company, in terms of staff complement, it's about roughly a total of about 500 people...

Yoh! (Laughs.)

...which in South Africa... in South Africa we're looking at a staff complement of about roughly 325. Then there are other people that are in different regions. We've got Mozambique, we've got Lesotho, Swaziland, Ghana, and Namibia as well.

Okay, great stuff. Thank you so much.

DISCUSSION

So as we now delve into the actual questions for this interview, what we've found from literature is that uncertainty mostly relates to constant change how to predict scenarios. In certain instances there's ambiguity, there's conflicting unavailable and somewhat unreliable information – and this whole mix also is explained better as the unknown unknowns. So first let's just set the scene especially from an uncertainty perspective, because I'm sure data-driven decision-making has been around for a while, now we just want to look at the practical application in an uncertainty context.

So the first question is really: How has Covid-19 contributed - and I think from an uncertainty perspective - contributed to the use of data in your decision-making, if at all?

Thank you very much. With regards to that question, we have always been data-driven. Most of our decisions that we make are mainly based on data. What's actually happened as a result of Covid is the fact that the uncertainty has been... I mean, there has been an increase in that uncertainty. So on a scale I would say there were a lot of moving parts associated with Covid-19, so we ended up now doing scenario analysis, a couple of scenarios associated with different forecasts associated with Covid. Currently I'm actually working on a project for one of the clients in Namibia, where we are actually supposed to have a couple of scenarios which we are saying we would expect. The reality is, we don't know which scenario actually is going to occur, so the more we run several scenarios, the better we get an expected outcome that we can actually say at least we can base our decisions on. I mean, data is there to just help you to see the uncertain future in a particular way, but it doesn't really replace the need for you to actually make that particular decision given the information that you have.

Absolutely. I think just to take a few steps back, do you believe with the emergence of Covid and the uncertainty that it brought about, there's been a lot... maybe, could I say a heightened need, or an increased need to actually use data to assist in the decision-making process?

I agree with that, because if you think about it, the uncertainties...

This is mostly from an Orion, Mr Patterson, as well as the other consulting firms, you know, your experiences there. Have you increased the need to use data at all?

If I look at it, I would say we have, always have been, I mean, data-driven. The only difference I can say is now that Covid has happened, we are now forced to use a variety of data sources to come into, I mean, making a decision. We're now not really looking at only, say, a few data sources. We use data to set up assumptions. When we set up assumptions we use data and we can use either stock market data, or the other data that we use, for example, we use mortality data. So let's imagine now with Covid happening...

Eish!

...some of the impact of Covid is going to be a long-term impact, and right now we are saying, we haven't seen it coming through, but we continue to follow through, I mean, looking at the data to see really what is going to happen in future. So it has strengthened the already existing role of data that we have been using, but now it's like a bit more pronounced, where we say, okay, we definitely need to think about these different scenarios. I mean, what is it that's going to happen? Because no-one is aware, or no-one knows really the future; because right now they're talking about... for example, there are so many scenarios where you need data to capture certain decisions. Is the V-shape recovery, I mean, something that we're saying is going to be sustainable? Or it's going to be a double U-shape where it's got double dips? Are we going to see... ?

Like a second wave, etc.

Yes. So all those things, all those are uncertainties. I mean, they've helped us to now say, okay, we have been using the data, but we need to use that data more into generating quite a lot of scenarios that will say for sure... like for example, I'll give you an example, right: There has been the need by one of the regulators to say, can you model the impact of mortality on the financial position of a particular fund? We now start to look at information from the stock market, the asset values, how the asset values moved; then we look at the liability and say, okay, how is the liability also moved as a result of this? What is going to be the impact in the future if more people are going to die? What's going to happen? So those decisions now require data and you definitely cannot run away from data to make those decisions.

Okay, perfect. So I think what you've already touched on now in this first question, sort of covers some questions that will follow. The next question really is, I think, to your point earlier – so data-driven decision-making refers to the use of data to support the decision-making process. And I think what this really echoes is what you've already mentioned to say, data will be data and you still need to use it to actually make a certain decision, or arrive at a certain conclusion. And now also just trying to hold on to another piece that you mentioned whereby you said you're now looking at multiple sources, the question that I have is: How and when do you rely on data when making decision in uncertainty? So let's talk about this in your various sources. How, and obviously when can you actually rely on this data when making decisions?

So the first thing that you need to think about is how credible is that data source that you are going to be using. You definitely need also to triangulate when you've got your multiple data sources that you have, and see if really the information that you have and the data that you have is making sense. If the data... because the other thing is, right now there is a lot of misinformation that goes out of there, especially when you're thinking about the media. You definitely don't want to rely on too much, or heavily, on such data that's coming in from the media in most cases. But there are credible data sources that you can actually use, for example, if you've got your Reuters terminals, you've got your stock market data that you are using. So it's possible to actually use even the real-time data that you have to actually make decisions. We normally do what you call asset and liability modelling, that we do, and in most cases it informs those people who are going to actually be investing money. Imagine in a period of high uncertainty, sometimes you've got incomplete information, but you just have got indications that... I mean, I think we're thinking that the market is going to go this way, so as an organisation, or as an advisor, you need now to say, okay, I think because of this, maybe you can go on to make this decision. Ultimately, there is a risk associated with those decisions, because sometimes it happens that it can turn out to be wrong. But the most critical part is, do you have the right tools and the right governance within the organisation that governs the process that you're going through to make those decisions?

And from a governance perspective, are you also referring to governance decisions around also... I want to use the word “credibility” of the data source that you've based your decisions on? You know, you can't be using a Reuters terminals and get stuff from Wikipedia – if I get where you're going with this.

Yes, that's true. So in terms of governance, the governance now... because you are making these decisions, the sources of your information has to be reviewed and the sources should be at least credible enough for you to do that. So that is very important. And also, the fact that from a process perspective, have you considered quite a number of scenarios as well to say, I mean, this indicates that there is going to be variability in your results, and you are taking it into account that my decisions that I'm going to make – I understand that there is a variability associated with that – but now, I am now going to use all the sources, apart from data? I mean, what about the other softer issues? What is the other qualitative information? I mean, you can take that as data as well, but that is mainly qualitative, and you are saying, okay, what are the advantages, given the information that I have? What are the advantages, what are the disadvantages? What are the ethical considerations that I need to think about?

So there are quite a lot of other things that you need to bring about when making a certain decision. I can give you an example. One example is, one of the clients, we're looking at making a pension increase recommendation. The data was pointing to say, don't grant any pension increase. That's the data. But there are reasonable expectations for members, because historically there had been increases. So somehow you can't just come in and say, I'm not going to give you a pension increase, right. Secondly, there are also ethical considerations that you're thinking about. I mean, you've got a bigger role to play in society. By following that decision based only on data, you might actually miss quite important considerations that you need to make. So it just also reinforces the point to say, there is data, use data to support, right, but not as sole...

Be all and end all.

... yeah, the sole source. You just stand up and say, data is saying so...

Therefore this is what...

I'm going to make that decision.

Okay. I'm going to come to this, to what you have just said now. I believe what you are actually speaking about there, comes in the next two questions to say, there is a benefit of using data when you are actually making data-driven decision-making – but we're going to get to that.

Before we do, the next question that I have is: What sort of challenges or obstacles do you experience when making data-driven decisions in times of uncertainty? And again, just to try to unpack the question a bit on a lighter side is obviously when you... so uncertainty is still there, and you're going to have to rely on data... sorry, you're actually going to want to use data to support the decision-making process with (IE? 0:23:33) as the data-driven decision-making. What are some of the challenges that you face with this, particularly now where there is uncertainty?

The difficult part of it is, some of the data, whenever there is uncertainty, you might actually over-react. I mean, there is an element of over-reaction, especially when you're thinking about the information that's coming to you. The first time you see that

information and the data that's coming to you, you might end up, I mean, over-reacting. And the reality is, some of the data, there's also delays to get like your key information, key data; or sometimes you haven't really seen the impact of a particular event, you can say – the impact of it you might not be able to see it the way it is, initially. As long as you don't have enough data as well, you will notice that it is very difficult to actually make a decision. You have to wait for the emergency of a particular trend or a particular outcome to actually be at least certain to say, can I use this sort of information? So ultimately that's a really big challenge, especially in times of uncertainty where you are standing there and you don't have the complete picture, right. The only thing that's going to help you is just that small amount of data that you have to make a decision. In those cases it is very, very difficult, but at least it's better than not having that data that you might need.

During this time, and I remember it was very difficult to get which source of data should I use, because everyone is trying to learn, everyone is trying to figure out what's happening. So that's what happens whenever there is uncertainty.

And I think, just thinking about it again now, you know, during this time of uncertainty there's definitely a number of conflicting information from the data sources as well. One source says this, the other source says that, and you actually then have... and there may well be very credible sources as well, right?

Yes. I can tell you, I remember there was one person who was saying, you know what... I mean, we were trying to model the impact of lockdown, and the guys were saying, you know what, lockdowns are going to actually be more... there are actually more... I mean, the impact from lockdown is actually severe as compared to having that lockdown. (Chuckles.)

Okay.

Right. And they had credible information. People were actually saying, no, whatever they're saying, these guys, it's not making sense, right. But now as we are actually emerging, we were seeing the impact of Covid on the South Africa GDP – if you look at the economic impact it is actually severe. And today we were actually trying to look at, to say how many years would it take South Africa to go back to the pre-Covid GDP numbers. And I can tell you, the people are actually saying it will take about 8 years. 8 years - if South Africa continues to grow at a dismal rate. So in actual fact, it just shows you that initially people actually were saying, no, I mean, these guys, whatever they are saying is not making sense; but now in hindsight, I'm trying now to figure out to say, okay, should we have done it in a different way? Maybe. But who knows? During that time, it was a time of uncertainty, we needed to act and ended up acting, given the information that we had. So that's a challenge that comes in – you've got limited information, you need to make the decision, and ultimately maybe (0:29:17) the decision as time goes on, as (0:29:22) emergence coming in out of that uncertainty.

Okay. Sounds good. Sounds good. I've got some flesh on this, let's flesh it out. I think you've got quite a lot of practical experience around the challenges that you face, so I

don't want to stop you from actually carrying on, as much as we've got a few more questions to go through.

I think also, the other challenge is, what I've noticed is, **there are companies that do not have the capability to provide real-time data.** So there is a lag; there is a **time lag.** For example, for you to get information of what happened last month, maybe you'll get it on the 15th or the 20th of the other month. So my question is, in a volatile situation which is highly uncertain, you want that data *now* – and you can't get it. So it just tells you that companies have to invest in management information systems that help you to actually see what is happening in real-time, right. If you want to see what is happening *now-now*, I should be able; I should not wait until they're saying they're running this month-end, they're doing reconciliations. I think you understand what I'm saying from an accounting perspective.

Yeah, yeah.

So that's another challenge that I've noticed, that the information and the **data are not available when required.** You only get it with a lag, and a time lag, I mean, it means that you are making decisions and the situation might actually have changed; and during times of uncertainty we are saying, the situation is very volatile and it is bound to change. So you actually need to make decisions *now*. If you are getting data, I mean, after 3 weeks and you want to make a decision, then what decision are you making using that data? You'd better look.

A lot has changed in-between.

Yes.

So it's quite interesting that you say that, which is fabulous for me, because it's actually things like this – this is a real sort of challenge. It's come up quite a number of times in prior interviews. So for me it's comforting to actually hear that keep coming up over and over again. Please go on.

I would say, I think for the challenges, I think I've just covered those ones, which I would say were actually like the key, key ones - especially the challenges, also the troubles we got when making decisions where there are delays and there's nothing you can do.

Thank you for that. Just to come back to what you said earlier, and I actually don't want to put any form of bias towards your frame, your thinking in any way. I'm going to ask the question straight-up and then you can then give your insight. Despite the challenges or, you know, and/or obstacles which you face – obviously you've experienced when making data-driven decisions – have you gained any benefits from using data-driven decision-making as a technique in terms of uncertainty?

Yeah, I mean, we actually got a bit of... I would say it's better than when you don't have anything to base your decision, right. I would say, at least it avoids also these, I mean, a bit of knee-jerk reactions, which actually can happen when you don't have **data to support your decisions.** So for me it has been very helpful to actually say, okay, hold back, and say,

no-no-no, what we are thinking is not what the data is saying. **Actually, the data is actually telling us a different story here.** Like for example, I was talking to some colleagues to say... I mean, everyone is thinking, okay, Covid, we understand Covid has been very disastrous. But when I was looking at the stock market data, I'm like, oh okay – it was recovering, right. *(Chuckles.)* There was recovery.

So I was actually looking at some of my portfolios where I was saying, okay, the companies were earning, like in terms of returns for investments that were done at the lowest, so their returns were looking at about 50-something % - 50% in terms of returns since March to date. So to some extent it has been very helpful to say, okay, some clients have been making investments on a particular portfolio, but they realise that data is showing that this is the best time to make these decisions to buy. They went on to buy, using the data that they had at that particular point in time, but right now their returns are like stellar. It has been a very good use of data, where you look at the data and say, okay, what is this data telling us? Then you act on that data, make a decision. And right now there are good results that people are actually seeing. I can tell you right now to say, obviously there has been Covid, but if you look at, for example, the Johannesburg core shares index, it tells you a story. And the story that it tells you, it tells you that, okay... I mean, we went to about 30,000. I mean, it went down to about 30 thereabout, and now it is back at around 54,000 – showing exactly that things can change. But if you use that data that you have at your disposal, it can inform you. **I mean, it removes also an element of bias that also exists,** I mean, it's inherent in us. If you don't look at that data then it means the bias can end up taking over your decision-making. So that's another advantage, I would say, when using data-driven decisions – it removes that element of bias from you, and you can then make that decision to say, okay, based on this information that we have, I've removed a bit of my bias, this is what the data is telling me. But notwithstanding the fact that you don't need now to entirely...

Rely.

...yes, only on data and forget everything about a particular situation.

Absolutely. So what I actually hear from you, which is what I wanted to bring from your earlier sort of contribution is, you know, when you say - and it's exactly how you put it, I like how you actually have explained it is, you know - when you use data to support a decision, you said it's exactly that, to support. What data will probably show you is that from an objective perspective, and again to your point – without any bias – this is what we ought to consider, but you obviously can't rely 100% on data. There are other things that you probably need to bring in that needs considering. Your example about the pensionable benefit increase, etc. etc. – there's an expectation and that sort of thing, but objectively you can actually then say, okay, based on this, this is what the numbers say, or this is what... I know numbers is obviously, especially in your role and your industry, but basically you get to a point where this is what it is in black and white, but let's then consider other things. So it allows you to make a very informed sort of decision, if I understand you well – after considering all other pieces to the puzzle.

That's true. That's true. That's exactly, I mean, from a summary point of view, I mean, you've actually put it quite well.

Okay, cool, that's that. And then, any other benefits that you'd like to share? Or I can move to the next question – it's really the last question.

I think I've seen that, I mean, there are certain conflicts, I can say conflict of interest that can usually happen in an environment where you want to make decisions and there are a couple of partners that are involved. And that conflict of interest, in actual fact, without data you'll not be able to really deal with it in a proper way, because you definitely need to see the conflicting outcomes that different people actually have in a particular situation. And having data, it helps to clarify and to actually make it clear to everybody that, okay, this is it – we are going to make a decision based on this one. In actual fact, maybe you would have agreed prior to that, that if this happens, then this is the type of decision that we would want to make. So there are obviously situations where data actually can help you make your "if this happens, then this" type of decisions. So it's actually very beneficial. You can't actually make those type of decisions without something that you can actually base it on to say, if this, then what?

So I've been following this person who actually does cyber security, right. So they base their decisions to check whether it's a robot or it's a human-being, based on the number of clicks that can happen on a website. So that's data. I mean, they can quantify the number of clicks and they can get sometimes where this is a human or it's actually a computer-generated program that wants to take over or wants to hack into a particular, say, being a bank or something like that. So at least they are able to actually utilise the "if's" – if this is happening, then so do this quickly to actually prevent cyber... I mean, from a cyber security point of view. So it's quite interesting to note that with data you can actually automate certain type of decisions whereby without data, then it's very difficult for you to do that. So it's another benefit which I have actually noted. I mean, having that data, and if that data is credible, you can have the rules on it – if you're going to put rules on it, then maybe human-beings will come in just to look at... you can actually say, these are the rules, then flag this to the IT department to look at it in more detail.

To moderate it as well, neh?

Yes, yes. I can tell you, the guys were actually saying that they used to make decisions, it will take them maybe hours, right, and hours and days and days to actually maybe identify what has been happening or if it is a fraud that is taking place. But nowadays with data that's available and the use of automation that comes into play, it has enabled them to actually say, within an hour they should be able to tell what's happening – and they can actually react quickly, before they've lost a significant chunk of revenue, or before there has been adverse impact, be it on the system or on a company.

Absolutely. Sounds good. Still got more or we can cover the next one?

I think you can move to the next one now.

I think you've definitely given many wonderful insights so far. I wish this interview could have many more questions, but unfortunately it brings me to like the last question for this interview. I think some of it you've touched on briefly. The question really is: Based on the above – the challenges, the obstacles, the how and when do you rely on data and that sort of thing – what can be done to enhance the use of data during decision-making in uncertainty? And this is both at an individual level, as well as on an organisational level. Feel free to start wherever or include both at the same sort of feedback.

Thank you very much. I think that is a very burning question, I think, especially now that Covid has exposed the weaknesses of the current systems that are available. So the starting point is to actually not have fragmented data sources. Make sure that when you're designing your management information system, it has to actually be integrated to a number of systems that are not talking to each other; because in uncertain times you actually want to see, or use data that's actually been taken from a given source. I've seen that legacy systems which are stand-alone - that can be used maybe by different departments – are not something that we want now. We actually want something which is a database, you know exactly that your database is able to hold different types of data that comes in, and you can actually be able to utilise it.

Then secondly, you definitely also need to invest in your data scientists, your analytics. Most organisations that I know of, they sort of try to outsource that role. For me it's a role that needs to actually be at the centre. If you want to make the best out of your data, you need to be able to have people who play with the data and tell you exactly what insights are coming from the data. You cannot just start utilising data because there's uncertainty, because in actual fact, you won't be able to do that, or you won't have that capability. So I would say, invest in your data team so that they can help you make these decisions - they provide, they can help you, provide these insights that you can actually say, I think I can support my decisions based on these insights.

And the other point – I think I've already highlighted it to use – the fact that be able to get that information as quickly, get the information timely, and not just wait for information that comes to you later. So that is very key, and I would say these are some of the things that we are looking at to say, how can we have a system that holds the data and we don't have too many legacy systems that don't communicate to each other, and we also get information that is timely? Apart from that, we need to be able to analyse different structures of data that we do have - we need for customers or internally. There are quite a number of data sources that can come in, but if you are able to actually process that, having a team with that capability, it improves your decision-making and even the outcomes. You expect to see quite favourable outcomes coming in. But it's not something that can be done overnight. Some is an investment that needs to happen, and over a period of time.

I think what I like about what you said is, there's definitely an issue of, do away with fragmented systems, especially when you're doing your MIS design.

Yes.

I think that is key. I think that is definitely something that I've experienced in my organisation and it's something that we're trying to manage now. And unfortunately, some of it is indeed the legacy system issue. Some of it is an implementation issue, as a result of we ended up where we are now. But definitely a sound investment in your analytics to give timely information quickly, I think, definitely does go a long way. I mean, you have made the example of a friend requesting information, you get it 15 days later. In uncertainty, surely a lot of things have happened in-between, I support that.

I would say, in terms of the actions that people have to take, I think the ones that you've summarised are the things that I can think out of my... without doing any further research on something, I actually see happening, and it doesn't really help when you've got those challenges and a lot of things would have happened in an uncertain environment, so the information that you have is actually... I doubt if you will be able to use it, because at least you actually need maybe to supplement it with something else.

Indeed. Definitely. It sounds good. Any other? So it sounds like mostly at an organisational level. And individual level, any insights there?

I mean, at an individual level, the benefits of data as well. Think about it, as an individual there's quite a lot of things that you can do, right. I'll give you an example to say, on a daily basis there's a lot of decisions that you make and these decisions actually, some of them actually need data to make those decisions. And it's very key that you also think about what data is available in order to make this decision. I mean, think about it – I want to drive right now to work, what sort of data do I need? And do I have that data that tells me that the road that you want to use actually has got an accident that has happened. And before you make that decision, have you considered those things? For me, on a personal level, these are some of the things that, if you start right now thinking about a data-driven decision, usually to supplement your decision-making and support your decision-making, it helps you; the thing is, you have considered it before you act. So I check. You may go, okay, this is my road, what's happening there? Oh okay. Now let me now go. So it means to some extent, these are some of the things that you can do, using available data on a personal level. But obviously, there are decisions that you might say, okay fine, data is saying this, but as human-being you end up just making decisions based on hunch.

Absolutely. I fully hear you. I think what you are saying is, it takes the burden of actually understanding the benefits off data-driven decision-making and then that alone would definitely enhance your use of it.

Definitely, definitely, you will gain benefit from that. Yeah.

Sounds good. My good sir, if you don't have anything else to add, your time has been immensely valuable. Thank you so much. I've covered all my questions on my end. If you still have anything else that you want to add to previous questions or any contributions, absolutely, we still have a bit of time.

I actually would say maybe one more point. I think it's really... it's something actually that happened yesterday, come to think of it, right. There was a power outage in the area, and I'm not so sure if those restaurant owners and your fast food outlets – your McDonald's,

your KFC – managed to pick it up. What happened is, there was the power outage and it was now getting late, and everyone wanted to go and buy something to eat. Guess what? A company that would have noticed that, that would pick that data that, okay, this is what is happening, would have actually prepared for a surge in the numbers. So you would see that McDonald's and other companies had long, very, very long queues, and people ended up not even going, not even thinking of going there, because they were not prepared. They were actually short-staffed – a few people were there, but the environment had actually changed quickly, to an extent that if they quickly noticed that, okay, there is a power outage in this area and it's expected to actually take longer to fix, they would then have added a couple of personnel to help, and they would have made it easier. I ended up travelling like to a place that is actually far away from where I stay, because I couldn't get in there. So data in that time of uncertainty would have helped them, or if they were analysing the number of people that are coming in with time, and actually that showed a trend to say, oh, this is showing something, something is happening – they would have been able to prepare from that.

I'm with you.

So I would say, I think those are my contributions. I don't want to keep you longer; otherwise, thank you very much.

No, I'm definitely at your mercy.

This is a very, very interesting topic and I think it's worth looking at, because actually, I see these things playing every now and then.

I think what you've actually done, which is extremely refreshing, and I think very insightful, is you've actually used a lot of everyday examples. I like your very last example, and I hope you know that we can... sort of the benefit I can gain from doing this research, could be applied even in our everyday normal, simple decisions. You know, power outage, where do I go and get food? Okay, what is my route saying for me to get to work? And that sort of thing. And then we also just really become a data-driven society. So, thank you so much for your insights and we hope it contributes positively to the world in one way, shape or another. Thank you so much, sir. If at any point you wish to have a copy of this interview's recording, I can make that available for you, but thank you so much for your time. Please do send the signed consent form at your earliest.

Alright, thank you very much. I'll actually try to see if I can sign it now, because... no, I need to put it in my company laptop, so I will do that.

Okay, thank you sir, I appreciate it.

That's where I've got my signatures. Do you have...

Electronic signature.

...a web document?

I do have a web document. I'll send that through to you.

At least I can just copy my electronic signature and put it there and put date.

Perfect. I will send them through to you now. Thank you, sir, I appreciate your time.

Ends