Credit Suisse Technology, Media, and Telecom Conference

Company Participants

- Sridhar Ramaswamy, SVP Advertising & Commerce

Other Participants

- Stephen Ju, Analyst, Credit Suisse North America

Presentation

Stephen Ju {BIO 6658298 <GO>}

I'm Stephen Ju with the Credit Suisse Internet Equity Research Team. Welcome to the conversation with Sridhar Ramaswamy, Senior Vice President of Advertising and Commerce of Google. Before we start, I will read off the safe harbor statement.

Some of the statements that Mr. Ramaswamy will make today may be considered forward-looking. These statements involve a number of risks and uncertainties that could cause actual results to differ materially. Any forward-looking statements that Mr. Ramaswamy makes are based on assumptions as of today. And Alphabet undertakes no obligation to update them. Please refer to Alphabet's Form 10-K for a discussion of the risk factors that may affect its results.

So before we kick it off, I think there may be some of you who may not be as familiar with Sridhar's role at Google. So I wanted to kick it off with a brief bio. Sridhar oversees all of Google's advertising and commerce products, which includes Search, Display, Video Advertising, Analytics, Shopping, Payments. And Travel. He joined Google as an engineer back in 2003. And since then, he's been an integral part of the growth of AdWords and Google's advertising businesses.

Prior to joining Google, Sridhar was Director of Engineering for the analytics platform at E.piphany. He also held research positions at Bell Labs, Lucent Technologies, Bell Communications Research. And Bell Corp. Sridhar earned a Bachelor's degree in Computer Science from the Indian Institute of Technology at Madras. And he has a Master's Degree of Science and a Ph.D. in Computer Science from Brown University. He has also published numerous papers on database systems and database theory and holds several patents in that area.

Also, another preamble. And the last one, I promise, we are launching a new piece of technology this year in which you can now fire up the CS Technology app, conference app. And type in your questions. So open your app and hit the Agenda

at the bottom left of the screen and locate the session on the schedule. And once you click it, you will see an option for live quote and Q&A. Click on that and you can submit questions for Sridhar, honestly.

So without any further ado, we'll start the Q&A. So Sridhar, we have seen you present at the Google Performance Summit as well as other industry meetings. But this is probably the first time that you are speaking in a room full of investors. So would you give us a quick glimpse into your day-to-day responsibilities and where you spend most of your time?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Thank you, Stephen. Glad to be here. I run the Ads and Commerce teams. And when I think of our priorities, both within my team and to external groups, we, as a team, focus on key areas like search, video advertising, programmatic advertising. And app-install ad promotion. And much of the focus of my team for the past couple of years has been on mobile. That's where the growth is; that's not very surprising. And so a lot of the time that I end up spending day to day is on product development and commercialization of our products in these key areas.

We continue to make large and dramatic changes to our products. I think the pace of innovation is really, it's a strength and a necessity because the world around us is changing so rapidly. So a lot of time is spent on product development. I also work very closely with Philipp Schindler, who's the Head of Sales, on how we actually take these products and commercialize them and take it to our advertisers and make sure that they realize the value that we think our products can provide for them.

Stephen Ju {BIO 6658298 <GO>}

Now, two years ago, we had Neal Mohan here on the stage. He talked about one of the priorities, that Google was to quote-unquote crack brand advertising. Where are we now versus two years ago? Where do you think the remaining pain points are? What problems do you feel like you still need to solve for your advertisers?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. A lot of our brand advertising strategy, unsurprisingly, is centered around YouTube, which is just an amazing, amazing consumer property with incredible growth. We've talked about mobile growth being in the many, many tens of %, for example. And so our brand advertising has been focused on things like how do we get our largest advertisers to reach the kind of audience that they increasingly cannot reach with traditional TV.

And YouTube and Google is doing very well in video advertising. But I'd say it's still pretty early. Just this year, we announced a lot of product changes. We're very excited about a new format called Bumpers, which is a six-second ad that we think is very, very suitable for mobile. And programs like Google Preferred continue to do

very well in terms of attracting commitment and TV dollars. We're going to see a lot more change come through in how brand advertising is doing.

I would say we are doing well. We have real and large relationships with some of the largest brand advertisers in the world. But it's still early. There's still lots more opportunity in growth.

Stephen Ju {BIO 6658298 <GO>}

Got you. You talked about the rate of change before and the need to keep up. Google has been a very heavy investor in AI. So would you talk about your advancements here in machine learning and how this is helping you and your team, whether it's in the rollout of consumer-facing products or tools to help advertisers make better decisions?

Sridhar Ramaswamy {BIO 18644257 <GO>}

So Ads has been one of the earliest and largest users of machine learning at Google and, frankly, the world. This is because we've been very intimately involved with things like predicting click-through rates of ads, which show us good an ad is for a consumer. And we have done this from very early on, because we've also used these predicted click-through rates to price ads. So machine learning has been an integral part of the ad system, pretty much since the time I joined. And gosh, that was like 2003.

And as new waves of machine learning, whether it's algorithms based on boosting or, more recently, algorithms based on deep learning and neural networks, have been developed, we are often eager and early adopters of this technology. And so deep learning and neural networks now are an integral part of how ads are served, both on search and on display. And we continue to work closely with these teams. We develop many of these innovations ourselves because it has such a big impact on us. But we continue to work closely with these teams to take the latest and greatest in their technologies and make our prediction algorithms more and more efficient.

I would say, again, keeping up with the pace of change that's going on here is really important and yields rich dividends for the ad team and for Google.

Stephen Ju {BIO 6658298 <GO>}

Got you. Now, after some of the more recent controversies and topics from investors, take a step back and look at what spurred Google's advertising revenue growth over the last 24 months or so. Some of it seems like it has come from an increase in ad load on both Search as well as YouTube. We're not used to thinking about Google running out of inventory any point soon. But how worried should investors be in terms of hitting some sort of a ceiling when you take the sponsored links from two to three and four, in some cases?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. So it is really important. And I've stressed this in meetings with many of you. I've stressed this to my team. I've stressed this, again, externally, that we put the user first when it comes to consumer experiences. So we've built up elaborate methodologies that we have published papers on for things like ad blindness, the cost of serving ads to users. And we always optimize for the long term.

While it is true that we're serving four top ads -- four ads, for example -- on a very small fraction of queries. And you can determine this number empirically yourself, just by running a basket of queries, I'll point out that that is a very small number. And this total number are this little fraction of queries on which we show ads overall has more or less remained constant over the last 10 years. Because user behavior in terms of what they search for in terms of commercial content hasn't really changed a whole lot. And so we think of ourselves as very careful stewards of the user experience. And we have the mathematical expertise to actually figure out, is a change like this good for the long term? What's okay. And what's not okay? And we're pretty happy with the trade-offs that we've made over the past many years.

Stephen Ju {BIO 6658298 <GO>}

Got you. Back to the topic of brand advertising. And TV in particular, TV ad dollars seem fairly resilient, despite what looks like ongoing declines in ratings. So can you help us reconcile this with the growth rates that YouTube is experiencing?

Sridhar Ramaswamy {BIO 18644257 <GO>}

It's one of those cases where I don't particularly feel like this has to be an either/or. And increasingly, if people want to reach audiences of a certain age -- the younger audience, for example -- YouTube is kind of the place to be. And the reach that YouTube offers -- again, we have published stats on this -- in terms of things like the 18; to 34-year-old demographic, say, on mobile, where it's larger than that of any cable TV channel, it's pretty remarkable.

So we have been very good at providing advertising for a very large set of our clients. Regarding whether there is going to be a mass shift from TV this year versus that year, that question tends to vary by country. In western Europe, I think TV is still well more established. And in the US, you also see more and more people coming up with unbundled packages for consumers to use and stuff like that. I think there's a big convergence that's going on. So it might end up being the case that there's not really like one moment in time where there's a mass shift, where everybody adopts each other's techniques in a pretty big way.

Stephen Ju {BIO 6658298 <GO>}

Got you. Another topic that's a recent topic on investors' minds, I think everybody's consumed with the topic of seeing the anniversarying of the benefits that Google saw from the additional sponsor links on the Third Quarter of last year. But at the

recent performance you were onstage to introduce an array of new products and services, updates, including expanded text ads and the ability to bid individually across different devices. So will you give us an update on how these initiatives are going?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. Back to the point of needing to innovate continuously, this is still a very nascent field. Mobile commerce is still evolving. We'll talk a little bit more later on about what we, like my team, is doing to make mobile commerce more efficient. But we think we need to continue to drive the user experience forward.

So at the Performance Summit, we introduced what we call enhanced text ads, a new format, two little, separate headlines, more suitable for mobile, a cleaned-up, visible URL. While these seemed like cosmetic changes, trying to get a business that is tens of billions of dollars large to shift completely over from an old format to a new format is the change that we are in the process of making.

It's going pretty well. Advertisers are seeing pretty positive results in many cases from these. Similarly, tablet bidding was a control that many of our advertisers wanted. They felt like they could realize differential value from doing this. And so that's going pretty well. Things like re-marketing for search ads with (inaudible), that is also something that a lot of advertisers are taking advantage of. In addition, we've also continued to work on innovations within the core of our mobile search ads work. All of these have kept the momentum going there. And things like the enhanced text ads migration, we expect to be well on our way to finishing it up in the first half of next year.

So overall good, positive momentum in the ecosystem and good, positive momentum in the value that advertisers are getting from mobile.

Stephen Ju {BIO 6658298 <GO>}

Okay. So I think there's, in some quarters and under, I get the perception that there's a lurch forward because of a new product innovation. But the case that you want to make is one of continuous innovation.

Sridhar Ramaswamy {BIO 18644257 <GO>}

And again, as an engineer and product leader at Google, I focus on how can you get the most changes out the fastest? When you start worrying about a year-on-year comparison to a nice change you're about to launch, you're in trouble. Clearly, there is a strong belief on the part of management, on the part of my team, that we will continue to drive that innovation forward. And that's really what we push for.

Stephen Ju {BIO 6658298 <GO>}

Got you. You have also spoken at conferences about being mobile first at Google. Does this open up possibilities for Google to better address the roughly 85% of commerce that is not yet happening online? And to this end, you have introduced new features to help advertisers attract store visits. What has been the reaction from advertisers. And how nascent is this opportunity for you?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. So I've talked in a number of places about how mobile can drive an enormous amount of local commerce. As Stephen said, 80-plus % of commerce happens locally. And advertising clearly influences some of it. But how do you create product that actually make a measurable difference to retailers?

So we worked on things like local inventory ads, which is now a three-year-old product that helps you see what is available from the stores around you. In addition, we have done things like put location extensions in your search for a store or a particular product so that the advertiser can tell you, "Hi. this product -- a bicycle -- is actually available in this store that is next to you."

So based on our location data that we get from people that use our apps and phones, we released a product called Services about -- I think it was two Decembers ago, 2014. And we've been scaling it up to more and more countries, in 10 or 11 countries. So roughly speaking, an advertiser can see how many store visits to the locations that they give us that actually are driven by clicks that happened on their ad.

That's one thing to see. A lot of them are very happy to see this metric. But of course, there are follow-up questions of how much of this is incremental? How do I value this in the context of the advertising dollars that I'm spending overall? Some people are able to make the math work for them, where they take things like average order value that a consumer spends when they walk into a store and back out a value that they should be putting into bidding or spending.

But as you can imagine, this is a complicated process, because most retailers manage their local store budget, advertising budget, completely different from their online budget. And it's really these conversations that we are in the process of driving, I would say they are still -- early, nascent conversations, how to turn it all into an efficient feedback loop that Google search advertising is so famous for. That's a work in progress.

Stephen Ju {BIO 6658298 <GO>}

Building on the offline commerce discussion, I think Google has recently taken steps to show advertising on maps.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes, yes.

Stephen Ju {BIO 6658298 <GO>}

How is this progressing. And what are the challenges to monetizing maps effectively?

Sridhar Ramaswamy {BIO 18644257 <GO>}

It's still super early. We are very conscious of the need to be, again, very thoughtful about user experience and user value. When I first announced it, some of the reporters were like, "Oh, are you going to show ads, then, on our driving directions? That might be distracting." So we are still iterating on the format. We are running a number of experiments. It's pretty early to say anything definite about it. But it's an area that we will continue to invest in. You'll see more about it in the next few months.

Stephen Ju {BIO 6658298 <GO>}

Got you. Let's talk about travel, switch gears a little bit. So you recently released Google Trips, the app itself, which helps consumers plan their trips better. It seems like to me that between flight and hotel search, the underlying pieces are there for Google to create probably an intermodal search engine. If I wanted to go on a trip to Barcelona, I'll need to just, "Barcelona," it should be able to put together the entire trip for me. Is Google Trips basically the first step toward that goal?

Sridhar Ramaswamy {BIO 18644257 <GO>}

So I would place this into a larger context of mobile search needing to satisfy your goal or your task as opposed to answering a query that you have currently. This is a vision that Larry has talked about before publicly, a vision of assist and suggest, where we do more than answer a query.

What you're seeing in Travel is one expression of that. And this is where you see the full strength of Google come into play. Google Flights is an amazing product. It can answer questions that most other search engines, flight search engines, cannot really answer -- questions like, "I want to go to a sunny place," or, "What are all the locations I can fly to from San Francisco within a certain budget range?" So we are pretty excited by that. We're pretty excited by our ability to make recommendations to you. For example, if you visit a new place and use the Trips app, you can come up with a list of essentially highlights around you that you can go and visit. And I've been pleasantly surprised. And I've gone to different towns and realized, "Wow, there's a dam right next door." So I think we are interested, first and foremost, in creating a great consumer experience.

We think things like monetization in areas like hotels and other places that you might look at will naturally come. So our scale product is still Search. And if we can help you do a great job in terms of planning a trip, whether it's flights or hotels or other attractions, I think we actually have done a pretty significant job. But if we can even convince you as a consumer to use the Trips app and have all of that information

available -- even offline, mind you. One of the things that all of us run into is we go to a new place, our plan quite doesn't work and it becomes a struggle to actually use our phone. The Trip app makes that easy as well.

So it's part of a larger consumer vision for what we think travel can be. And we built it very much with the mentality of if we get the product right, we will get monetization opportunities.

Stephen Ju {BIO 6658298 <GO>}

Yes. Well here's to hoping that it is the next billion-user platform Sundar can highlight.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Definitely our hope as well.

Stephen Ju {BIO 6658298 <GO>}

Okay. So talking about assistance, as you look longer term, you talk about mobile-first world. Are we moving to a voice-driven world? And in that world, what kind of ad units do you think Google might be serving?

Sridhar Ramaswamy {BIO 18644257 <GO>}

I think we need to be open-minded about this. At this point, the assistance team -- and there's an assistance team within my group as well. The main assistance team is part of the Search team. They're laser-focused on creating an amazing consumer experience and on making sure that that experience is really, really a joy for people to be using.

We are keeping an open mind about the kind of monetization opportunities that there are going to be. I think it can range from being purely transactional, meaning we make it convenient for you to fulfill a transaction with the Assistant, or it can involve promotion. But one thing that we are all clear about is the days of three top text ads followed by ten organic results is a thing of the past in the voice-driven world. So we're very much keeping an open mind on what this needs to be and focusing much more on what's the consumer experience. If it's scaled, we'll figure the rest after that.

Stephen Ju {BIO 6658298 <GO>}

Yes. Seems like to me, if you make it easier for the consumers to do something, they should be doing more of it?

Sridhar Ramaswamy {BIO 18644257 <GO>}

That's correct, that's correct. I mean, this was our thesis for mobile. If people recall, there were a lot of worries about was mobile incremental? Was it taking away from desktop? But it turned out that mobile expanded the pie. We need to have a similar positive attitude towards voice search and Assistant and focus on creating great consumer experiences.

Stephen Ju {BIO 6658298 <GO>}

Yes. Another sore topic. Let's talk about ad blockers. So it seems like for Search and YouTube, it should not be a huge problem. But it does affect your display business. The fact that consumers are opting to use ad blockers is a signal for change. So what can Google do to help the consumer as well as the advertiser?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. It's a real problem. And as you correctly point out, it's a consumer issue. I think there are still too many sites in which the ad experience is pretty bad, whether it's ads that start autoplaying a video or ads that completely cover up the screen and you can't quite find the X. All of us have been through it. And it can be very frustrating.

So we announced recently, just a couple of months ago, that we were going to be part of a coalition that the IAB in New York, which is a US advertising body, was starting. This is a coalition for better ads. We are working with them to come up with a quantitative standard for what an acceptable ads experience is going to be. Then we want to work with the larger ecosystem of browsers, for example, to make sure that there is pressure and self-regulation on the part of advertisers and publishers to only run ads that consumers don't find offensive.

I think that is very, very sorely needed. And we think that that's the right way out of this current problem. I think without self-policing, there's going to be more and more bad experiences and more and more consumers turning off ads across the whole. And I think, frankly, all of us suffer because it's going to drive a lot of small publishers that have valuable sites that you and I use on a regular basis out of business. So we view pretty passionately that this is part of Google's larger mission, of making the world information be available to everybody. And so there's a certain sense of urgency that we feel about getting this coalition right and making sure that it's rolled out right.

Stephen Ju {BIO 6658298 <GO>}

Yes. Then another product that you introduced recently, Accelerated Mobile Pages, how does this help you toward that end goal?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Accelerated Mobile Pages was an attempt at a much better consumer experience. It started as an ad vertical in mind, a news vertical. Many of you see that on the results,

if you search on Google for news. It's been doing very well. And it's based on an open standard. Anybody can adopt it, anybody can run Accelerated Mobile Pages. It doesn't have to be just Google. And people have introduced ad formats into Accelerated Mobile Pages. The results are pretty early from that front in terms of what is the monetization compared to the increased number of page views that you get from having faster-loading pages. We continue to work on making that better. But in general, we think that the mobile ecosystem can be made much better for the consumer. And doing that will actually lead to increased usage.

Stephen Ju {BIO 6658298 <GO>}

Switching topics a little bit. So advertisers have been grappling this year with issues around transparency. There are well-publicized issues with third-party auditing on Facebook impressions and recent A&A report about what's pretty scathing on the use of rebates by ad agencies. So do you think advertiser concern about transparency helps or hinders Google's ad business in general?

Sridhar Ramaswamy {BIO 18644257 <GO>}

So you actually asked a complicated, two-part question. One was around metrics and transparency. We work closely with third parties -- comScore, Nielsen -- to make sure that the results that we provide for display advertising are measurable and verifiable by third parties. We've been very open about that.

And recall also that the vast majority of Google's revenue comes from direct-response advertising, which has built-in measurement. It's based on conversions that advertisers see. So value is being measured cleanly and by the party that is most affected by it. So we think we have overall a good story in terms of working with the industry in making sure that metrics that we give for brand advertising are real and verifiable.

On the other side, when it comes to our interaction with agencies and advertisers, we strive for transparency. We don't do things that contrast. We have all of this information be available to folks so that agencies and advertisers can have the right conversation about where these dollars go. So we feel pretty good about where we are on both these fronts. And we'll continue to work with our big advertisers and agencies for making it even more transparent. So we are making sure that people feel like fair value is being realized for their dollars and for their effort.

Stephen Ju {BIO 6658298 <GO>}

Another somewhat general question. But wondering if you can talk about the underlying trends you're seeing for programmatic. Ruth highlighted it as a growth driver in recent earnings conference calls. And secondarily, header bidding comes up as an issue for the display business. So are you concerned? If you can go into a little bit about what header bidding is and how that impacts you and what are your concerns.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. So header bidding is a technique by which publishers try to satisfy the demand for some of their pages even before things like Google's Ad Exchange are called. It's a way for them to realize more value on their most valuable pages. And we have -- header bidding by itself is not bad. Its implementation can be bad sometimes, in that you end up having a lot of calls on the client side that can slow down the loading of the page. So we work with publishers to see what are technologies that are needed in the underlying platform.

We have a version of header bidding called Exchange Bidding that's built right into our platform products that a number of our publishers are using. So we'll figure out where this is, at the end of the day, Google's publisher products need to serve publishers. We need to make sure that they can realize the most value that they can for the content and the eyeballs that they have. So we don't particularly think of it as a threat to our business. But an important evolution in the business that we're happy to be a part of.

Now, going to programmatic, DBM is one of our fastest growing programmatic products ever. We have talked about it in multiple earnings calls. Overall, it has excellent usage by top advertisers. Of Ad Age's top 100 advertisers, something like 80-plus % of them use DBM to get widespread adoption. They have very solid growth across the board. It's an area that we?re very, very happy and comfortable with.

Stephen Ju {BIO 6658298 <GO>}

Got you. At I/O Google introduced updates to Android Pay to make it easier for consumers to pay for merchandise on the mobile Web. Anything you can share in terms of consumer adoption and benefits and conversion that advertisers may be seeing? Presumably, this helps to take down transactional friction overall.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. Reducing transactional friction is a really important priority for the commerce part of my team because that ends up helping scale out advertising products. We announced a pretty ambitious program based on a change to Chrome that can be used to provide a much better payment experience for consumers' payment credentials. But that requires changes on the part of the retailer.

So even before going there, I would highlight a simple feature that we launched in conjunction with the Chrome team, which is Chrome Payment Autofill. I don't know how many up here have used it. But I have my credit card that is stored on Android Pay available to me whenever I am filling out a credit card form on my phone, also on my desktop. And that has actually been a significant factor in making commerce easier for me and for a lot of other users. We think that's the really important thing for us to be doing.

We announced partnerships recently with both Visa and MasterCard in order to facilitate better payment credentials transfer on the Web. It's a sad truth of today that in-app payments on both Androids and on iOS work much better than the Web. Our goal is to make sure that it's actually transparent across the board. Each year, Apple's efforts, for example, to make transactions much better on the mobile Web on Safari. That makes mobile commerce better overall and ends up helping everybody in the mobile ecosystem including, of course, Google. So I think nice progress overall in this area.

Stephen Ju {BIO 6658298 <GO>}

Yes, I think at the time you showed off the product at I/O , I think you disclosed that the gap in the conversion rate is, I think, 66% versus, I think, the desktop?

Sridhar Ramaswamy {BIO 18644257 <GO>}

I don't recall the number.

Stephen Ju {BIO 6658298 <GO>}

Yes, I think there's a pretty healthy gap that you can close and that theoretically should help raise the value of the inventory on the mobile Web. Got you.

Another cool product that we saw at I/O that just really didn't get that much press, I think there was like a spatial recognition technology that you have on the phone that helps you, I guess, plan out or map out the interiors of buildings. Can you talk about the potential for the commercialization of this technology?

Sridhar Ramaswamy {BIO 18644257 <GO>}

It's not from my team. I would say that part is still early. But we are definitely interested in much better location data for all the reasons that I talked about earlier, because products like search advertising in general can end up driving a lot of store visits. We work extensively with many advertisers to deploy, really, Bluetooth low-energy beacons that can be used to better detect anonymously, in aggregate, when users actually walk into stores.

We think location continues to hold a lot of promise. But the killer app for location, one that compels you to take your phone out when you get to a location, hasn't quite happened. And we're still optimistic about it. But it's been a slow change.

Stephen Ju {BIO 6658298 <GO>}

Okay, got you. Taking a step back and looking at a more global perspective, it seems like in the US, we are, shall we say, a little bit overburdened with the existing infrastructure, whether it's in commerce or advertising. And in some cases, the emerging market countries, they may skip building physical infrastructure and go straight online. So what's your perspective in terms of whether, I guess, the pace of

innovation internationally is faster versus here, or is the international franchise going to be faster-growing for Google?

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes, I think this is a really interesting question. And one that brings many different perspectives. Surely, yes, we are burdened in a number of areas. But I think that works pretty well. What I mean by that is when you talk about Android Pay, you're talking about an experience in which you have to take out your phone, unlock it. And then go and tap. Come further, until very recently, it's taking out a credit card, swiping it once. And three seconds later, the transaction's done. Okay, that's the legacy technology, except that it works really well.

And so something like Android Pay or person-to-person payment is not a mass phenomenon, that it is in a place like China. Similarly, when it comes to commerce, as we were talking, you can pretty much order from the top 100, 500, 1,000 retailers within the US. And you can be pretty guaranteed of a very good experience. Things will show up on time. If you don't like it, people will take it back. Not the case in emerging markets.

So I think it becomes a little hard to compare. There are many people that are coming online in emerging markets who went straight to a mobile-only experience. They're much more comfortable doing commerce. That's a positive. But you're also seeing several countries. And truly this has happened in China, where Google doesn't really play a role, where it tends to get dominated by one or two people. And when there is one or two people dominating an area, there's not much of a role for advertising, because you have to go there all the time.

So I think it's a tough comparison. I think there are many advantages here with the diversified commerce world and well-developed infrastructure. But then you also have a population in areas like China and India that's very, very mobile-first, much more ready for change.

Stephen Ju {BIO 6658298 <GO>}

Yes. I think lastly, Sridhar, I think your title, you've run all of advertising and commerce. And I can't help but think that within Google's product portfolio, from the top of the consumer marketing funnel to pretty much the bottom, all of the underlying pieces are there for Google to help advertisers drive volume. So can you talk about where you are in terms of that opportunity, linking it all together? A broad question there.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Yes. That's part of the -- it's a work in progress. I think a number of pieces are definitely in place. Truly, we do an exceptional job close to the bottom of the funnel. Search is incredibly effective as a medium. We do a pretty decent job close to the top of the funnel, where YouTube brand advertising is pretty effective. We're

increasingly working at personal products -- for example, the shopping team has done a number of nice launches to help you find, say, the look for a dress that you're interested in, where you don't quite know the exact dress or shirt that you want. But you're able to look at a pretty clear design or at a particular store's collection. So we have efforts along those fronts.

We're also working on personalization across these formats. And here, actually, we have a number of products that we're rolling out that have a lot of promise because with something like Universal App Campaign, an advertiser tells us, "Here is my app. And here some assets where there are images or videos. And here is a price for install that I'm willing to play. Go find me all the consumers that you can." All of a sudden now we have a rich canvas in which I can show you a quote-unquote brand ad for this app, potentially on YouTube. And actually convert you on some other product, like Search. So we think constructs like that, the Universal Apps Campaign-like efforts, are going to really deliver a product that's much more end-to-end, because you now have a canvas that can stretch across all of Google?s different properties. That's a vision we are driving towards. But it's the individual pieces that are being worked on.

Stephen Ju {BIO 6658298 <GO>}

Great. Well looking forward to following your progress in the years to come. Thank you very much, Sridhar.

Sridhar Ramaswamy {BIO 18644257 <GO>}

Thank you.