

Retail Leader: Industry Insights Webinar

Theory to Reality: How AI Pricing Will Transform Retail in 2019

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Mike Troy: Good morning and welcome everyone, and thank you for joining today's webinar: Theory to Reality: How AI Pricing Will Transform Retail in 2019. This is a great topic. It's certainly an intriguing and forward-looking topic. We have several excellent speakers with us today who have really great insights to share.

When you registered for this event, you likely noticed we asked the question, do your pricing and promotion strategies include AI? If not, you may be losing customers to competitors, and even if AI is being leveraged for pricing and promotions, the space is moving very fast, which is why the concept of operationalizing AI is so important, and what we're going to get into today.

How does a retailer operationalize AI with shopper-centric pricing and promotions to make customers feel valued and enhance loyalty, and how do retailers harness the value of AI to deliver quick wins that increase margins and profitability, but still give shoppers prices they love on the products they care about the most? I don't know the answers to those questions, but we have several people with us today who do. Joining us to explore this topic of Theory to Reality and how AI pricing will transform retail in 2019 are Brian Kilcourse, managing partner with Retail Systems Research, most often referred to as RSR, a company that helps develop winning strategies with industry-leading research focused on the extended retail industry, and Rod Martinez, a solutions marketing executive with Revionics, a leading provider of cloud-based solutions that help companies optimize pricing, promotions, markdowns and the use of space.

Brian is someone that many of you on with us today probably know. He's well-known and highly regarded in the retail industry, in the retail tech space in particular. He's authored numerous studies on virtually every aspect of retail. I had a list of things that he authored reports on. It was too long to read, so I just kind of condensed that. He's a frequent speaker on subjects ranging from emerging technologies to IT governance and best business practices, and is regularly sought out by the media and people like me for his views on where the industry is headed. So excited that Brian is able to join us today. One of the best things about Brian's perspective is it is informed by real world experience, because prior to becoming one of the industry's top analysts, he spent nearly a decade as an executive at the Long's chain of drugstores on the west coast, where he served as CIO.

Rod Martinez also has a deep retail technology background. He's got more than 20 years experience in various sales support, product and industry marketing roles. Prior to Revionics, he held key roles at companies such as IBM, Sterling Commerce and Oracle, so also very well known in retail and tech circles.

The plan for today is first we're going to hear from Brian and then Rod, and then I come back at the end to field questions from the audience, and then typically have a few of my own. Before I hand things over to Brian, we'll cover a couple of quick housekeeping items. First, I always like to let people know the deck is available at the end of the webinar. You simply send a request to info@revionics.com. Again, that's info@revionics.com. We also produce a transcript of today's webinar that's also accessible by sending an email to info@revionics.com. There's also a quick survey at the end of the webinar that I encourage everyone to take. With that quick setup, I'm going to hand things over to Brian and we will get into the meat of the presentation. Go ahead, Brian.

Brian Kilcourse: Thanks Mike and thank you all for joining us today. My task is to talk a little bit about how AI is getting real in retail. It seems a very timely subject. We've been asking questions in our research for the last couple of years about retailers' attitudes about AI. You get the complete range of answers, from AI transforming every aspect of their business, to it being a new tool that they can use to competitively differentiate, to having no impact at all. Retailers really are all across the spectrum here in their attitudes about AI, but when we get down to asking questions about specifically how they're using it, aside from the obvious leaders in the industry, most retailers are taking a fairly cautious approach toward this in some of their innovation and experimentation and things like that. AI is more mature than that, and it is ready to be used for some real production problems. My job today is to talk a little bit about how certain retailers are doing this, and then what you can do in your own businesses to get started.

First I want to talk just a little bit about RSR. We're just entering our 12th year. It's been a really interesting time for me personally and for us collectively. Our job is to facilitate the conversation between those who have solutions and those who need solutions. Of course, those who have solutions are the technology firms who are trying to communicate their value in the most effective way to retailers, and retailers are on the other side of the equation where they really want to be understood so that these conversations are efficient and meaningful. We view that as our job. We do that with a combination of two things. First of all is our experience. We all come from the retail industry. Mike mentioned that I was a CIO for 10 years. I've actually been in the retail industry most of my adult life, and most of that time as a retail technologist, and my partner, Paula Rosenblum, has been in just as long. Steve Rowen, my third partner, has been in the business since he got out of college. We all have a lot of retail experience. We augment that with a deep bed of research. We've been doing benchmark research projects since 2007. By this time, we have a tremendous amount of information about the retailers' view of the challenges and the opportunities that they face in the industry. That's what we do.

Now let's talk about the subject that we're here to talk about today. First of all, I'd like to demystify what AI is. There's a lot of talk about it. For example, I was just reading an article this morning in *The Economist*, their projections for 2019. One of the questions was, are robots going to take over the world? The answer was, well, not quite yet. It's that kind of journalistic hyperbole that makes everybody just a little bit nervous. I would like to demystify this by telling you that what AI really is is a data analysis technology that helps you to understand unstructured data and learn new things based on pattern recognition that can be detected, or patterns that can be detected from all of this unstructured data. It's not HAL. There's HAL's eye right there in the middle of that slide. You might recognize that from *Space Odyssey 2001*. It may get there, but it's not going to get there in retail, and it's not going to get there in 2019.

What it really does is it can help you to search very, very large databases, do calculations that would be quite difficult for humans to do. An even simpler way to answer this question, "what is AI"?, is that it

helps you to answer questions that you didn't know you had. Here's a simple depiction. You might have seen something similar to this in the past. When you talk about structured versus unstructured data, structured data is that stuff that we're all familiar with. You might recognize those blue cells as something that might be in a spreadsheet. That's a perfect example of structured data, but more typically, it's transactional data that you get from your operational systems, your order management systems, your inventory control and all those kinds of things, and you structure it so you have columns and rows. Then you can do analysis of that data based on rules. This is basically done for reporting purposes. People like me implemented systems going back to the '70s that did just exactly that, but we have all this new kind of data. You might think of it as big data. The kind of stuff that comes from the digital domain. It doesn't really have a structure. It's just little bits of information that can be important to us and maybe not important to us. We have to have a way to determine whether the data is important or not, but it's unstructured in its nature, so it kind of floats out there. It could be text. It could be images. It could be voice, video, bitstreams. It could be anything like that that comes from the digital domain.

AI is the engine that helps you, number one, to store that data, and number two, to analyze that data using algorithms that can detect patterns. Some of those patterns are pretty important to us, because they help us to make predictions about the environment that we're living in. Now this gets to the real value of what AI is. Let's talk about the world before AI. This is actually a book that I read in the '90s. It's called *The Adaptive Enterprise*. The premise of the book, the author was Steven Haeckel, and the premise of the book was that in the old model was a very predictive, stable environment. The innovation really happened when you defined the mission and you built policies around it. For example, you invent something really good, an automobile, or you come up with a great design concept for clothing, and you implement that. That's your mission, is to deliver that great and innovative product to the marketplace, and then you get involved as what you might think of as a plan and sell closed system. A loop that you go round and round and round in.

First of all, you have your strategies, and those change from time to time. You wrap your functional hierarchy around those strategies, and then you execute. It's all about command and control. Your most important data outcome from your analysis is forecasting based on probabilities. We've been doing this as long as I've been in business and probably a lot longer than that. It assumes a very, very stable environment, and it works until someday it doesn't. We all know that businesses in the past have had a life cycle where a system has worked forever, and then suddenly it no longer functions the way it does, and that's when they go back to the mission and the policy and start to reinvent themselves. It's a very stable model. We've all lived in it for a long time. The data that you're going to use, again, is going to be structured coming from your operational systems, and it's going to be used to forecast what's going to happen in the next cycle.

The problem is that's no longer real. What's happening now is we're getting lots and lots of external signals, and we have to adapt to those signals much more quickly than we ever had to before. There's this new type of data that's coming in that is reflecting the uncertainty in the market that we operate in today. Innovation is really about being able to adapt the business model as you get these signals from the outside and basically change the business, according to the challenges and opportunities that you're facing in the marketplace. This is based on new insights. The problem with getting new insights from old data and old rules is you can't. When you're analyzing your operational data, you're expecting an answer set. Your rules of inquiry are all based around expected answers. That's not unexpected answers. Nonetheless, that's what we've been trying to do for the last several years.

Now again, let's look at it from the perspective of the keys to winning. The real objective for the last umpteen years has been to close the gap between sensing the conditions in the marketplace and responding to it. As long as the operation was closed, it was a closed operation, internal feedback was just fine for that. You get that internal feedback from transactional data. Then you essentially develop trends and probabilities. You might think about this as the kind of things we do for traditional forecasting. We look at past sales, and based on those past sales we would predict what we are going to do in the next season.

Now when you get these new external signals, those are coming from outside the four walls of the enterprise, and they can include all kinds of interesting data. For example, nowadays people are interested in geolocation data. Essentially for example understanding consumer traffic patterns. Weather data, social data, market metrics and competitor data, most importantly. This external feedback is always changing. For example, we're always getting new sources of external data, and they have new data attributes. This is where the need to understand patterns and affinities becomes really, really important. A key to winning is learning how to consume this new type of data, and then to detect patterns that are important to you and use those to change your business.

Now again, let's look at this from a perspective of what a retailer really does. I've always thought of retail as a fundamentally reactive business. Something happens in the marketplace and the retailer responds to it. In the old days, those plan and sell cycles could be quite long. For example, if you were a fashion retailer, the cycle could be nine to 12 months. Our job was to plan that far ahead to bring product to market that would be interesting to consumers, but it started to change of course. We brought in a new set of tools. That's when BI and analytics became important. That started to happen in the late 1980s with data cubes and those kind of things. What happened in the early 2000s is we started to work with predictive analytics. Essentially this was the result of Moore's Law working in our favor. We could now run these cycles much, much, much more quickly, and therefore we could start to do what we characterized as scenario planning. We'd anticipate this scenario A or B or C or D, and then something would happen and we'd pick the right scenario and respond appropriately to it. This was state-of-the-art until just not too many years ago. I would say about five years ago, but then we came up with this new concept of AI. It's really basically a virtuous cycle of improvement. What happens is a retailer detects an external signal and matches it with the internal metrics, and they sense a change and then they adopt. Then they do it again and again and again and again. This doesn't assume as stable market at all. It assumes an unstable market, and we have to adapt as these changes occur in the marketplace.

This was the essence of Haeckel's book. It really has applicability in today's world. The problem that retailers have is they have to make so many decisions so quickly that they need the help of technology to make those things happen. One of the things that AI is very good at, it's very good at automating decisions. This happens to be a chart that I borrowed from a source at Tesco, the great U.K. retailer. I thought this just pictured it just perfectly.

When you think about how we make decisions, first of all, in the oldest days of all, we had data that would describe what had happened, and then a human would interact with that. A decision would be made about what to do, and then the action would be taken. Then we moved a little bit ahead on that and we started to think about diagnostic data. Why did something happen? Again, a human would be involved and a decision would be made on how to act, and then of course we'd act accordingly. Finally just as I mentioned a second ago, we started to think about predictive and what will happen. This is

when scenario planning came into fashion, again, around the turn of the century. The human however was still involved. The right scenario would be chosen and the action would be taken.

Now when we think about these operational decisions that have to be made across the entire enterprise very, very quickly by a lot of different people, especially when it comes to responding to consumer conditions. You have to start thinking about prescriptive data. What should we do? Then it goes right into decision support, and finally in some cases, it makes the decision automatically. This is not theory. This is actually really happening. The data may come from things like IOT, or it could come from the digital side of the selling world, or it could come from social media. AI is involved in sifting through all of that data, determining what is important versus what is merely noise, and then helping us to make these operational decisions rather quickly. As I said, it's already happening in the real world, where decisions are being automated. I'm going to show you a few examples, but first, a little bit of a theoretical example.

I got this from the internet. This is how AI learns what you're willing to pay. Really excellent article in KDnuggets. Let's take this theoretical example. How does a system know what your willingness to pay is? First of all, data is constantly being collected about you, your behavior in the digital side, and not just you but millions and millions of other people. Then the question then comes is what type of items did you look at? How long did you spend at the web page? What items did you put into your theoretical basket? What items did you purchase, and what do people pay that look and behave like you? That's that pattern I was talking about. What's happening here is, in this theoretical example, a pattern has been developed and recognized by an AI engine, which says that consumers that have certain types of behaviors are going to respond this way to an offer. It's that matching particular person to a model of consumer behavior, which gets us to the next point. It's all put together into the AI engine, and that translates your behavior into a persona that tries to predict things about you. One of those things is the maximum price you are willing to pay. That in fact is really happening. It's not just theory. It's actually happening in the real world.

Let's take a real world example of how AI is being used. This has received a tremendous amount of press play. This is Walmart. Walmart is one of the very first companies that I'm aware of that ever understood that data could be used for strategic advantage. Walmart is well known for focusing on fresh food initiatives, from farm to fork, zero waste and those kinds of things. One of the projects they're working on is something they call the Eden Project. They're focusing on freshness algorithms using AI and other advanced technologies to essentially to prevent the amount of wastage that goes from fresh food. Let's talk about how they do that. What Walmart does is they monitor the temperature and the freshness of produce and perishable foods, all the way from the supplier through the warehouse and right to the store shelf. They improve the visual inspections. They're using technology to do visual inspections of the food as it passes through the distribution centers and all the way down the store for the purposes of quality control and freshness. Then they dynamically route those perishables and produce to the nearest store based on the condition of the product. For example, if the model that they're looking at and using to measure the sell by date of a product tells them that they need to sell it within the next five days, it determines where that produce will go, to a nearby store rather than a far away one. It's really exciting. They'll dynamically route these perishables to the nearest store. They'll prioritize their movement from the back of the store to the shelf to optimize their freshness.

Finally they're capturing data all the time. They're measuring the data so that every time they go through this cycle, they get better and better and better. Now this is a highly automated process. It gets to that thing that I said earlier about automatic decisions about the produce. If this was left up to

humans, they don't have enough humans in their huge organization to do this. Now the question is, why are they doing that? Well, it's good for consumers and it's good for the environment. I love this quote. This comes from the Walmart annual report last year, it says, "the primary way we seek to reduce food waste in our operations is by selling the food we carry." Essentially, sell it before it has to be thrown away. It makes so much sense. "We've improved our forecasting and ordering tools to improve inventory, adjusted store fixtures to increase turnover and consumer appeal." This is great. It's great news for the consumer. It's great news for the environment. It reduces waste. It helps us to learn how to use these new technologies to great advantage.

Let's go from Walmart's experiment to a little bit of theory and talk about how this can actually affect shelf price. We have a couple of things going on here. First of all, we have produce. You can see then, a great looking shelf. We're using some sort of an IOT capability. These are devices which are measuring the freshness of the food. They might be measuring the temperature that's inside the box, the amount of light. They might be doing digital inspections using digital cameras. This all goes into an engine that is enabled by AI. They may be using something that's a technique called dynamic shelf life rather than fixed shelf life. Analysis is helping to determine what items are nearing the best used by date. Now I'm not suggesting that Walmart is using this, by the way. This is me theorizing on how it might be used. Take a look at the chart to the right. This comes from Journal of Production Economics. You can see that they compared a couple of things here. They had fixed shelf life, FSL, and they had dynamic shelf life. It was basically comparing the effectiveness of a price reduction either one day before its best used by date, or two days before its best used by date. You can see in that particular test they did that if in a dynamic shelf life environment, if they reduced the price two days before the best used by date, they will sell through the product. That means zero waste.

How is this good for the retailer? Well, it's good for the retailer because getting some margin is better than getting no margin, number one. How is it good for the consumer? There's a lot of hot prices out there. It's really excellent. Finally of course, it's great for the environment because you're not throwing things away. Is Walmart going to go there? We'll have to wait and see, but I would predict that if they don't do it, somebody else will. This is a classic example of how AI can be used to create a great value opportunity for consumers, great profit opportunity for the retailer, and as I said earlier, great for the environment.

What this brings to mind of course is this notion of dynamic pricing. Dynamic pricing is not a new concept, as we know. It's been used in the airline industry for a long time for pricing flight tickets. It's been used in sporting events. It's been used for the commuter lane on busy freeways. It's been used in a lot of different things. It's had a little trouble getting going in retail because of the problem with getting a price to the shelf edge. This gets to an argument about electronic shelf labels, and we're not going to go there with this particular set of examples, but dynamic pricing is very real. It's based on the notion that instead of using rules to determine price, you're using algorithms. You're using math to determine what the best price should be. This gets back to that theoretical example I shared with you just a little bit ago. It works really well in the online space. Amazon of course has gotten a lot of noise about this. There's been lots of articles written about how flexible Amazon's prices really are, but the fact is they are using algorithmic pricing. Based on an analysis of both the internal data that's available to them, for example, the available inventory, sell through date, the cost of goods, the cost to serve, vendor rules about pricing and funding and external data, competitive data in particular, this allows retailers to set a dynamic price. It's made possible by big data technology. In other words, AI. How real is it is the question.

Well, let's take a look. Kroger is fighting of course for primacy in the United States against Target, Walmart and now Amazon. They've done some amazing things with new technology, and remember I just talked about ESLs, or electronic shelf labels. Well, they've taken it a step further. They're talking about something called the enhanced display for grocery environment, or their EDGE technology. It's enabled by IOT sensors. It uses beams in real time for every aisle and end cap. It's energy efficient. It has no paper. It has wonderful advertising, by the way. It allows retailers to display really, really nice looking ads in a miniature contact setting. The most important thing for this conversation, it's enabling dynamic pricing for individual products, individual shelves and individual stores. It can get right down to the product spacing in different stores. It's an innovative, real world opportunity for them to test as well. For example, the Kroger company is testing the EDGE software to have communication with consumers' smartphones so that the consumer can essentially compare the product of something that's on their shopping list. It creates a custom avatar, which is fun for each shopper. They're testing this right now in the real market. This is done with AI and IOT.

Now, the question might be, where can you start? Well, the good news, and I guess we're going to talk about this a little bit more in just a couple of minutes, is that this is already being used by companies such as our sponsor here today to advance price and promo optimization. First of all, you can use math-based as opposed to rules-based analysis of both your transactional data and new, incoming, non-transactional data to understand these new factors that might impact performance. For example, seasonality, weather, the competitors' environment, local conditions. What I mean by that is, is there going to be a big sporting event or a rock concert or perhaps a marathon run in the area of a store?

Channel driven affinities. The effect of digital activity on the physical store. Those kinds of things all go in to helping you to understand what to charge as a price. Understand the impact of digital activity, such as email, search and social on product performance overall across the entire enterprise. To better understand what product promo halo effects. When you promote a certain product, either in the digital or physical space, what's the effect on other sales? How does it affect the total basket? To develop those models that I talked about earlier. To enable scenario simulations. You don't have to test this in the real world. You could test it in the theoretical world before you decide which price structure you want to promote. Run new simulations that determine the most profitable mix of products and prices.

The good news for retailers is all of this is happening now. It's real. You can get it in the marketplace today. A lot of the technology firms that we work with are working as quickly as they possibly can to get you there. This particular company that we're talking about today will allow you to do it right now. With that, I'm going to turn it over. I'm going to let Rod describe how they're actually doing that. Thank you very much for listening.

Rod Martinez: Thanks, Brian. That was a great explanation of how AI can benefit a retailer and some good examples of how it's used in practice. I think that's critical now, because this helps a lot of retailers. They're having a difficult time to determine where to start with this. They're getting bombarded every day with what they should do to save their business. AI is the savior for that, right? You're hearing that all the time. Some of the examples are, if you look at what's out there, personal shoppers for online and in the store. Chat bots are a common target for sales and service. Rod Martinez: By the way, in a recent survey, 70% of respondents said they'd rather have human interaction, so that may not be the first place to start if you're looking at just jumping into AI. Some of the others, you know, call centers to help with standard inquiries, and clienteling in the store based on purchase history and what's online in their cart. It's kind of what Brian was talking about earlier, and of course pricing.

There's a reason for that. As Brian mentioned, AI continues to be a hot topic because it does provide benefits to retailers. Organizations that have already begun their AI journey are doing 5% better in productivity, performance and business outcomes. There's good reason to be looking at this.

The point is, is to start with something that's proven and provides a quick win. As I mentioned, chat bots may not be the first thing to start with, but down the road after you've recognized some of the benefits, go back and look at something like that. Where do you start? AI pricing is one of those areas that's proven in the market for more than a decade. As Brian mentioned, dynamic pricing has been around for quite a while. It's now being recognized as a differentiator for retailers. It's supported by a lot of studies. 80% of retailers think price optimization is no longer a luxury. In another research from RIS News, they found out with 10 as the highest, retailers rated pricing 9.2 on the impact of financial performance, showing the importance of optimized pricing on your bottom line.

Why aren't retailers rushing to get this done? The reason is that there's still a lot of confusion out there. Again, as Brian mentioned in the beginning of the session, they're all over the board as far as how they're adopting AI, or do they trust it. Are they really looking at it? Again, in the study were 10 stands for complete understanding, retailers gave themselves a 3.9 for understanding the role of AI in pricing. They don't understand it. A lot of retailers don't understand it. That explains why 42% of retailers still primarily use spreadsheets. Another 34% have an internally built software that they've probably been using for a while. It probably doesn't have AI, but it at least gets them a little closer to what they're trying to do.

Let's look at what the disadvantage is for that. If you have a spreadsheet and you compare that to retailers who are using AI, there's a huge disadvantage there. The problem with using a spreadsheet is that the availability of data has exploded. AI provides a way to take advantage of that, as Brian mentioned. The key to winning, he said, is responding to patterns and trends found in all of the data that is now available, and adapting that to innovative ways. It's impossible to do that effectively with just a spreadsheet, even if you had an army of analysts.

The example here, if you have 50,000 SKUs, it requires six times 10 to the 3700th power of calculation to simulate all those possible actions. If you look at, okay, where should the item be placed on the circular? Should it be on the front page? Should it be on the last page? Should it be on the right or the left? What are the prices that I need to promote in this? And, what are the items that should be in this? You look at all those different possibilities. It's impossible to do neatly in a spreadsheet to get it right.

That's why AI-based pricing and promotion is critical to a retailer's success. You're competing with 35% of retailers who say their pricing optimization software is up to date. They're using it to optimize their pricing and their promotions, and an additional 11% are in the process of implementing that. If you're not thinking about it right now, you're a little bit behind there.

Let's take a look at some ways that you can get started. As to the point of where do I start my AI journey, and Brian talked about a lot of these things, with analytical insight, the minute you start with just identifying or confirming what your key value items are, and as you know, these will probably change by location. Understanding what the KVI is in a particular location can have tremendous value, or gain insight into what promotions drive additional sales, or are just cannibalizing other items' sales. Are you really making margin and money on those various promotions? Maybe it's just helping refine pricing strategies based on consumer insights. This is what my consumers are doing. What are my pricing strategies to support that? Once you gain some benefit from those, it can help you move onto the next

project, which could be rules-based pricing. Implementing rules about what I want to do for various locations. You can start by forecasting or doing what-if scenarios. If I do implement this pricing strategy, what are the benefits? What do I expect the uptake to be on that? You can look at your different pricing strategies and see, am I really going to get that based on pricing changes, and ultimately getting to price and promotion optimization with machine learning. That will determine the optimal price that your customers are willing to pay.

Obviously where you start will depend on your immediate business needs. It's going to change by individual companies. Revionics can help you analyze your goals and determine where the best opportunity will be to get started on this AI journey. Here are some examples of various starting points from our customers. If you look at that first promotion performance analysis, a leading pet retailer performed an in-depth analysis into their historical offer effectiveness and found a significant number of their offers were diluting margins. Simply by stopping those promotions, they increased their performance. By getting an understanding of what their promotions were doing, the ones that they've been doing year after year, they realized those aren't really benefiting us.

Another one, a key value item analysis. A drugstore retailer determined what their true KVIs were, and when they started price testing these items, they saw volumes increase significantly and margins began to increase as well. I'll come back to this when I go into a few case studies, because this is an interesting one here. Another one, optimized pricing based on store location. By analyzing their data and determining the price level based on a better understanding of what their customers valued at each one of their unique properties, they were able to determine the price point that was there for the customer, and the amount they were willing to pay. By doing that for each of their properties, they were able to pay their entire three year Revionics contract within five months of going live. A huge uptick there.

Then finally, dynamic pricing. This was an online retailer, and they were discounting and offering promotions. What they were trying to do was increase their customer base. They were doing it without really understanding what the target price was that would attract new customers. By utilizing AI, they offered more competitive prices that truly mattered to their target customers. The interesting thing here is that they did increase their customer base, but that customer base that was now coming onto the location had an increase in their spending on their site more rapidly than their existing customers. They were now getting to the target customers that they really wanted to get to.

Let's take a look at some customer case studies. The first one is the one I mentioned earlier, Drogaria Araujo, they're a Brazilian drugstore chain. They have over 200 stores in Brazil. Their challenges were that they had high inflation, which requires frequent cost adjustments, and they needed a solution that could provide updated price spec and recommendations with a high frequency, because the market conditions were changing rapidly. Originally they thought Revionics was overkill for their product offering, but once they understood the capability and they started recognizing the benefits, then they were all in. An example of that is, they started with key value item analysis. The results ran counter to what their long time assumptions were, to the point where the executives said, "This can't be right," so they hired an outside consultant to verify that. After lots of money and lots of work by this outside consultant, they realized, "nope, that looks right." They started price testing. Based on that, volumes increased significantly and margins began. It kind of goes back to the point of, it's hard for a lot of retailers to trust the science to take advantage of something that has been different from what they've been doing for many years. We can help you get there in taking that first step.

Another example is Sally Beauty. They're a global distributor and retailer offering professional beauty products for both retail consumers and salon professionals. They sell and distribute in more than 5,000 stores. Their goals to enhance their revenue and margin was setting the appropriate prices by category based on market demand. They also wanted to increase their efficiencies and streamline the analysis, the profit and the actual pricing limitation at the store level.

Nearly all of Sally Beauty's products, the 6,900 SKUs they have, are now managed with Revionics. They eliminated the time consuming manual processes, which resulted in category teams spending a couple of hours rather than days reviewing the recommended price changes before they actually did that. One of the benefits now is they can implement more frequent, targeted price changes that are more responsive to their customer base and the market trends, which has also increased their customer loyalty.

They also use an executive dashboard that shows revenue, profit and margins in a rolling 13 week view of revenue. They're monitoring what Revionics is suggesting, and they're ensuring that they're meeting their profit goals and their margin goals based on that dashboard that they have for the executives.

The next example is Holiday Station stores. They have over 500 stores throughout 10 states in the northern tier of the U.S. They've been using Revionics pricing since back in 2010. They needed some new processes, as well as a strategic solution that leveraged their business rules. They wanted to incorporate science as well as the data that they had to recommend the optimal prices, and obviously to forecast the effect on consumer demand. They can now analyze and forecast what they think should happen before they actually implement those prices. One unique issue that they had was that they have a unique tiered pricing capability. It's fundamentally ingrained within their business model for a promotional standpoint for a long time, so they really didn't want to change that. An example of that tiered pricing is you can buy one item for \$1.69, or buy two for \$2.00, but you have to buy that second item in order to get the discount, which is a little different from grocery. The system they need to optimize the price for both the single price of the item, the \$1.69, as well as analyzing the data to understand what percentage of customers will move onto that second tier at various price points. That's what's going to determine that discount for that second price.

Finally, Delhaize America has approximately 1,300 supermarkets in 15 states from Maine to Georgia. They're one of the largest supermarket operators on the east coast. They were very rules-based centric. Revionics kind of challenged them as they were going through this analysis to take more of a strategic way of thinking about prices. They implemented a full feature price optimization solution that delivered not only the day-to-day optimized pricing across all its locations. It was also one that could align with its goal of strategic shift toward more consumer-focused pricing. Getting a better understanding of their local shopper, and based on that, that's how they're doing their pricing recommendations and adjustments at each one of those store locations.

They now have more shopper-centric pricing. That still includes their business rules. We didn't eliminate those business rules. We just incorporated them into the science and into the data to help them understand what those prices should be. The pricing solution provided results that allowed them to move onto the next solution, which was the markdown solution. They've had success with markdown. They've had success with the pricing, and then proceeding is going to look at the promotion optimization.

This is a good example of taking it step by step. Let's start with KVI. Let's start with price optimization, and recognize those benefits, which can be substantial, and then move on to that next step to incorporate more data, to incorporate markdowns, to incorporate promotion optimization. There's various steps that Revionics can help you with to start your AI journey and move into what you feel comfortable with, what the company feels comfortable with, recognize those benefits and then move onto that next level.

With that, I will wrap it up. As everyone knows, NRF is around the corner. We'd like to invite you to meet with us, to either stop by our booth or go online and set up a meeting with us, if you have some specific examples or ideas that you want us to help you with. We're also sponsoring two big idea sessions, one on Monday, one on Tuesday, and we'll feature common retailers which are customers, as well as industry analysts. Please stop by, and I'll turn it back over. I'll turn it back over to Mike.

Mike Troy: That was great. Thank you very much. Brian, I appreciate the overview you gave. Really kind of the grounding there of how we got where we're at, and really where we're headed with the whole concept of prescriptive, and machines telling us what we should do, is pretty fascinating. Always interesting, Rod, to hear Revionics' perspective on where things are at with dynamic pricing and price optimization and how people feel about that and who's doing what. I think those examples of who's doing what are very instructive.

A couple of quick questions that either of you could weigh in on. Are retailers moving fast enough with AI? This could relate to pricing or even other use cases throughout the organization, where you think we're headed or where the industry is at as far as adopting AI and extracting the benefits of using it.

Brian Kilcourse: Our research suggests that the vast majority of retailers are really waiting for somebody else to define the use cases that justify the expense that might be involved. We think that's a serious, serious mistake. We've made the case in our research, and it certainly actually has been kind of a central theme of my entire career, is that information is a strategic asset, as important as products or buildings or stores. It's huge. I've learned this by watching companies such as Walmart, and later on Amazon. The challenge for retailers is they're just being buried in data. They're trying to siphon through that data in traditional ways, which is virtually impossible. Using traditional data structures and traditional BI and analytics tools to go through this new data is just a daunting task.

The other thing of course we know is that retailers are having an extraordinarily difficult time finding the data scientists needed to be able to implement AI from scratch. Taking basically the roll your own solution strategy. That's why we really recommend that retailers look to companies that have the data scientists in place and have the analytical tools in place and the structures in place to be able to make sense of AI. Price and promotion is really a big part of it, because those systems are mature. They're working in the marketplace.

Rod mentioned that for people who look at the retail industry from an investment perspective, optimization is table stakes, but a surprising number of retailers still don't have optimization technologies in place for price and promotion. That just makes no sense to me. It's not like the first time we've ever brought this up. Even if that's not your thing, one of the other surprising things we saw in our recent study, it happened to be on IOT, was that retailers are not taking advantage of IOT and AI enablement for fairly mundane things. For example, measuring your cold boxes. Measuring your HVAC systems. Measuring those physical assets to predict when they're about to fail so that you can prevent the failure that perhaps costs the retailers some revenue or some margin. Those are the kinds of things

that could be done right now. Those use cases are in place now. There's no reason for retailers not to do it, other than their own native reluctance to be the first on the block to do anything.

Mike Troy: Okay, thanks. Rod, you got a comment on that?

Rod Martinez: I totally agree with what Brian said. Let's be honest. It's hard. There's a lot of data out there. There's a lot of changes that you have to make within the organization. That's why we're saying if you take these small steps and you use the benefits you gain from those, you can quickly move on to become a retail leader in AI.

Mike Troy: It's not like we're going to have less data in the future, right? The prospect of siphoning through what you have now is daunting. I'm curious though, what's the onboarding process look like? Rod, you talked about how there's still a lot of retailers who still use spreadsheets to make some of these decisions. What does it look like when a company goes from spreadsheets straight to AI. How does that work? How long does it take? How soon do people start seeing value?.

Rod Martinez: It depends on the individual retailer obviously, because it goes back to also what kind of data do they have. Is it clean data? Where do they want to start? If they start with maybe just looking at KVI, like Drogaria Araujo did, and then getting a good I think comfort level of that. You can be up and running in a solution in nine weeks once you have the data and you start with that process.

I think there's multiple steps. In this example, they didn't truly believe the science, right? It takes a little while to get an understanding, but they start testing it. When they started testing it and they started doing the price recommendations, their benefits increased. Their margins increased. The amount of product they were selling increased. I think you have to kind of slowly weigh in and find an area that is a big pain point for you, and then how does pricing and promotions help with that.

Mike Troy: As data has proliferated and storage is cheap, everybody just saves everything. Brian, do you have a sense, do we really need to retain all of the data that maybe is being stored? Does that lead to some angst over we're not analyzing it as we should? Maybe some of it is not really data that needs to be analyzed?

Brian Kilcourse: No, it's a fabulous question. We've said, and being just slightly tongue in cheek, that retailers have always been buried in data. As retailers, they throw away far more data than they keep. Now that's because based on the analysis of known data, transactional data, retailers knew from a record keeping perspective what they needed and what they didn't need. That's only gotten worse by several orders of magnitude since unstructured data started flowing at them. There's a fundamental difference here, and the difference is is that this unstructured data might be important to them, or the patterns that are inside of that unstructured data might be important to them or might not be important to them, depending on the patterns that are revealed, but they defy traditional analysis. They defy sequel like analysis based on rules, and that's why the discovery of patterns is so important.

From a technological perspective, and this is not the purpose of this webinar of course, but you'll notice that a lot of AI enablement is happening right at the edge, close to the point of data collection, to sift through data that's important to retailers versus data that's not important. This is after years of the industry arguing where that sifting process should happen, whether it should happen close to the center, near the enterprise, or out on the edge, but the data is coming at them so fast and so furiously

and the attributes are changing so constantly that intelligence is needed pretty close to where it is collected to detect a particular instance of data as it fits to a pattern, and then relay that information back up to the retailer.

It's an old answer to the problem. Yes, we have way too much data, but it's a new challenge, because some of that data might have some importance that we never envisioned in the past.

Mike Troy: Okay. Interesting thoughts. This is a deep subject with a lot of layers to it, because you start getting into some hypothetical scenarios where all retailers are running AI and optimizing prices. Retailer A is taking inputs from retailer B, and retailer B is taking inputs from retailer A and it's a battle of the AI systems. It's an interesting new field for sure.

Brian Kilcourse: I just wanted to finish that thought. Keep in mind that the real issue is responding to real time market conditions. It's not the technology. It's what you can do with it. I'll leave it at that.

Mike Troy: All right. Very good. If you would like the deck, be sure to shoot an email to info@revionics.com. Any questions that we didn't get to, the folks at Revionics can follow up directly via email. I think that with that, we're going to sign off. Everybody have an awesome day. Thank you very much.