ADEXA
Whitepaper Series

# I Want My Latte Medium, Extra Hot with No-fat Milk--

## *Attribute-Based Planning in action*

Attribute Based Planning (ABP) is all about choices. It is about selecting what you want exactly the way you like it, i.e. customization as we know it today. First a simple question: how many possible combinations are there for a simple order of beverage from Starbucks? 10? 50? Or 100? The answer is at least 1600. After you consider type of coffee, size of container, temperature (hot or extra hot or iced), amount of fat in the milk, flavors etc. it easily multiplies to the above number of combinations. For more complex products, the combinations can be in millions and in many cases hundreds of millions as is the case with electronic gadgets.

More importantly, some combinations are hard to define. Examples of the latter are texture of fabrics, where a range is specified, or operating ambient temperature of electronic components. Every product and every industry has thousands if not millions of different properties associated with it. In addition, every company has their own business rules associated with how they use such properties to make more money for the business. For example, McDonalds serves more Teriyaki beef in Japan and more Salad in California! Keeping track of all such variations depending on customer, region, weather conditions, and diet trends is truly a daunting task. However, exploiting such complexity can mean incredible opportunity in increasing profits and reducing unnecessary costs. We are not talking about Business Intelligence, we are referring to the ability to define attributes of products, regions, customers, the environment etc in order to be able to take advantage of what to sell, when to sell, what to make ***and how to allocate resources*** in various regions. Attributes help to differentiate products from mere commodities hence higher prices can be dictated. The bottom line is how do I plan the supply chain based on attributes.

Having a different SKU for each attribute variation is NOT a viable option since the combinations are too many!

Customers demand for what they need when they need it at the lowest cost. Attributes can help to deliver the goods on time in situations where, in their absence, it would not be possible. For example to satisfy a strategic customer's demand, a higher quality product is shipped in order to ensure on-time delivery. This may ensure retention of market share and customer loyalty resulting in additional business. In some cases, attributes play a critical role in the distribution of the products. Lead-based toys are not allowed for import into US. Hence "lead" becomes and attribute of a product shipped to US. Or equally, it is an attribute of the region not to accept lead-based products. Once the attribute is defined then one can define business rules against the attributes. In this case, "no pegging of lead-based toys to US orders." It must be emphasized that attributes are more than "fields" in database. Generally adding fields enables better reporting. However adding mere fields cannot be used actively by the system to make decisions or define business rules. Attributes as defined here are actually used as *constraints* for planning in both the supply side and demand side. They are deployed to make decisions about sourcing, making, storing and delivering goods. Attributes are active part of every stage of the supply chain as are business rules and they are taken into account when plans are generated. Most supply chain systems have built-in attributes which are very limited. Examples are Customer Priority, Size or Color, and grade of the product. However with ABP, an unlimited number of attributes can be defined and used for planning purposes!

Business rules change all the time. In many systems such rules are hard coded into the system or take many years of consulting effort to develop and embed such rules into the system. With attributes, rules can be changed and attributes can be added as needed. Hence the system *constantly molds itself into the new business environment*.

From a technology perspective, attributes enable a more efficient operation of the system. i.e. faster with less memory requirement. Consider the above coffee example, without attribute, one would need to generate at least 1600 possible configuration of the end product. Needless to say that products are changing all the time and mew ones may need to be added or deleted. With attributes a simple hierarchical representation would reduce the memory requirement to a few orders of magnitude less! In more realistic examples of manufacturing the storage requirement of systems without the use of attributes would make it almost impossible to represent the full range of products. At best, when they are represented, they are either unacceptably slow or very rigid to changes. Hence the systems cannot scale and cannot grow with the business. Another critical issue, eluded to earlier, attributes make the system "malleable" to changes. Their absence requires custom coding which would result in a rigid system intolerant of changing with the business. As an illustration, consider a chemical product that uses oil as one of its basic ingredients. As the price of oil increases, the margin drops and at some point the more is sold the more money is lost for the company. By having price of oil and elasticity of price in different regions as attributes, one can devise a business rule to sell the product only in regions where the demand can tolerate higher prices for the product. This would then be translated into how much to make and where it should be shipped to based on the dynamics of the market as well as supply/demand pegging rules. In the absence of attributes the latter

would be a very costly transformation of the operations. Obviously if there are additional changes in the price of oil etc, one needs to make further adjustments, a very rigid and costly approach and not practical.

As a very interesting case study, we devised an Available-To-Promise system for one of the top global car makers in Europe. On the surface one might say what is so special about this? The end user enters the options, the system checks for inventory or capacity and availability of material etc and then returns a delivery date based on allocation of resources. Yes, but this was not all! The ATP system would not only return a promised delivery date, but it would also come back with alternatives. For example if the promised Date was 2 weeks from now, the system would also provide alternatives (color, engine size, price, location) that can be delivered a lot sooner and or less expensively at a later date! Attributes allow you to do that. In the absence of such attribute based pegging, the user would have to do thousands of trial and error to figure out what is acceptable to them! Now that is customer service!

Next time you are looking for a demand planning system, a supply planning system or even a factory planning system, perhaps you should ask: *Is the system attribute based?*

We would love to receive your comments or request for more information on the topic send us and email to info@adexa.com with the subject line “My ABP.”

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