

How To Deal With Discontinuous Demand

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The Theory: Daily Demand







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The Reality: Discontinuous Demand





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The Reality: Discontinuous Demand





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This Is Not An Issue When MOQ >> ADU









Our Approach – First Trial

- We were doing simulations with hundreds or SKU's, many of which had this kind of sales profile
- We had to manipulate the buffers by manually adjusting the red zone and/or the threshold % factor with crazy numbers.
- This was done by trial and error and was extremely time consuming
- There must be a better way a systematic way with some mathematical foundation – that can be used to automate this process!

Maybe we should calculate the RED ZONE by ignoring all the Zeroes and taking only the days with sales into account?

15 22 12 16 48





Our Approach – First Trial

- Mathematically this is easy
- If there were 41 days with sales in a year, that is on average one day every nine

1 in 9

- Then we just multiply the ADU for the Red Base calculation by 9
- ADU = 2 $\rightarrow 2 \times 9 = 18$
- ADU for the Red Zone Base calculation = 18



This is looking good, because this is the same Red Zone and Threshold we had originally.....BUT!





Our Approach – First Trial

... It feels like this red zone just seems TOO BIG!







Our Approach – Second Trial

Maybe we can solve the problem by just applying the factor 9 to the spike threshold

Red Zone = 9 Units

Spike Threshold = 4.5 Units \rightarrow 4.5 x 9 = 42 Units







Conclusions So Far

 Both solutions result in a Spike Threshold of 42 Units, which is exactly what we want, but the red zone is either too big or too small

Factor 9x applied to Red Base



- Is there a middle ground?
- What about splitting the factor in two components and applying each component to the Red Base and the Threshold respectively?
- We used the Square Root of the factor









SQRT(9) = 3









Conclusions

- Finally, we seemed to have found an easy way to deal with these products
- When we applied to our simulation we found that with these settings most buffers looked visually good
- Service performance was close to 100% with 20-30% less inventory by just applying "standard" LT & Var factors across the board.
- The more interspersed the sales are, the higher the factor
- On the other side, when you have sales every day, or almost, then the factor → 1 Sqrt(→1) = → → 1 The factor doesn't impact the original buffer calculation





What About The Green Zone?

- There may be some benefits in applying the squared root factor to inflate the Green Zone
- Benefits: Better buffering of demand variability: the demand propagation to the supplier is more stable and predictable
- Cost: Average inventories goes up slightly























































Thank You!

