REVIEWER 2

The authors argue that by correctly accounting for the transfer of demand from an out-of-stock item to substitutable items, the expected order date of the latter must be corrected.

The argument is true, if very simple. In short, if a shop sells two kinds of orange juice and one runs out of stock, the stock of the latter will depleted faster and one can predict when this will happen, which is straightforward to compute assuming constant consumption rates.

The added layer here is that of a dependency matrix, which allows the above argument to be generalized to any number of items and any number of substitutable items. The whole question is then how this matrix is determined from data? Only a vague statement is provided. Several open questions remain:

1. Why should coefficients of the dependency matrix be 1 or 0 only? - It is an initial assessment which meant to map out the existence of correlation, therefore, it is really a binary situation where 1 = correlation exist (the strength of correlation is irrelevant at this point) and 0=no correlation between the product.

1.1 I am not sure that correlations are adequate here. The authors probably mean dependencies.
It's a matter of terminology, you can either write connection, correlation, dependencies, etc. If there is correleation so there is dependency. Eventually, it's a mathematical parameter which describes if product could even be taken into consideration as substitute.

2. What are the economic consequences of wrong positives, wrong negatives in the inference of the dependency matrix? There are no negative consequences, the formula doesn't allow that.

3. Could the authors offer a dynamic example? Example for what? Dynamic example- kindly clarify.

4. Is there data available? There is, however only for the demand and supply scenarios. The dependency factor is just a conceptual and pre-designed stage of the model. The market basket analysis is used to find relationships between data set. After relationships are found we can apply the model.

5. Why are the consumption rates constant? This is an initial assumption of the EOQ model. The model could also be performed on a stochastic consumption rate, however the core analytics won't be changed.

6. Are we sure that the whole demand of an out-of-stock product fully propagates to other products? This is exactly why the model has 5 stages, first we define a group, after we validate in a mathematical way that correlation indeed exist. Once we have that in place the OOS quantity is distributed to other substitute products. For each iteration the matrix is being updated and by doing so we will get more precise with time.

In short, provided that this generalization does not pre-exist (I am not in a position to have an opinion on this point), I think that this discussion paper is a necessary but not sufficient

contribution, and that this way of thinking should be extended much further to show non-trivial dynamical properties.