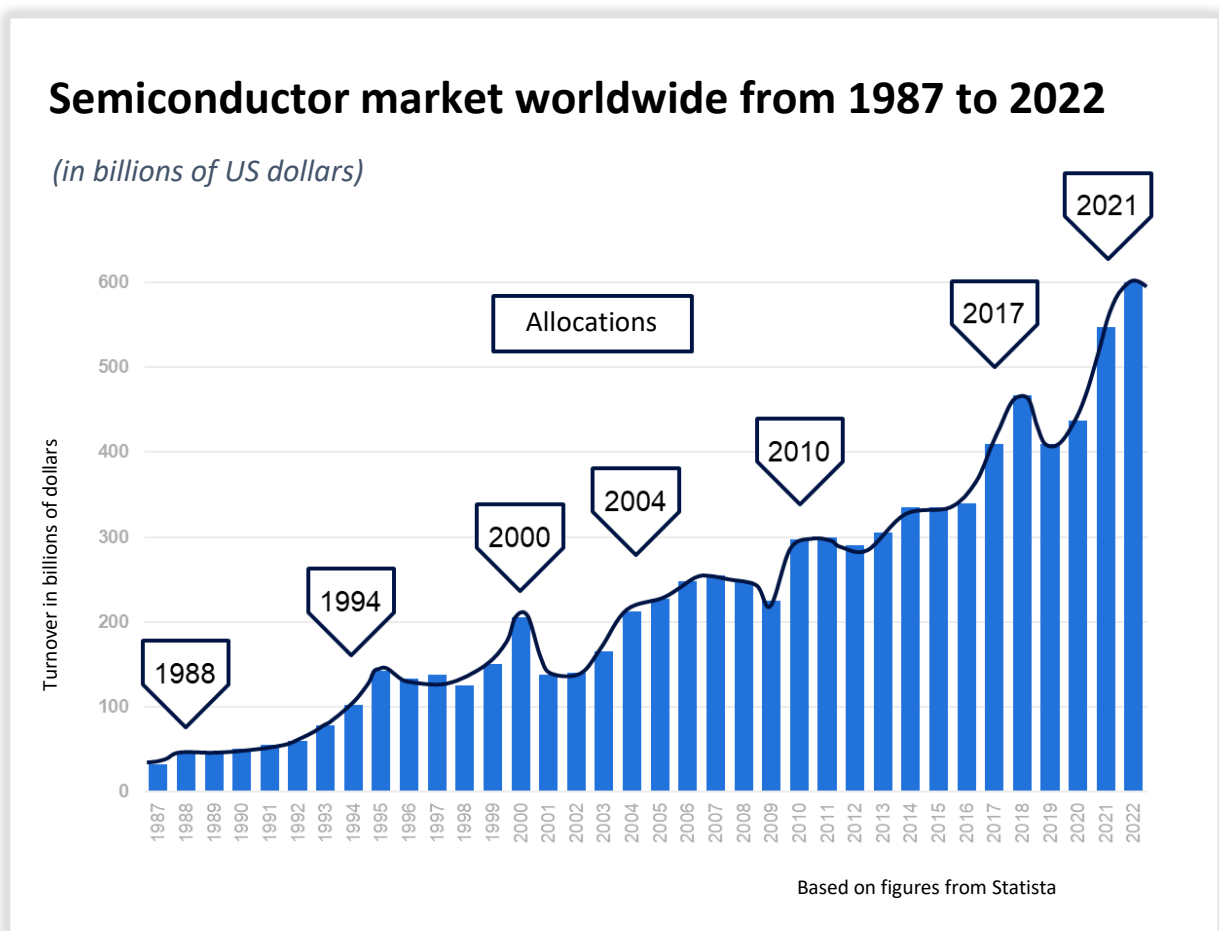


Interesting and noteworthy information on the occasion of the association's anniversary

Four allocations in 20 years of FBDi!

Allocations come along with impressive regularity. Some are more severe, affecting more products worldwide, and some are somewhat milder. Sometimes they end up being halfway acceptable, and sometimes they leave behind immense damage. Some of us have already experienced several of them, leading to the recognition of a pattern. However, there are new players in the market every time who are completely surprised by this circumstance – just like I was in 1995. Many therefore have no idea why they actually happen. Yet the phenomenon has been well researched for many decades. For all those who are interested and would like to know how to get through allocations better, here is a field report.

By Thomas Gerhardt, Managing Director at GLYN and board member of the Fachverband Bauelemente Distribution e.V. (FBDi – German Trade Association for Components Distribution)

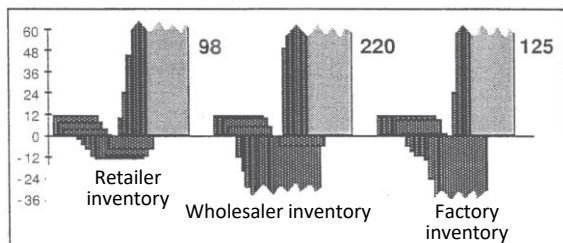


In the 20 years since FBDi was founded, there have been four allocations. Since I started my career in 1995 as a sales engineer in distribution, there have been as many as six. At that time, an allocation was just expiring and I had no idea what was happening to me at all. The prices of the components were in free-fall. The warehouses were full. Hardly anyone was interested in ordering anything. A few years later, during the following, very bad allocation in 2000, I thought: "What? Not again!"

A book on the shelf

In 2003, after that too was over, I found a book in our home library that had been recommended to my wife by a professor during her studies. I was intrigued by the thick, blue, hard-back book with the interesting name, "The Fifth Discipline – The art and practice of the learning organisation".

So I opened it by chance to page 36 and saw graphs with inventories and titles like "Retailer", "Wholesaler" and "Factory". This aroused my curiosity and, hoping to learn something for the company, I immediately started to read the book.



It turned out that precisely this one, randomly opened chapter is a must-read for everyone involved in the electronics industry.

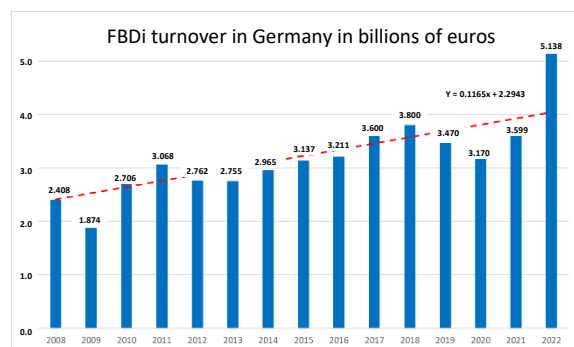
Under the heading "Prisoners of the system or prisoners of our own thinking?" author Peter M. Senge describes a game that was developed around 1960 at the Massachusetts Institute of Technology (MIT) – one of the world's leading top universities. This is known as the *MIT Beer Distribution Game*.

It is an experimental role play in which the participants take different positions in a distribution chain (e.g. component manufacturer, distributor, circuit producer or – as in the book – brewery, wholesaler and drinks shop). The aim here is to keep the costs of the entire chain as low as possible. However, since the individual

parties only communicate with each other via written orders, attention is usually focused exclusively on their own situation. This results in increased variability in the system, highlighting the *Bullwhip Effect*.

To this day, this game is used in management training, but far too seldom in our industry. In the book mentioned above, the electronics supply chain is mentioned explicitly because its complex processes, comparatively high standard delivery times and production capacities that are difficult to increase make it very susceptible to increased variability.

The annual growth of distribution since 2008, when FBDi started publishing its valuable notary figures, is 5.6% (Compound Annual Growth Rate = CAGR, red dashed line in the chart). Excluding the exceptional last year 2022, it was actually only 3.1%.



However, the growth of the promising electronics industry of the future did not, in fact, take place in a linear fashion, but in waves. The two general phases can be described off hand and very roughly as follows:

Allocations last approx. 18-24 months. They are characterised by long delivery times, rising prices, empty warehouses, high turnover increases, good profits, friendly customers and self-assured suppliers.

In the times in between, about 3-5 years, it is the other way round: short delivery times, low prices, full warehouses, declining sales, depreciation losses, self-assured customers and friendly manufacturers.

As early as 1990, the author explained why this is so in his highly acclaimed management classic, which has been translated into 20 languages and printed more than 1 million times.

Yes, you read that correctly. In 1990, one of the most influential management thinkers of the last 75 years describes a principle that was discovered by an elite university in 1960. In other words, the theoretical, systemic knowledge of why there is increased variability on a regular basis in the electronics market has been known for decades. But we keep rubbing our eyes and discussing why it happened this time, how long it will last, whether it will happen again soon or whether this was really the last time.

It is not the triggers alone

The many possible allocation triggers are enumerated and discussed with relish. In 2020-2022, they were, singularly or all together, the container ship *Ever Given* stuck in the Suez Canal, snow storms in America, the Corona pandemic, the Ukraine war and the energy crisis, leading to disrupted supply chains, etc. In 1999-2001, they were the Y2K software problem (millennium bug), the introduction of the euro and the conversion of all vending machines, etc.



There are triggers for every allocation. They are manifold and hardly predictable. But the next part is provocative. They are certainly part of the phenomenon, but hardly decisive. A much more dominant factor is the reaction of all the market participants to these triggers. The effect of the triggers is increased dramatically by the behaviour of each individual. It is this amplification that first leads to a completely exaggerated increased variability – measured against the triggers – of the entire system.

If a Martian came to Earth during an allocation, he would think: *"What are they up to? There is no shortage of goods. There is not even that*

much demand. They're all just ordering everything they can get their hands on, and that's why someone else ends up with nothing. Earth people merely have a distribution problem."

We all saw what hoarding can do in the toilet paper pandemic. No one can seriously claim that the consumption of this product really increased so dramatically at the time. It was rather that, during this time of collective hysteria, some had a cellar full of it at home, which meant their neighbours, quite possibly, really did have a problem.

Consider a situation in which maybe a year's supply of your missing *"golden screws"* is lying in another warehouse or could not be produced because, in the factory, the production of someone else's components had to be brought forward – components that were then merely stored.

Order and demand

Unfortunately, we keep confusing order with demand. The temporal component is completely forgotten. If a player, for justified safety considerations of his own, orders goods today for immediate delivery that he actually only needs later, the demand in the market does not increase (which is, however, something almost everyone is only too willing to believe). If he also places orders for a later date, even then, only the incoming orders and the order horizons increase, but not the actual demand. At least not much more than the long-term average.

The often significantly higher sales that follow the high order intake actually flow to a large extent into the inventories of the many supply chain links. The blanket statement *"the warehouses are empty"* has never been correct. There has only ever been a larger or smaller number of individual compartments that were empty. The immense increase in turnover can partly be explained by price increases. However, a general, unit-based leap in market growth involving such high figures, is not possible overall. Where are the many additional factory buildings, employees, machines, etc. supposed to come from for an ad hoc 40% larger market? Was the industry's capacity utilisation really that low before the allocation? Hardly!

If, on the other hand, you take into account that everyone in the chain is going to order a little more during an euphoric phase – because the market is growing so well right now – then it becomes obvious that, over a few stages of the supply chain, the number of goods ordered from the manufacturer can quickly double in number.

An example

Suppose a normally growing sawmill orders maybe eight new, fully automatic, woodworking machines per year. There are, let's say, 1,000 electronic components in each one – 8,000 pieces in total. However, because they have heard that delivery times will be significantly longer, they order ten units for immediate delivery, just to be on the safe side. It is better to have them in store and be able to deliver than to have to wait. Therefore, a "demand" of 10,000 components is registered by the manufacturer of the machine. Because he too has been watching the news, he prefers to buy 20% more from his contract manufacturer. Maybe his customer will want twelve machines next year. The EMS now sees a "demand" of 12,000 components. However, with foresight he increases the amount and orders 14,000 pieces, for example. If the distributor adds more as well, the manufacturer is faced with supplying 16,000 units – twice the actual demand and for immediate delivery. However, since he cannot ramp up his production capacity that quickly, he feeds new, longer delivery times into the system. These then automatically lead to further orders.



My close and also very experienced colleague in FBDi, Dietmar Jäger, always says then: *"Incoming orders are a function of delivery time and vice versa."* How right he is.

The system is coming apart at the seams

This is exactly what happens in every allocation. There is a trigger of some kind that creates a panic. This feeds on itself and snowballs until all the warehouses are full; i.e., the alleged "demand" decreases, or the manufacturer can produce more. These conditions mostly come about simultaneously. It is also what determines the typical duration of allocations. In our industry, it always takes about 18-24 months for these two conditions to be met.

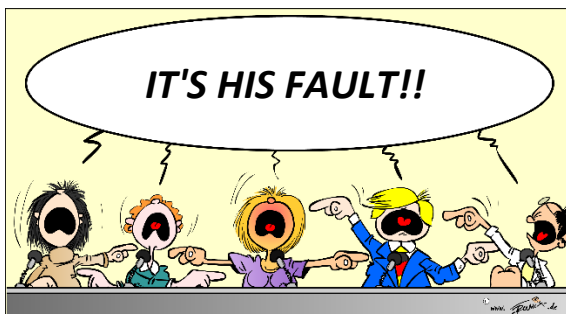
However, rather than looking at this dominant, causal, system-immanent psychology and the latency periods in the system, other reasons are discussed instead. Consideration is given to whether legacy capacity should be increased at all, whether the Chinese government's Corona policy will prolong allocation, whether intermediate products will remain in short supply, whether the energy transition will lead to exponential overall growth, whether the war will cause long-term disruption of supply chains or whether there will be enough freight containers, to name but a few. I respond to this in the inimitable manner of Peter Ustinov in his role as the master detective, Hercule Poirot, in the film *"Death on the Nile"* who said, after Dr Ludwig Bessner had presented some arguments opposing his solution theory: *"That may all be true, ... but it is ... irrelevant!"* The trigger for the beginning is arbitrary and the trigger for the end is also arbitrary. Between these two points, a well-researched mass psychological process takes place, and it is mainly this process that is the deciding factor.

Is there anything that can be done then?

At the end of almost every allocation, sales decrease. The alleged market growth turns out to be an "advance". About 75% of role-players drive the system into the wall and create the maximum possible damage. 15% do slightly better and 10% do much better than the others – so, despite everything, success is a possibility!

What is happening at the moment, however, is not an attempt to do better. Instead, all you read about, at the moment, is who's to blame. The distributors are allegedly to blame because they were not able to deliver. The manufacturers are to blame because they did not produce enough and were not able to confirm any deadlines. The customers are to blame because they did not order early enough. The brokers are to blame because they have made a fortune out of the plight of others. All wrong! No one link in the chain is solely to blame. If anything, all of them are. But actually, it is the system.

To add to this, everyone now feels themselves to be trapped in a "sandwich position". This is logical because, in a long supply chain from the end consumer to the retailer, the product manufacturer, the machine producer, the production service provider, the distributor, the component manufacturer, the pre-product supplier, through to the mining company, everyone, without exception, is in a sandwich position. And everyone points left and right to pin down someone to blame. Not really helpful and, considering one's own contribution, not fair either.



So what is to be done?

The better players observe three rules that sound easy but are unfortunately, in the face of human nature, difficult to implement in practice. The emphasis here is on difficult, not impossible. Actually, something is possible.

The rules are:

▶ **Do not panic.**

It takes discipline to resist the overwhelming urge to place larger orders when the backorders are growing and your customers are screaming loudly for merchandise or the salespeople are unnerving you even more

(which, by the way, you shouldn't do to your customers either).

If you are unable to apply this self-restraint, there will be unpleasant consequences for both you and everyone else.

▶ **Keep in mind the goods you have already ordered for immediate delivery that just haven't arrived yet.**

It's like a headache tablet. If you have taken an aspirin, you also don't take another one every five minutes until the pain has gone. Wait for the effect! Keep your backorders in mind.

Do not think about "delinquencies" (those that are "overdue"), because for those, the confirmation date is also already in the past. Do not think about the entire "backlog" either, because the "order backlog" consists of both items that are wanted immediately and those that are wanted for later. Because there is no separate term in our industry for goods that are ordered with "immediate delivery" as the preferred date, but that are confirmed for a later date, I suggest "backorders" for them.

So, keep an eye on your backorders. Do you really want the goods you ordered for immediate delivery? Imagine if they came tomorrow. Will your customer really accept their total annual requirement immediately when the golden screw finally arrives?

You can be certain that your suppliers will try to fulfil your old orders as soon as they can. It is not for nothing that you put enormous pressure on them in many escalation meetings. You will therefore have to accept the goods.

Always remember this: *everyone is responsible for their own preferred dates.*

▶ **Never order more from your supplier than your customer orders from you.**

Remember that, at each stage of the chain in front of you, an additional amount has probably already been ordered for immediate delivery and the chain is longer than you may imagine.

Also, assume that your upstream supply chain neighbour is not telling you quite the whole truth. He will vigorously declare that he needs 1,000 pieces for immediate delivery, in the hope that, in four weeks' time, he will then perhaps be allocated at least the 100 that he really needs. He believes this to be necessary because he is afraid he won't get anything from you otherwise.

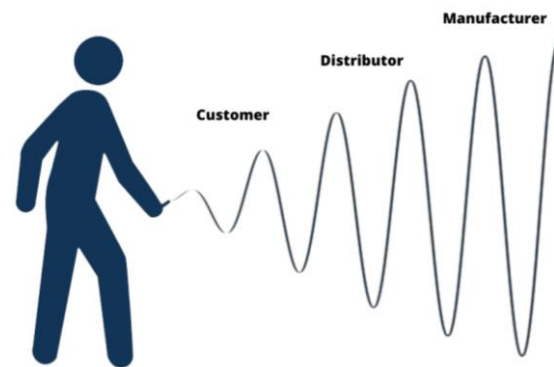
So make sure that at least you don't make matters worse with regard to your own suppliers.

Incidentally, the purely electronic exchange of data, which is repeatedly proposed and also promoted in this context, is not an effective measure. It is a blessing in terms of efficiency in normal times, but it does not prevent shortages. The idea is that there will be no allocation if the entire supply chain passes on its data 1:1. That is actually true in theory. Unfortunately, in every man-made panic, many players intervene in the automatic mechanisms and override them. These interventions are then reinforced by the systems. Overwrite a delivery time of 12 weeks in your system with one of 52 weeks and see what it then spits out in the way of order suggestions. It generates a lot of incoming orders for your supplier. Is this then market growth? Remember as well that it is better to share true information about data. No system can tell if the 16,000 pieces represent the real demand at the very beginning of the chain or if the 8,000 pieces actually required have been inflated a little at every stage along the way to you.

So who suffers the most damage?

According to research, the damage in the chain is worst for the manufacturer. He is faced with an inflated, supposed demand that he cannot fulfil. Because he is strongly criticised for this, and at the same time sees great opportunities for himself, he decides at some point to expand his production capacities. Nowadays, that costs an enormous amount of money. 18 months later, when everything has been installed, everyone realises they have ordered too much at once and that their warehouses are overflowing. Then they reduce their orders, and the manufacturer is left sitting in his empty production

halls. The wholesalers have huge stocks that no one wants to take any more and the customers have them too. In this order, however, with figures decreasing along the chain.



It's like the famous whip. The back at the end of the strap is particularly hard hit. As a distribution representative in the middle of the supply chain, I would also love to whine and say that retailers are the hardest hit. Everyone will feel that way in their position. But it is indeed the last link in the chain.

After allocations, this fact also regularly leads to concentration processes at all levels because the strong companies then buy up those that have overstretched themselves. Not particularly good, but the logical consequence.

The panic in the other direction at the end of almost every allocation is also typical. How do you reduce your excessive inventory when the controllers take over again with their "return-of-working-capital" cudgel? By throwing it on the market like something nobody wants, at devalued prices – thereby driving the diabolical spiral downwards once again.

Oh yes, and this to finish with

A confirmed delivery time of as much as 30, 40, 50 or 60 weeks is never the correct, seriously meant delivery period in a swelling allocation, but merely a synonym for: "We are inundated with orders right now and we can't do it. There's no way I can say anything for certain right now." No customer in the chain, not one of us, wants to hear that and you can't enter that into the system. That is why one resorts to estimated deadlines that one believes one can meet. Motto: we will probably have delivered it in a year's time, at the latest.

Summary

Peter M. Senge ends the chapter with the following words, which could not be said better: *"As the participants in the beer game come to understand the structures that cause its behaviour, they see more clearly their power to change that behaviour, to adopt ordering policies that work in the larger system. They discover a bit of timeless wisdom delivered by comic book writer Walt Kelly many years ago with his famous line from 'Pogo' [an anthropomorphic possum]:*



"We have met the enemy and he is us."

In this sense: After such a cycle, there is enough surplus production capacity for a few years of normal growth. At some point, however, this is fully exploited and some new trigger sets things off again. There is therefore no doubt that the next allocation is on its way. Your own nth, the fifth for the now 20-year-old FBDi, and my personal seventh.

But now we all know what to do. Good luck with it!



20 years of Bauelemente Distribution e.V. (www.fbdi.de):



Founded in 2003, FBDi e.V. is an established player in the German association landscape and bundles the interests of its members from the distribution sector, who represent around three quarters of the sales volume of electronic components in Central Europe (DACH). In doing so, it has an overview of the entire electronics supply chain.

In addition to the preparation and further development of data about the Central European distribution market, competence teams generate a high level of market-related expertise relating to important regulatory topics in the electronics industry (including CE, directives and ordinances). This qualifies FBDi to be a sought-after partner for politics, electronics manufacturers and customers.

Membership in the international distribution association IDEA, enables an exchange with other associations at European level.