And No Just-in-time For All

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Pandemic has created a lot of unexpected challenges for the humanity, for the global economy and even for single business processes. Some rules of the game simply stopped working. Situations never imagine before the pandemic become a part of new reality. Risks never thought to be realized entered the game.

For example, producers were still producing goods, consumers were ready to buy them, but they can't. Simple because of a great line of container carriers waiting in the ports for the unloading. Nowadays bottle necks in supply chains are not specific cases of single companies this is something global. With global consequences and new challenges to business resilience. So, we need to adapt.

If we are talking about supply chain issues which industry is under the fire first?

Before answering this question, a few words about the most recent events, because they are very demonstrative. After Russia has invaded Ukraine, a lot of sanctions were adopted. Some of them were related to supply of goods.

On average traditional producers in Russia reported that they have inventories for 6-9 months. But there was one industry, where production stopped almost instantly. The whole automotive industry was literally destroyed in a moment. Car production in Russia fell by 85% in April and by 97% in May 2022. Why so bad? The factories are still there, the workers are still there, internal market is still alive, but the industry has collapsed. And the answer is easy: just-in-time (JIT). Low inventories combined with inability to replenish them and the "game is over" almost in a blink of an eye.

Actually, this is very warning sign for the whole global automotive industry. What are you going to do if China invades Taiwan? No chips, no cars. What are you going to do if export of Russian palladium will be banned (like previously was banned Russian coal or gold)? No palladium, no autocatalysts, no cars.

Yes. Russia is very extreme case. But what about chips shortages and problems of global automotive industry during pandemic? Elon Musk in his interview to ChanAcademy a long time before the pandemic was complaining that the whole production line of Tesla has been stop because of $3 USB-cable absence. We can't produce a $100 000 Tesla, because of a $3 issue.

Looks like the dominant production and supply chain management concept "just in time" is not as perfect as it should be especially in post-pandemic world full of new challenges like war, energy crisis, recession, inflation etc. It seems we need something new or something different. But Kuhn once said: "It takes a theory to beat a theory".

The efficiency of JIT is so high, you simply can't forget about it. Because you will lose competitive wars. Let's remember a very demonstrative case of Harley-Davidson when legendary brand was humiliated in the US court and almost

destroyed by Japanese bikes in 70-80-s XX with their better quality and lower prices. Thai is why maybe it is a little bit too early to bury the JIT. Still, status-quo is not a solution as well and something needs to be done.

Of course, there is always an option to leave it as it is and to concentrate on fixing the consequences. Issue with the chips? Ok. Do you remember Fordlandia? Let's follow this 100 years old idea and produce our own chips. In this case we will control the situation totally. But stop, Fordlandia was a total disaster in the end. Maybe the world should ease some sanctions against Russia? To make sure there would be no problems with palladium and other resources. But what about war in the whole Europe? Maybe we should shift from older 90+ nanometers chips to the newer ones? But what about costs? Inflationary pressure is already high. No need to get the situation even worse. You can also replicate Tesla's action in 2021: company offered the delivery of vehicles with missing parts (some Tesla vehicles were delivered with missing or watered-down USB ports, and front passenger-seat lumbar features were eliminated). Or you can become the best buyer for suppliers giving them the best price offers. But are you sure your demand is enough elastic?

All these ideas might have the right to existence, still they do not fix the problem, they deal only with the consequences. But the problem is here and sooner or later it will reappear.

Below we would like to provide some ideas/remarks related to solution of existing problems (instead of discussing solutions to the consequences of the problems). Conceptually we can call it "Modern Just-in-time".

One of the elements of this new concept we called "Stocks Matrix".

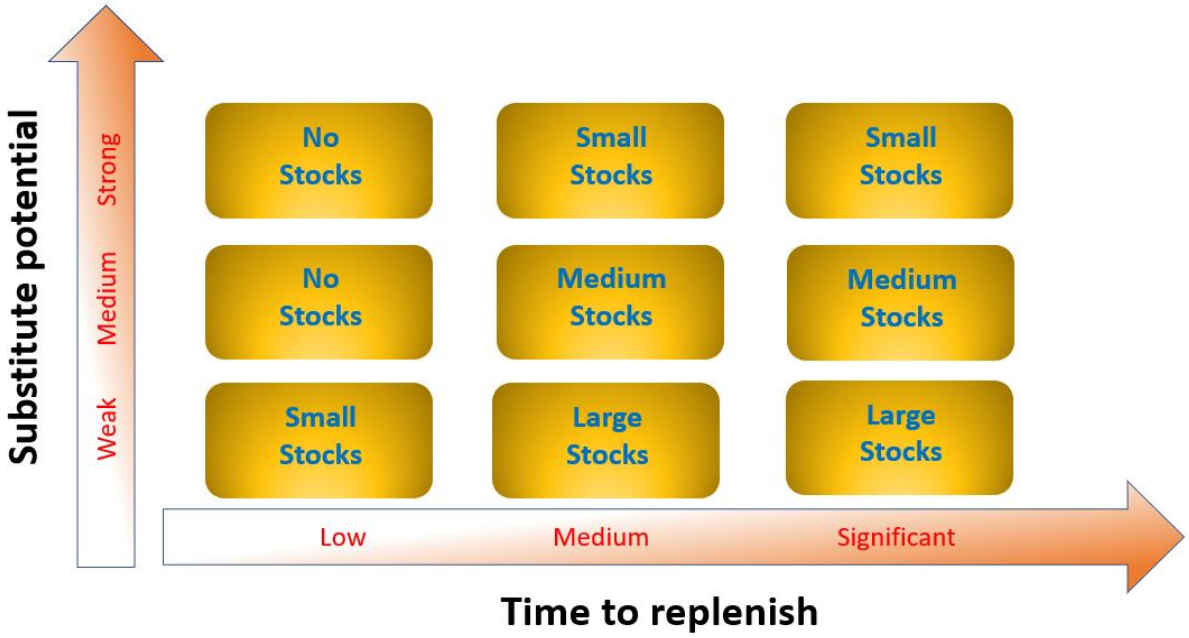
Remember all those strategic decision tools like BCG matrix, McKinsey matrix, Ansoff Matrix and a lot of similar ones. Sounds primitive, but they are still efficient. Easy to build, easy to understand, easy to apply and a lot of other "easys".

The basic principle of construction is +/- the same: coordinate axis explaining certain crucial parameter.

In our particular case the problem is very specific: which size of the stock for a certain good we need to store to avoid production problems?

To answer this question, we need to know our ability to replenish existing stocks (can be measured with the time to replenish) and our ability to substitute this accessory by other "same" accessory or by the shift of supplier (let's call this "Substitute potential"). If we will display these two crucial parameters on the coordinate axis with 3 options per each parameter (like "low", "medium" and "high") we will have 3x3 matrix, where 9 different cells are available.

In the Figure below there is a general view of "Stocks Matrix".



How does it work?

For example, our main supplier failed to deliver $3 usb-cable, but we can easily find another supplier or we can use another type of usb-cable from our initial supplier or we can re-order it and the delivery would be fast enough not to halt our production. In this case $3 usb-cable for us is a “No stocks” option. Means for this accessory we can use as low stocks as possible.

But if we have a crucial chip which can’t be substituted simply because it is a very specific one and we will have to wait for a long time to re-order and re-deliver it, the situation is quite different. Looks like it is a good idea to make a large store of this accessory.

Actually, those auto producers or gadget producers which managed to do this (created additional stocks) in 2021 avoided serious problems with production.

Of course, each company can modify the matrix for own purposes and specifics. There could be provided a quantitative benchmarks and thresholds to define what is “low” time to replenish and what is “significant”. There could be also specific classification of substitute potential based on company data base.

One of the magic abilities of matrixes like this is that it makes you think about the problem and its aspects. For example, if you have only 1 supplier for accessory, maybe it’s time to find another one? Or if you have in accessory nomenclature only 1 position, maybe it’s time to find some substitute-alternatives? Questions like this will certainly arise when you will try to fill the “Stocks Matrix”. Also, you might not be satisfied with your current position in Matrix. Maybe “Large Stocks” is not a good option for you because of the costs. In this case you have a good reason to think how to move from one cell of the matrix to another. Find additional supplier? Find some substitute? Sign additional contract? Options are on the table, but you have to take a look at it.

But stocks is only one aspect of business resilience. That why we propose additional point for decreasing consequences in crisis conditions: implementation of innovation triggers.

Why innovation trigger is a necessary parameter for understanding the level of company resilience in crises conditions? Because processes of working with innovation triggers create 15-20% unpredictable business success deals with new products, new technological decisions, creating new niches of market, new logistic solution and so on. And it is a powerful factor to increase business resilience in times of crisis.

For example, company has effective value of stocks and develops two innovation triggers (Autonomic Systems and Causal AI). So when it has high level of workers illness, Autonomic systems can help company to work with fewer amounts of workers. Causal AI can make choices like humans do. This provides opportunities to replace specialists or some knowledge/understanding processes "know how". Results – stronger business resilience.

To understand how our stocks decisions based on "Stocks Matrix" influence the business resilience we propose to use "Resilience Matrix". First parameter in our "Resilience Matrix" is value of stocks. Another parameter is quantity of innovation triggers that use the company. Innovation triggers include: Computational Storage, Cloud data Ecosystem, Superapps, Industry Cloud Platforms, Digital humans, Causal AI, Autonomic Systems, Metaverse, Machine Learning, Code Generation and etc.

Scale of resilience estimation depends of 2 parameters (value of stocks, quantity of innovation trigger):

0-30 % – low level
30-50 % – above low level
50-70 % – medium level
70-90 % – above medium level
90-100 % – high level

Resilience Matrix

Innovations triggers/Stocks	No stocks	Low stocks	Medium Stocks	Large Stocks
No triggers	0-30 %	30-50 %	30-50 %	0-30 %
Low amount of triggers	0-30 %	30-50 %	50-70 %	30-50 %
Medium amount of triggers	30-50 %	50-70 %	70-90 %	50-70 %
Many triggers	50-70 %	70-90 %	90-100 %	70-90%

How does it work?

Company has no stocks and no innovation triggers. Business resilience (first quadrant Resilience Matrix) is low, 0-30 %. It is a risky and vulnerable business state. Any problems with delivering materials or absent external technical support,

and business activity is stopped. Something urgently needs to be done: innovation strategy based on innovation triggers or closure strategy.

Let's take a look at quadrant 11 of Resilience Matrix: medium stocks (enough time for replacement) and medium amount of innovation triggers (enough opportunities to replace basis or maintenance processes). It means that business has enough time to reconstruct supply chains or maintenance processes. So, business resilience is above medium level (70-90 %).

To conclude, despite pandemics or wars are rare and unique events, their consequences in form of supply-chain disruptions are not something unbelievably new. According to McKinsey Global Institute analysis, supply-chain shocks affecting global production occur just under every four years. On average, of course, but still the problem is not new, it persists over the time. And that is why "Stocks Matrix" is not a specific solution for a single and temporary problem. This is something you need to have as a tool being a manager. Especially if you are using JIT concept.

Please, don't forget that life is full of other surprises and supply chain issues might be only 1 piece in a puzzle. To take a wider look on business resilience additional instrument of similar nature can be used: "Resilience Matrix". "Adapt or die" principle is inevitable part of this game that is why only constant innovations can somehow guarantee your survival and development.