File name: Supply Chain- Inventory Management & Forecasting with live Q&A _ Invest NI (2).mp4

Moderator questions in Bold, Respondents in Regular text.

KEY: **Unable to decipher** = (inaudible + timecode), **Phonetic spelling** (ph) + timecode), **Missed word** = (mw + timecode), **Talking over each other** = (talking over each other + timecode).

Moderator: Good afternoon, everyone, and welcome to today's webinar on inventory management and forecasting. My name is Clive Stewart and I lead up the supply chain resilience and development team in Invest Northern Ireland. We are an experienced team of industry professionals who provide a free service to companies and further details will be provided on that during the course of today's webinar. I'm joined today by my two colleagues, Jo McVeigh and Steven Drummond who are supply chain specialists and will be presenting on the material in the webinar today. This is part of a series of supply chain webinars that we are currently running over the next couple of months and today's webinar, we're really focussed on giving you an insight into the importance of focussing on optimising your inventory and forecasting processes and how our supply chain team in Invest NI can actually help you with that. We will now go through to the presentation and there will be time for Q&A after the presentation.

Jo: The subject we are covering today is around basics of inventory management and hard line (ph 01.13) for forecasting. We want to look at what inventory management is and how it can help your business going forward. I am Jo McVeigh.

Steven: And my name is Steven Drummond.

Jo: Supply chain support from invest NI is provided by the supply chain resilience and framework team, or SDRBF (ph 01.33) for short. We are part of that team. The team is made up of supply chain professionals seconded from business and have experience in implementing supply chain improvement in a wide range of inventory industries. Our role is to work with business to analyse what they do, analyse where development is possible, and provide mentoring and support throughout projects to deliver tangible value and cost savings. We can also provide supply financial support for a supply chain role in your company to deliver supply chain improvement if resource or skills to do not exist at present. The webinar supplied (ph 02.09) primarily help you understand some of the principles of inventory management, provide some wider context on how inventory management can both help or hinder your organisation and, most importantly, highlight how you can make changes in your processes to build resilience by reducing costs and improve performance. We have also signposted some tools, techniques, and resources that you may consider as next steps.

So, let's start with the basic definitions. What is inventory? Inventory can be seen throughout your manufacturing process. In his book The Goal, Eli Goldratt suggests that if a company's goal is to make money then they should focus on increasing (mw 02.52) and decreasing inventory. Inventory can be very costly to your organisation and have a huge impact on your cash flow. So, if it's so costly, why do we need it? You can see some of the reasons on the screen from improved customer service to stock out costs. If you ask a production manager about inventory they may say, 'I need it so I don't run shortages and delays' (ph 03.18) or, 'It gives me flexibility to keep everyone working efficiently, if I get an urgent order, I can react to it.' There are many reasons not to hold inventory. If you ask a financial controller about inventory they may say, 'I have a ton of working capital that I pay interest in tied up in inventory, it's also costing me money to store it and move it about and I continuously get stock reduction charges for obsolescence, stock losses, and stuff going out of life (ph 03.48).' The challenge here is to find the optimum level to balance the good and the not so good reasons to hold inventory. And, remember, this will change as circumstances change.

Tails for the production manager. If the supply chain works well and orders are both placed and material delivered on time, they won't run into shortages and delays. If the production system is operating properly and the capacity in demand within production will match and the planning function should manage monthly (ph 04.19) demand so it doesn't impact operations. All these associative processes working effectively reduce the need for increased inventory. When they don't increase stock a work in progress is used to plug the gaps in your system and operations. The diagram shows there are many reasons for excess inventory. Important to get the root cause of these to make a positive impact your inventory levels. When a company recognises these issues they can begin to eliminate or at least mitigate the causes of excess inventory. They can bring down both it's inventory levels and its associated costs.

The first area want to look at is the management of inventory. The objective and intent of inventory management is having a process that gets the right parts to where they're needed and when they're needed. To manage inventory effectively you need a good understanding of the processes that control inventory, which we'll talk through in the next slide. Importance of the inventory both from a perspective of the company but also the customer point of view. The ability to be flexible and react to your customer needs can be achieved in increasing inventory levels. So, it's a balancing act of controlling cost versus customer requirements. The supply chain to your customer may require you to make frequent, 'Just in time,' deliveries, which will also affect how you manage inventory and finished goods to be able to respond to the customer.

Steven: This is a generic illustration of an inventory management system. Let's start with the customer. They place an order for finished goods, material planners then process an order to create the amount of work (ph 06.08) on the internal system, usually via an MRP system. Purchasing, source and order the parts for material and create a purchase order, that goes to the supplier, who then fulfils these orders. Parts of materials are delivered from the supplier and can go either directly to the production line or can be received into the stores. Parts of materials move from the stores to group of use, and when then they're used by operations during the process, they're known as, 'Work In Progress.' The finished items are then

shipped to the customer.

Inventory management system involves a movement of data as well as physical inventory and this needs to be understood and managed with the processes to operate effectively. Sometimes when we think of inventory as just stores and warehousing that we consider, however, the image on the screen shows that inventory movement both exists and is controlled through the entire manufacturing process. Keeping this process as lean as possible ensures that inventory levels are kept to a minimum. Shorter, less complex process cycles result in less inventory.

The flow of inventory can be interrupted or bottlenecks can develop throughout the process, all of which can increase inventory levels. The process that monitors inventory flow needs to be able to highlight these problem areas and fix them as they occur. Each step in the process can have issues, from erratic customer ordering to poor quality through supplier bid (ph 07.48), to incompletion of finished goods. Again, all of this adds to waste. All of this adds waste into the process. At a practical level, it's very useful to walk through the production process from start to finish and look for inventory build ups. This may identify improvement opportunities for your company going forward.

Jo: Here just some of the early warning signs that can show inventory management system may not be working correctly in your premises. Have you too much inventory and yet you've both shortages and unhappy customers? If you see evidence of any of these signs, you probably need to act. All of this is noise in your system and this leads to increased costs. So, what can you do? Set your own inventory management process. Do you have a process? Is it documented? Is it being used and is it fit for purpose? These are some of the questions you may have been ignoring, however, the impact of not addressing these is an impact to your profits. Here's a simple example of the cost of holding inventory. This can sometimes get ignored by companies who see inventory as a purchase price, and that's it. Cost of holding inventory includes storage, obsolescence, insurance. For the work exampled we've used 25% as a notional holding cost percentage this could be much higher, each company will be different. In the example for £100,000 of stock, the inventory costs could be £25,000. So, each thousand added in stock inventory levels can impact your profits by £250. Compared (ph 09.36) to this, if you save a thousand in inventory it's an increase to your profits of £250. That's the equivalent of getting 5,000 in sales at 5% margin, so it's an important area to tackle to keep your business competitive and profitable.

Steven: Moving on, we're going to look at the relationship between inventory levels and demand forecasting. In order to meet customer expectations, having finished products when they're needed, three main factors come into play. Is the company holding the right levels of inventory? This inventory levels are dictated by customer need time, buffer stock, which can cover short term fluctuations and requirement, and for longer term demand forecasting, which, although, is allows a company to match their capacity with the market customer requirements. The forecasting can be done effectively, then less buffer stock is required and shorter lead times are possible. This slide shows number of sources of information which can help build up a demand forecast, from current order book to historic information

and trends. A forecast, however, is only as good as the information included in the calculation. These are different types of data that are useful to consider. Trends are helpful to predict future demand by predicting future buying habits. Seasonality, here we are looking at the presence of variation, which occur at certain intervals, weekly, monthly, or quarterly. Various factors may cause seasonality, like weather, and holidays. Cyclical elements, data can exhibit rise and falls that are not of a fixed frequency and are often due to economic additions. Autocorrections, with a degree of similarity between a given time series and a legged (ph 11.36) version of itself, measures the relationship between a variable, current value, and its past value. Random variation, events that are impossible to predict. Time series models forecast future based on past models. There's a lot of software out there that can help with this process.

It's good practice to build up forecasts on a short, medium, and long term basis as these serve different purposes. Short term forecasts will help the company prioritise current production. Medium term forecast will help to balance near term requirements and the current capacity and may impact resource levels, shift patterns, supply of raw materials and machine time requirements. Longer term, (inaudible 12.25) the company to look at their strategic position against later capital investment and market direction. For example, if you're moving towards a sustainable and supporting green economy, the use of fossil fuels, reducing emissions need to be factored into your plan. And, also, you may have production lines that maybe phased out and you may be looking to change production mixes going forward.

Building a forecast model, things you need to be clear on, what am I trying to forecast? What is the demand that I'm looking at going forward? What is the timeframe, is it short, medium, or long. It's always good to start with the data you have. Historical data is a good reference point. Is demand increasing or decreasing? Adding to this (ph 13.17) then you can start with demand you already know, firm orders from your customers or all guaranteed, regular work. Then we can overlay high potential sales enquiries and other work that you are likely to win. Usually, market trends, customer information, and marketing at sales input.

The next level, which is more speculative, includes potential areas of opportunity for production, again, from the sales and marketing team. It can be added to the forecast. This should also reflect the company strategy in terms of production input. From all of this forecast, the amount (ph 14.00) can be estimated. As you can see from the example, this is a range from high to low that can be used for supply and production planning. The difference between high and the rest of it (ph 14.10) widens with a longer horizon. Forecasting should also be seen as continuous process that should be repeated as part of the budgeting process at least once a year.

As we've said, forecasting, if a continuous process, may be useful at identifying issues ahead of time. Here in this example, you can see fluctuations in short, medium, and long term. Now, part of this forecast allows you to ask questions and draw some conclusions that you may want to consider going forward.

Jo: Moving into this section, we will cover stock management. How the stock is managed has an impact on inventory and, again, the overall costs. You need to consider what your stock management process is. Are you using MRP or min/max? The key here is having a documented process that is understood by all. The other big question is it it working for you. Do you have shortages or excess stock levels? When you do have an issue, is the process being followed? Are you getting to the root cause of the issue to eliminate it going forward? It's also vital to insure you've a robust cycle count process. It's important to both production and inventory holding costs. You need to know what you actually have on the system is actually in the store. Safety stock and buffer stock levels can be used to help when demand or supply is volatile and these are specific to your business and one size doesn't fit all. Any extra stock is extra cash. Here is an example of a simple tool, min/max. The goal here is to keep the inventory between two levels. The minimum level is a safety level to cover unforeseen circumstances and the maximum of the most economic quantity balancing stockholding versus reorder level costs. This is done by launching replenishment orders to arrive as the stock reaches the minimum level. As the order companies should not bring stock levels above the maximum level as this is dictated by the batch size and the frequency of orders.

The reorder point is back scheduled using the lead time for the commodity to replenish the stock as it reaches it's minimal level. This is normally managed by an MRP system. Worth noting again the accuracy, the usage, and the lead time data are critical to this process working well.

Steven: Basic warehouse operations. This is an example of the basic warehouse operations. Companies will have a different approach depending on their needs, however, they usually include received goods, putting away, pick and kit, and issue, alongside cycle counts, alongside cycle counting and return of parts to stock. The objective is secure and accurate control of stock. Ask yourself, do you have a documented process? Is there a control system in place and is it working? Is the process adequate for your current and future operations? Is the process understood and being followed by your staff? When issues occur is it because the process has not been followed and the process is not working? What happens next? Do you work to fix the process and fix the problems?

There's an old saying of, 'What get's measured, get's done.' If you don't focus on measuring your inventory levels, they may get out of control. You can see some typical metrics on this slide. For stock turns to obsolete stock levels, metrics that you see what's working and where things are going wrong. You need a balanced approach. If you push too hard or reduce your inventory, that could impact production. Another tool that is widely used in industry is IES and OP, sales and inventory operations planning. It is a process of planning future resource levels, so that supply is in balance with demand. This is a top management process, and looks at risk levels (inaudible 18.28) and supplying parts for the business.

Jo: So, in conclusion, what are the next steps? Do you have documented inventory management processes or procedures and are they right for your business is now? Are they fit for purpose? If not, pick them.

Make sure everyone understands then eliminate single points of failure. Enforce the operating system of your documenting processes and monitor it through key performance metrics. Do you maintain and update supplier lead time and inventory levels? Important to drive data accuracy. In times of high volatile work and forecasting and demand management needs you to be flexible in your approach. So, based on what you've seen, where are you now, what problems are you already aware of? If you need advice on any of these areas we are here to help. The aim is to help build internal strengths to move your processes forward. So, what now? There's a supply chain checklist, which covers four key areas, risk management, risk mitigation, inventory management, and supply chain management, and if you feel this questionnaire in that allows us to see what areas we can help you with. This service is free to companies who meet the criteria and to get in touch with us you can email us on supply chain query at invest.ni.com and fill in the questionnaire link below. Thank you for listening.

Steven: Thank you. Okay, thank you Jo and Steven for that update on inventory management and forecasting. Before we move into the Q&A section, there should be a short evaluation or questionnaire coming up on the screen now and we'd ask if you would take a couple of minutes just to fill that in on feedback and then we'll move into the Q&A. Okay, so, we've had a number of questions coming in in terms of as we've been listening to the presentation. The first one, actually, that has come in is, 'How do I start to reduce inventory?'

Jo: I think I'll have a go at this one, Clive. I think, for me, one of the things that really jumped out when I started looking at inventory was that people were very much focussed on the financial data. You had a financial analyst who was telling you just how much of your money was tied up in capital, and sometimes you don't know is that a good figure, is that a bad figure? But one of the things I would really suggest, one of the things that we would really get involved in is really just having a look. Going out and having a look around your business. Where is the inventory? And it's not just in the store. So, what could your production line, you know, having a look for where there's boxes, kind of, shoved in round corners or are there carriers and containers, some round the back of your store that, you know, people don't go there because, 'That's the old stock, we don't want to think about that.' But asking yourself some questions like, 'Well, how long has it been there and why is it there?' I mean, you'll have heard me say in the webinar quite a few times around systems and controls and I worked with auditors for many years and many times you see that processes and cycle counting are for auditors. But really getting to see are your processes well documented around your inventory control and do people understand them, because if they don't, you end up with having these, kind of, excess inventories. Or, whenever you go to try and look for your inventory, it's, kind of, not there. And one point I really would stress is around securing your store, who's allowed in? Can someone just walk in up the production line and go, 'Actually, I broke this bit and I, kind of, need this one.' And there's some kind of rigour and discipline in terms of downplaying the stock in that bit of going so that you know if you're looking for ten and you go to the store, it's there.

But really begin to see what's in front of you. What kind of buckets are you seeing, what's in raw material, what's in your work in progress. (inaudible 23.01) sitting around or finished goods, because all of that has real value tied up in it and one thing that you begin to get into as you look at these kind of questions is it begins to, kind of, point you to some of your problem areas. What happens if you see inventory queueing

at the next process step? You can think, 'Well, is the line balanced? Is that resource a bottleneck? So, you mightn't think of that as controlling your inventory management. But, in a sense, these are things you can begin to do something about. You know, if you look at your supply chain are there issues there, is that's what's causing and leading to your inventory? Are there opportunities for alternative supply? In some ways there's no quick fix for this and, if there was, I think the team would all be millionaires. There is something about looking and coming up with a structured approach, beginning to see what are the kind of the types of parts you have, are they critical parts? Are they long lead time? Are they costly? Are they accessible? And at that bit of going what are the first ones you can look at? And then you can begin to, kind of, bring those down. One message I would have in this most definitely is that inventory isn't just the responsibility of finance. So, how do you make it everybody's responsibility? So, get out there and have a look. That would be my first, kind of, pointer for you.

Moderator: Okay, thank you, and just another question following on from that is what's the best way to actually reduce inventory?

Steven: I think Joanne's covered quite a lot of that through answering the previous question, but if you had a good process, we have a good inventory management process, one of the things that that should be doing for you is identifying what level your inventory should be at versus what level it's actually at. And within that process it should help you identify why you have high levels of inventory. If you can understand why the inventory's there, why the process or why the system is causing that inventory to be there then you can start doing something about it. So, it could be that you're (inaudible 25.21) lead times are overstated, which is increasing your inflows of inventory and means you're holding more stock than you need to. It could be that you're forecasting's poor and you're having to build up inventory to protect deliveries to your suppliers.

In answer to the question, the best way to reduce inventory is to understand those things and then start doing something about them. You know, if you do them, if you see the inventory and need to do something about it, fair enough, but the biggest gains are when you're getting to the root cause of the problem and you're putting long term fixes, long term measures in place. Well, address those high levels of inventory, start bringing it down. What I would probably say as well is that's a continuous process, you can't just do it once, you need to just continually work at it and make sure that you're driving your inventory down. There's lots of information out there, there's lots of stuff you can do, you know, for example, you could have vendored managed stock, you know, where the vendors actually not charge you for the stock until you consume it. You can have consignment stock where you're own customer actually owns the inventory that you're holding. There's lots of things that you can do, but I think the most important thing is having a good system that gives you the information that lets you react to the inventory that's in front of you.

Moderator: Okay, thank you, Steven, for that. There's, just to remind everybody, there's the opportunity in the chat function for anybody that hasn't-, wants to ask a question, just feel free to put it in there. We've a few questions coming through, actually. In today's climate there's a lot of

unpredictability in the market place with the global supply chain issues, the increase in cost, the challenges around shipping, etc. that's around that. Companies are potentially having to hold more stock, either to avoid higher prices or to potentially stock outs. And the couple of related questions (signal drops 27.31) I can do, you know, to help manage that unpredictability to help make myself be more resilient against those, sort of, market forces.

Jo: A nice easy one then? Well, in all my years in supply chain, I think one of the things that really summed that up was this bit of risk. You know, you place a purchase order and you're basically hoping that the supplier that you've placed it on will actually deliver what it is that you're looking for. So, there's always been that, kind of, risk element when it comes to supply chain and I think what businesses are facing in the last 2 years, I mean, I have to say I'm sick of hearing the word, 'Unprecedented,' but it is unprecedented. Usually whenever we had issues of a difficult supplier, where you could, you tried to build up a dual source. So, you had that ability to, kind of, swap in and out. But that's not quit, certainly not a quick fix. When it comes to the increased pricing, and I've heard that so many times from some of the clients I'm working with and in that one you've, kind of, got three options. You can do nothing, and every time that you put a purchase order out, you know, the price is whatever the supplier dictates. You can try to buy ahead in some ways and in many ways that has caused some of the issues that we're facing in that suppliers or customers have gone out and, kind of, snagged their bit of inventory, which means what's left for everybody else ends up having that higher price. Or you can, kind of, do a little bit of a percentage hedge approach where you maybe buy out a little bit in the future so that you can mitigate that in some way.

I think circumstances really depend on what you do. Most definitely you end up with extra stock in the short term to begin to fill that gap of unpredictability of going, 'I don't know if this is going to arrive in whenever it says it's going to.' But in some cases I think we have to get a little bit more comfortable with passing on some of that cost to the customer base as well, you know, and not absorb it all. Because you have to, at the end of the day, become a lucrative business, going forward. But whatever you do in this shorter term, it shouldn't be applied right across the board to every raw material part that you have. You will have the risky items. Difficulty is that risky items this week may have changed to be something else. But it isn't an across the board policy. So, something, one of the things that we would use would be the protech (ph 30.29) model and that, kind of, allows you to put your supply base into quadrants and really look at, okay, for the risky ones, what am I having to do. Am I having to pay more? Am I having to extend my lead times on that? Am I having to give a bigger batch size to insure that I get a piece of the pie? And I suppose the heartening thing in some cases, and you may not feel it at the moment, is that there is a little bit of stability beginning to come back in and if we have gone head and bought loads of stock at that higher item you could end up when things settle with loads of overpriced stock.

Plus, you've got the cost of holding inventory, so you're trying in some ways to find that middle ground between it. I would most definitely say that this period of time will get better, but in that bit, in when you're right in the mud of it all, the bit of looking and going, 'Okay, which of my suppliers are in that situation that I really need to micromanage them and I really need to put those extra kind of process in.

But, remember, they need to be taken out again when things stabilise, not just have-, I mean, I was trying to think when was the last time you did a review of your lead times? Or did comparative pricing to, kind of, what else is out there? Or do you have contracts in place to guarantee demand to suppliers, so that you can get that chunk of the pie but not necessarily at the increased cost. I mean, I'd love to sit here and go, 'Yes, we've got all, kind of, the magic answers on this one.' I think it is the bit of really trying to focus that down to which of the ones are causing you the most headache and what can we do about those first of all, because some of the other stuff is flowing in, I would like to think, fairly easily.

The other thing, as well, is bringing some of your supply back to, I suppose, the Northern Ireland base where you can, kind of, control it a little bit more. But, again, those things, kind of, take time. Guys, if there's anybody, if you want to jump in, anything else that you would say?

Moderator: I guess, just adding to what you're saying Jo there in terms of it's about that forensic analysis of, effectively, of your supply chain and understanding the risks that are associated around it and trying to mitigate against that because I see a number of areas, you know, it's an area that's been a big challenge for a lot of companies. I see the questions coming in here around that, you know, how do you mitigate? I think it ties back to the focus. We all too often find that businesses don't put enough emphasis on the supply chain and on looking at things like inventory or forecasting or the risk side that you alluded to earlier as well. I think that's a really key part as you look to come forward is focus on saying where the opportunities are, where are the key risks, how do I mitigate against those? And that's things, again, we can help people with. That actually comes onto another question in and around forecasting and the question's very much around, you know, forecasting is very difficult in my business, where do I start? How can I help put things and measures in place, so, Steven, do you want to take that on?

Steven: That's an easy one. If we're under the SCRDF and ask for the (talking over each other 34.07). Forecasting is tricky, okay, and it's one of those things, it's an imprecise science, you're never going to get it perfect, okay, so that's why we're, kind of, advocating for forecasting within a range, so, like, a higher and lower level. If you ask me what I'm going to do next week, yes, I can tell you, you ask me what I'm going to be doing in a year's time, I can't tell you. I've a fair idea, but it'll certainly be less certain than what I'm going to be doing next week. And it's the same in business, the longer you look out the less certain the future is. But there are things that can help you predict that future, you know, if you look at what's happened at the past, if you look at trends, you know, just all the stuff was said in the slides, that build up a picture of what the future will look like.

As well, it's probably important to remember as well, companies will have the strategic plan and will have an SNOP, you know, and to an extent they could control the demand a little bit, in terms of the demand isn't there they can up their marketing level or marketing activities to try and build that demand. Or they can trend (inaudible 35.20) down the demand as well by increasing price or being selective in the customers that they work with, you know. So, there's things that companies can do, but it's important to

do forecasting, because you need to at least have an idea of where you're going or else you're just sort of playing forward (ph 35.40) in the dark. Hopefully that covers it, but, again, I would emphasize, you know, come and talk to us and we'll help you work through it. Because it's difficult with all these things, it's difficult because all companies will be different, all companies will have their own set of circumstances, you know. So, we will help with that, the answers to the solution that works best for your company.

Moderator: Yes, I agree with that, I think it actually builds on on another question or part of another question that has been in as well where a company has been experiencing challenges with, I guess, on the back of EU exit and the changes that's been going on there, if the challenges in suppliers coming from GB or from elsewhere, you know, the additional paperwork and the challenges of that, so it's causing problems with companies having to maybe think about resourcing around that. I know our next webinar, actually, is on supplier selection and sourcing activities in a few week's time. But in terms of the particular question, was there any advice for the company in terms of, you know, how they can they, in terms of forecasting base, how can they, you know, things they can do to try to foresee the challenges in their supply chain and mitigate against them?

Steven: Yes, it's all the same stuff, Clive, you know, they need to just stay at that to the current reality, you know. Look at what's happened in the past. You know, I think it's particularly useful to talk to your customers and get a feel from them on where they see the demand going, you know, and where they see the-, because we all have customers, that's what business is about, selling stuff to customers. So, they're the prime source of information for this stuff, you know. There's always the other sources, you know, like, sort of, marketing forecasters, stuff like that, but I would start with the customer, if it was me.

Moderator: Okay, thank you. The next one is on stock management, and the question is, 'Are there any stock control or management templates available for small businesses to use?' I guess, obviously, we have some templates we would be using it with companies, but, Jo, do you want to say anything or not?

Jo: Yes, I think, I mean, you saw on the webinar there was probably a list of, kind of, different KPIs that we would suggest when it comes to looking at inventory and the honest answer is that it's best to, kind of, get in there alongside you and see which works for you and which one doesn't. If you're a small company, 'If we provided you with a list of, you know, here's 35 key inventory metrics that would be really useful to have a look at,' you would end up being, kind of, overwhelmed with that. And I suppose, one of the things that, when we're, kind of, selling our services in a sense, is that ability to work alongside you, get a feeling of what you do and we try to look at your business through your set of lenses and then begin to bring that kind of applicability to it. But, when it comes to things like just in time models or min/max or economic order quantities, or ABC analysis, there are lots of models that are out there that we can, kind of, bring to you and go, 'There's this, how does that sound, how does that sit with what you're currently doing?' So, I would say please get in touch and we can then hopefully bring you some of the best practice that's out there.

Moderator: Yes. I think that's a really valid point because each company is, sort of, different although, as I said, a logic that you follow and, you know, when we're working with the businesses, we would bring the right bespoke or tailored documents to actually help them work through that process. The next question is on should you build them into your bottlenecks?

Steven: The typical answer to that is probably if you're going to have it anywhere have it front of your bottleneck. But, no, you shouldn't be building it to get bottlenecks. You know, the idea is that if it's a bottleneck, obviously, you want to sweat that resource, you want to have that resource operating to full capacity at all times. So, upstream of the bottleneck you should basically operate a pool system where the processes of stream are feeding that bottleneck and keeping that supplied at all time. In the, sort of, temptation there is to build up some inventory and keep that safe, you know, but that's just, kind of, defeating the purpose. So, the technical answer is to have a pool system that's feeding the bottleneck. The bottleneck, typically within a production process sets the pace of the flow through the line or through the operation or through the operation, whatever it is. So, it's important to keep that fed but keep a lot of inventory in front of it, that's not a good thing, it just drives your cost up. The other, sort of, thing that jumps to mind really is why's it a bottleneck and can you balance the line better and sort of eliminate that as a bottleneck? And sometimes you can do it, sometimes you can't do it. It's something that if I was faced with that problem I would certainly have that discussion with the company, you know, 'Well, why is this a bottleneck and what can you do about it?' Rather than just try to mitigate that by having a lot of inventory sitting in front of it.

Moderator: Yes, and I think it's about right size and what that inventory level should be, but I think you've talked, you know, Steven, about the, sort of, bottlenecks within an organisation, but equally there could be a bottleneck at anywhere within the supply chain and I think, certainly, I have seen times with companies is that they could have a very high risk supplier situation where they've only got single source and that can become a bottleneck in its own right as well. If there's any issues around that. So, thinking across the end to end supply chain and where are the potential bottlenecks and how do you mitigate against those are another important factor for companies to consider.

Steven: (inaudible 42.21) you know, whoever's asked that question, give us shout and we'll have a-, we'll have a chat about it, you know.

Moderator: Okay. No, thank you. Another question was talking about outsourcing, you know, should you, you know, should you be outsourcing fulfilment (ph 42.38) to, you know, an e-commerce company, is that a better option than doing it in-house, you know, so we can focus on other activities rather than actually, you know, doing the picking and packing, etc. So, it's a very-, it's a very specific question in, in my-, in my view. I guess you'd be wanting to discuss further with the company around it to see what is the right strategy for them. I don't know if Jo or Steven, you want to add anything to that?

Steven: This is-, this is a question that goes back and forward, you know, companies-, it's one of things that, that, you know, that (inaudible 43.10) changes on it quite often, a lot of it depends on the size of the company and the capabilities. You know, so, should we outsource the stuff? Well, well, the immediate thing about outsourcing is you're hoping that a company can do that task more efficiently than you can but you need to recognise that they're going to take a margin on that, so, what the-, the stuff that they're doing, they're going to take a margin on it. If you can do it cheaper yourself then it's preferable to do it cheaper yourself, you know. Particularly if it's, you know, if it's consuming or if it's, it's eluding (ph 43.44) the overhead that you're having to spend, you know, so, you know, you have a HR department and you, you, you have a security group, does it make any sense, you know, you don't need-, you're not going to get a reduction in your HR department by offloading your security to a third party, you know. So, there's lots of-, there's lots of nuances about that. It's a-, it is a hard calculation to do. And if you've got a small management team and you want to focus on the knitting (ph 44.10) then, you know, maybe it's the right thing to do. Just depends on the size of the company and where they are. But there's, there's, there's arguments for and against this, just put it like that.

Moderator: Yes. And I think-, I think it, it needs to have, sort of, due diligence, and, and the size and the scale of the, the organisation also is a very key factor in, in, in that. And the consideration of the effort and the time to manage that third party as well, you know, has to be taken into account and, and how you deal with that side. So, but, again, these are other areas where we can help companies to walk through the scenarios and, and think about things. Moving on then, in terms of the, the questions, I guess, can you-, can you give me some examples of where, you know, the supply chain team or, you know, Invest NI, you know, have helped companies to improve their, their imagery or their forecasting processes?

Jo: Well, well I can help you (ph 45.10) with this one because Steven has waxed lyrical-ed all things forecasting. So, I think in this one thing I would have to say is obviously when you're working with, with ourselves, your name is confidential as a company. So, so, we can't-, I can't actually say, 'Oh it's this company that we're working with,' but probably one of the biggest companies that I have been working with, we have managed to achieve a six-figure saving with them in their inventory reduction. And, and a lot of that has been through this, kind of, coaching, mentoring approach, working with the business, go-seeing with them, asking questions. In this particular example we did a review of their, kind of, end-to-end inventory process and looked for, you know, big areas of, of, kind of, spend and big areas of, of inventory cost and developed, kind of, plans that went with that. And I suppose the process was, kind of, actually quite straight forward, you know, when you're working with a company, they're giving up of their resource, so, a team was established. We did quite a detailed, kind of, data analysis, so, it was looking to some of those things that Steven talked about about route causes. And then you're really getting into, kind of, analysis and the areas that that point in time, that this company looked at, were their high level parts, their slow moving or non-moving stock, you know, that they have and really beginning to see what they could begin to do about that. How could they burn that down.

We helped introduce, kind of, key meetings for them, so that they had a non-moving stock review and a

general, kind of, stock reduction (ph 46.45) meeting. And, I suppose, the challenge was coming up with a process that, that said, 'Okay, if this stock is no longer needed, or it had slow demand, what can you begin to do? Can you reschedule out unnecessary orders? Can you cancel them? Can you challenge some of the order quantities? Can you sell back?' Now that, I know that one is, is-, can be a bit difficult, especially in the manufacturing side, whenever there's, kind of, quality traceability. But even getting to the point of explainable variants is-, and, and beginning to escalate some of these-, some of these issues to other departments. I suppose, in this one, I suppose, I will summarise up what we, kind of, looked at was they looked at their non-moving and their slow-moving stock and they-, and we got that process of agreeing disposition strategy. So, what did you do? How did you get rid of it? How did you-, how did you reduce your, your inventory based on that? And then some of, I suppose, the slow moving stock. So, we all know that you buy stuff in, maybe the build rate changes and all of a sudden you're left with more inventory than it looks like you need to consume. So, in that, there was-, there was-, they looked at burn down plans, or looked at rescheduling of orders.

And, and that all began to release money into the system. Ultimately for this company, the, you know, they got the saving which was great but the, the process was that we were coming in behind the scenes was, 'How do we prevent some of this excess obsolete stock happening again?' And that-, and, and then-, and where we are at the moment is beginning to look at their, their buying policies and seeing, you know, are there different ways to look at the value managed inventory, the, the build to order, some of the consignment stock ideas or just in time. How do you begin to ensure you're spending your money in the right place? And the other was really looking at the engineering change process. So, you know, if you're in a business that's got constant innovation, which is-, which is great, you know, actually building that step in that goes, 'If I'm about to change it from this revision to that, how much stock have I tied up in that lower division (ph 48.57)? And can I-, can I decide to do my change a little bit further on to actually utilise that?' Because you can end up having amazing changes in there and what you're left with is this obsolete stock. So, for this company, it was really looking at tidying up all of what had happened before and beginning to put in good practice, so that-, so that the bath tub didn't fill up again with all this-, all this stock that was of no use going forward. But really, you know, a lot of the work is done by the company and we are sitting alongside, again, either bringing tools or asking, asking the odd question, just giving that outsider's perspective as we're beginning to look into it. And, you know, six figure sum, but there's much, much more in there still to go. That's just one example. Always good to hit you with a big one.

Moderator: Okay. Thank you, Jo. And just the, the last question that we've got is how do I access Invest NI support or help for a supply chain? And, I guess, I'll take that. So, there's a number of ways that, that anybody who is interested in interested the supply chain team support, you'll see the details on the web page at the minute on the presentation. You can either, I guess, there's an online application where you can put in an expression of interest through Invest NI if you go and look at that and look for supply chain, you will be able to see the link to that. You can speak if-, to your Invest NI client executive if you're an Invest NI customer. Alternatively you can email the address there, the supply chain query email address that's on the-, on the link-, on the-, on the web page. So, we'll-, conscious of time, so, to, to wrap up, I guess, we'll be-, we'll be sharing details, we'll be posting this webinar online in the next couple of weeks as well on the Invest NI website, so, for

anybody that wants to go back and look at any of the material, they'll be able to see details there. And we'll, we'll send out further details around that. So, I'd like to thank Jo and Steven for their presentation today and thank you to everyone who's joined today's webinar and hopefully you found it useful. So, we'll now conclude the webinar. Thank you.