Managerial Problem Solving in Logistics How to Bridge Practice and Methodology

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Abstract: This article is aimed to give a methodology for dealing with problems in logistics systems at managerial level, and to present an approach capable of addressing logistics trade-offs.

Keywords: logistics, consulting, methodology, optimization, problem solving

1. Introduction

Being a professional in the field as well as a teacher researcher, I must constantly face the fact that practice and theory greatly differ from each other. It is really hard to bridge the gap between these two realms. There are certain well-defined logistics problems, or rather symptoms to be more exact, that I have often run into during my work as a consultant. In these cases, one could not help thinking of the typical situation when we go to see a doctor, and the GP prescribes Aspirin or the same wonder remedy to every patient, treating every case and everyone the same way. Any doctor doing this is a bad one. These kinds of symptoms, similarly to the abovementioned logistics cases, often turn out to be really just symptoms and the real causes lie somewhere else because in supply networks and in logistics everything is connected to everything else.

From a knowledge management point of view, a wide variety of organizational practices have been proposed to support the creation, storage and transfer of knowledge, yet it is often unclear how these practices and methodologies relate to one another in their contribution to supply chain performance.

In the following I would like to present a 6+1 step method to manage situations where seemingly there are some underlying logistics problems.

2. The method

To give a clear view of the proposed method, I list the 6+1 steps before their actual discussion. These are:

1. Helicopter view!
2. Focusing!
3. Methods for the recipes!
4. Technology planning!
5. Focusing on business opportunities (cost-benefit)!
6. Measurement!

+ 1 Kaizen (i.e. continuous development)

2.1. Helicopter view

Take the helicopter view. The first step is not to focus. One way of overcoming problems, in `management-speak', is to `take the helicopter view' [1]. This is a metaphor for rising above the detail of the situation so that you can see it as a whole, and in its wider context, the whole supply chain. It means taking the overview; seeing the essentials rather than the details.

Let's see a concrete example. Several companies reacted to the present economic crisis with stock reductions. According to recent surveys, this action was the number one crisis management goal in the supply chain in fact [2]. A classic way to reduce stock levels is to demand more frequent deliveries of smaller quantities from our suppliers. Unfortunately though, it brings about a painful symptom causing our goods transport costs to grow significantly. No wonder, for the supplier who has made deliveries once a week, now has to make deliveries twice a week but in smaller quantities. The unit costs and also total costs of the supply system will increase, the system gets worse so to speak. It means that if we focus on the supply system only, without looking at the entire logistics process, we will most probably maltreat the problem. For the root of the problem was in the stock management (too).

2.2. Focusing

If we have managed to clearly identify the problem with its causes and results then we must focus our resources. This means that we must precisely define, determining our system limits too, what we want to solve and focus our resources on the actual task. Focusing attention on the problem while transforming knowledge into business values, is not a new way to understand the interconnections within a system and the links between knowledge management practices and organizational goals [3]. It may require nothing else but to conduct an ABC analysis (Pareto- analysis). This tool can tell us which are the particular SKU's that are limited in quantities but make up the bulk of our turnover, or which haulers are the most common targets of customer complaints etc. To

achieve serious results, we had better not try to redeem the whole world but concentrate on fixing a relatively smaller, well-defined part of the supply chain.

2.3. Methods for the recipes

We must apply methods for our recipes. Using methods means that we approach the problem systematically. It is not enough to get down to problem solving, we must follow a clearly defined and worked-out method, calculation, formula, process, scheme or system. We should involve the professionals because without the appropriate methods we cannot cook good food. It is like merely having an excellent goulash soup recipe is not enough to reproduce or even get close to grandma's delicious meals. In the field of supply chain management, we can choose from a large number of deterministic analytic models, stochastic models, simulation models and models covering economic aspects too [4].. In many cases, though, we are afraid of using them because our professional knowledge or expertise is not enough.

2.4. Technology planning

Technology can be planned. Do not forget, logistics is a technology-intensive activity. Just think of transport infrastructures, or the tools of materials handling. But besides the actual trucks, fork lift trucks, packaging lines or scales, we can also think of the underlying know-how, IT systems and processes since they also qualify as technologies. Technology is the amalgamation of physical aspects (machinery and tools) and techniques (processes, know-how) [5]. It largely defines how well a certain task can be executed. A basic principle of business is to do the right thing in the right way [6]. Because just doing the right thing (to be effective) is not enough, we must also do it in the right way (to be efficient). In other words, it greatly matters what we can achieve by spending say 100 cost units. For this reason, we must plan our technology, no matter if we talk about the process description of receiving goods (standard operating procedure) or defining the technical specifications of a materials handling machine with continuous operation.

2.5. Focusing on business opportunities (cost-benefit)

We must focus on the business opportunities. Today's management practice tends to accept highly publicized, hype solutions [7]. It is especially true for fields of pioneering technology, such as IT, but there are many overused and fashionable management techniques too, including outsorcing. One reason for this trend is because most of the companies try to follow the main stream. However, it is a dangerous practice easily resulting in wrong decisions. Managements must not forget about the useful tool of cost-benefit analysis. Besides being cost-focused, a company should study not only the introduction costs of a technique, but its costs of operation or TCO (Total Cost of Ownership). It is much tougher to quantify the actual results or what the solution means in terms of benefits and savings. If these latter aspects cannot be clearly determined, we should ask the suppliers/offerers to provide us with such analyses and/or involve the company's finance department. We must be able to express the monetary worth of a solution.

2.6. Measurement

"If one does not know to which port one is sailing, no wind is favorable". In short, we must measure the things. That is we must define the "instruments" and indicators that help managers to decide if an organization or project is going to the right direction at the right speed. Targets must be quantified. In terms of performance measurement, we must touch on two useful management approaches developed in the past decade. The first is the so-called Balanced Scorecard (BSC) method by Norton-Kaplan from 1992, which explores the various performance aspects in a detailed and comprehensive way. In their study, Kaplan and Norton also underlined the fact that we cannot assess a company's performance based on purely financial indicators [8]. Aggregate financial indicators are hard to understand by people in operative positions and they do not help much in determining how to change the operation/culture of an organization in order to improve its performance. The BSC approach aims to motivate companies to measure such factors as quality or customer satisfaction. The other widely used technique is monitoring KPI's (Key Performance Indicators). These are quantifiable measurements of the improvement in performing activities that are critical to the success of the business [9]. Typically they are process-oriented, differing from process to process, activity to activity and company to company. It follows that only a well-constructed performance measurement system can give us appropriate and effective performance parameters.

2.7. Kaizen (i.e. continuous development)

This is a Japanese word for continuous improvement. It means that from time to time we should return to things already dealt with to check them, to see if they are still working well and to revise them if necessary. Or, paraphrasing the Hungarian proverb, "seek a knot even on the rush", try to find fault with everything.

By adhering to the above steps, we can minimize the mistakes and help to improve our company's logistics processes and resolve painful real life problems due to following a systematic and thorough procedure.

Of necessity, there are some elements in the described procedure where we might need help. We can get such help internally, from within our company, from a colleague with great expertise and extensive knowledge of the given field. There are other cases though, when we should ask for external aid, turning to consultants and planners. In either case, the logistics officer must be the "captain", the conductor who composes and leads the execution of the required tasks. He/she must be the one who, by calling for internal/external help and managing the cooperating colleagues, will finally "reach the port".

3. Simple trade-off

In case of a lot of problems, we must deal with one specific aspect in particular concerning the methods under step 3 and 4 above. This issue is called optimizing with capacity constraints. A specific and profound example of it is the ski lift, which can be

considered a special logistics system. Anyone who goes skiing is possibly frustrated at standing in queues, waiting for a ride on the ski lift. For this article we will call this situation the "ski lift problem". This often long waiting time greatly mar the quality of skiing and the quality of the service. How can we improve this situation?

A solution to the above problem will show that it is possible to improve the quality of service without increasing the actual capacity of the system. It sounds good but what does it mean exactly? And how can we achieve this? Let us take the following example: we got a ski lift with 2-person chairs that take people to the top of the hill in 20 minutes. What if we put 4-person chairs on the cable, doubling the number of seats, but in the same time we reduce the speed of the lift to half so that the engine will work at the same capacity? The result is that twice as many people are being transported at any given time but because of the slower lift speed the ride to the top will take twice as long, that is 40 minutes.

Why is it any better for the skiers?

Let us suppose that, for this example, a full round takes one hour and it includes 15 minutes' skiing downhill, 25 minutes' waiting for the lift and 20 minutes' ride uphill on the chairlift. With our modified ski lift we reduce the waiting time to one fifth because the "people waiting" are put on the lift now so, from now on, they will spend most of their former time of queuing sitting in the chairs. It is much more interesting for them to watch the scenery with snow-covered tree-tops than to trample on each other's skies in the line. So a downhill ride will still take us 15 minutes but we only have to wait 5 minutes for the lift that takes us to the hilltop in 40 minutes. And we achieved this without increasing the performance or capacity of the lift, we still transport the same number of people within the same time frame! What happened is that part of the system's waiting time (we can call it "lead time" too) were moved from one subsystem to another subsystem. But, since it results in a much more interesting and enjoyable experience for the skiers, the quality of service is increased [10].

The above simple problem shows us that we can drastically change, without significant costs, a system's benefits and performance (i.e. its operating parameters) by shifting and reshuffling the emphasis on its subsystems.

Our ski lift is a logistics system, or a materials handling machine with continuous operation how logistics would call it, where skiers are the "material".

As an extension of the ski lift problem, we will look at some analogies, some similar trade-off situations and solution possibilities in the field of logistics.

Production processes and (semi-finished) goods waiting in the warehouse might be similar cases. A good example is when bananas spend their waiting period usefully ripening in the depot. The process is planned, banana harvest is scheduled early because the ripening of the fruits while transporting and warehousing is calculated into the whole process. A similar case is the post train when the mail is being sorted during the otherwise non-productive transportation process. (Unfortunately, not in Hungary any more, since a few years ago the Hungarian Postal Service switched to road transport entirely.) Or in car manufacturing some pre-assembly processes are carried out in the warehouse during the waiting time. For instance parts of the engine exhaust manifolds are assembled in this way in many factories.

In short, we can often find lead-time related improvement possibilities that can increase system efficiency through minor adjustments, without major efforts or costs. To achieve this, we should follow the following principles:

#1 Be bold, make changes to subsystems that no one has dared to touch before. Do not forget, we are looking for the optimal operation of the entire system and not of the subsystems.

#2 The keyword is "look for trade-off". We should study that which process elements can be expanded or moved "at the costs of" other process elements.

#3 Destroy to build! Take the process to pieces, disassemble it to its components, down to the smallest lego blocks.

#4 Play lego. Try to play freely (see principle #1). Put the pieces together again in a different new way. This is the most important thing! We really are capable of building operational systems from the existing lego blocks. And this is the core of the ski lift example too. We must build a better thing from the existing parts, without new building blocks. That is what playing lego is about.

#5 Evaluate: Run a PDCA (Plan-Do-Check-Act) cycle, that is check the results, make the feedback and, if necessary, change or fine-tune things.

But be careful, there many are bad examples and partial solutions too. One such case is when the truck spend the same time in front of the warehouse but to reduce its waiting time they "drag out the" loading process, pretending that they are working on the case. It means that they are loading several trucks in parallel but the loading of each truck takes a bit longer. It is a bad solution because we must split our attention and resources, increasing the chance of making mistakes and making the system more prone to disturbance.

4. Management limits

Although the method described above can be useful in itself, often it does not lead to a concrete practical step or action for the company. It is because bridging the gap between the goals and the existing situation are hindered by the following problems:

- Distance: managing operative problems and daily market issues erodes the importance of thinking about of the future;
- It is hard to quantify the financial benefits of a solution due to the many boundary conditions and estimations and thus the monetary yield is often underestimated.
- The constantly changing management have no interest in long-term planning through several cycles, they usually focus on the short-term financial targets only [11]. (Unfortunately, this is true for policy makers too).
- Past successes, achieved market positions and strong products often make the companies blind to the change in framework conditions, making it hard for them to revise a formerly successful strategy. (A good example of this is the

agonizing of the once world-famous instant photo camera brand Polaroid due to the appearance of digital photography.) [12].

– The goals, the needs for managing the future usually come up only after the trouble, which, on the other hand, cannot be managed by long-term tools.

Only those companies can remain standing that are flexible enough to adjust to the changing conditions. This requires that they must know what to expect and what to watch carefully so that they will be able to react on the occurring changes as fast as possible. If we can answer to the changes within a certain time, it is called reaction. If we can change together with the environment, it is called preaction. But it is proaction, when we can influence our environment being one step ahead of the changes, that can give our company a real competitive advantage over the others. The method described in this article can help to achieve this.

References

[1] Silk, D. J.: *Taking the helicopter view (problem solving),* Engineering Management Journal, Vol.6. Issue 2 (1996) p. 7
[2] Cap Gemini,: *Crisis dominates the supply chain agenda in 2009*, Cap Gemini (2009)
[3] Gray, P., H.: *A problem-solving perspective on knowledge management practices*, Decision Support Systems, Elsevier, Vol.31 Issue 1, (2001) pp 87-102
[4] Beamon, B.M.: *Supply Chain Design and Analysis: Models and methods*, International Journal of Production Economics, Vol.55.No.3 (1998) pp. 281-294
[5] Pataki, B.: *A technológia menedzselése*, Typotex (2005)
[6] Chikan, A., Demeter, K.: *Az értékteremtő folyamatok menedzsmentje*, Aula (2001)
[7] Abrahamson, E., Fairchild, G.: *Management fashion: lifecycles, triggers, and collective learning processes*, Administrative Science Quarterly, Vol. 44, 1999.
[8] Kaplan, R., Norton, D. P.: *The balanced scorecard - measures that drive performance*, Harvard Business Reviev (1992)
[9] REH, F.,J.: *What are the key performance indicators?*, http://management.about.com/cs/generalmanagement/a/keyperfindic.htm, (2009)
[10] Pullman, Thomposn: *Strategies for integrating capacity with demand in service networks*, Journal of Service Research, February (2003) pp. 169
[11] Gummesson, E. (1994): *Service Management: An Evaluation and the Future*, International Journal of Service Industry Management, Vol.5, Issue 1 (1994) pp. 77 – 96
[12] EUBank, 2008: *Fading Polaroid's; the passing of instant photography* http://davideubank.wordpress.com/2008/03/17/fading-polaroid%E2%80%99s-the-passing-of-instant-photography/ (2009)