Resolving the Friendship Dilemma between Analytics and Logistics

Abstract
Building “Analytical Workers” is critical for the logistics function to stay ahead of the pack and provide the backbone for competitive advantage. This paper puts together an approach on how Logistics leaders can build a successful analytics plan to create an analytical organization which creates the platform to build analytical workers.

Published on: January 2014

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About the Hexaware

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Executive Summary

Logistics companies and functions understand that analytics can play a major role in their business and help them to reap business benefits. This belief has not translated into the expected level of proliferation of analytics into the logistics functions, which is a contradiction. This paper attempts to analyze the possible causes and lays out a plan on how the friendship between Analytics and Logistics functions can be fortified.

All Logistics companies and functions undertake measurements to analyze the performance of their operations. These measurements typically showcase what went right and what did not and in some cases it gives pointers to the question ‘WHY’. Majority of these measurements are done using internal available data and are undertaken through a mix of analytics tools and excel worksheets and tend to avoid investing into a holistic data and analytics solution which would not just be aligned with the strategy but also address continuous improvement at the tactical level.

Leaders while knowing the value that analytics can bring to their business tend to calculate returns in advance to justify their investment and that too at individual departments or operation level and not as an organization as a whole. No perfect answers are found and hence the ‘adhoc’ management towards analytics continues. Leaders need to believe that data is valuable and can be mined to get right results – the key is not in calculating returns in advance but to create a well-thought plan and its deployment. The key to get maximum value from analytics are as follows:

- Change Mind set from tactical to strategic for Analytics deployment
- Craft out a mid and long term plan. Don’t put in too much effort to calculate “instant” returns.
- Make a plan for assembling and integrating internal and external data. Eliminate silos created in the organization and instead create a central pool of information
- Identify models that will create additional business value
- Decide on a best fit analytics tool which meets your requirements and has longer term potential.
- Decide to in-source or outsource or mixed-source . If outsource or mixed-source options is selected, chose a partner who understands your business and not just analytics.
- Create a road map for assembling a talent pool of the right size and mix
- Create a roadmap analytics for deployment in the organization
- Focus on building worker-friendly analytics

Once all this is in place, it becomes lot more easier to appreciate the power of analytics. You would face challenges in terms of investment, speed, cost, acceptance and frontline engagement which the leadership can address better as they have a plan in place.

People, Process and Technology were seen as the three important arms to provide quality logistics services. As we evolve this is changing to People Process and Data with Technology enabling all these three functions.
1. Introduction
Logistics organizations know that they are swimming in the data but exploiting only a fraction of available information. Every logistician knows there is gold waiting to be excavated. They know the value but are not sure if the “modes” adopted to “mine the data” will guarantee them the amount and value they expect from the excavation on an ongoing basis.

Logistics Operations and Analytics have all the textbook traits to be the best friends. This friendship has however not welded and reached the level compared to how other industries have bonded with Analytics. The payoff from data management and implementing advanced-analytics needs no elucidation. The concept of data-driven businesses has been discussed over years. Companies which have deployed big-data and advanced analytics into their operations have found improvements in productivity, anticipating resource needs and achieved cost reductions that are better than those of the competition. It not only gives you the transparency into how your operations actually work but also helps you in anticipating resource requirements through creation of “What if” scenarios which enables you to take “data-driven” business decisions.

2. Challenge – Is it the ‘Mindset’?
While everyone knows that big-data and implementing advanced-analytics will yield results why do logistics companies find it difficult to go from “here to there”. It is a complex web covering a number of issues namely:

a. Investment in money and more importantly in time is substantial. The operations feel that they “know it all” and a system can’t incorporate all the dynamics and complexities of their operations.

b. “Are we ready” syndrome - They are waiting for the business operations and systems to stabilize. In the dynamic global economy, the desired state of readiness is likely to never arrive.

c. Operations want to know returns on investment upfront. They are looking for a “magical” solution which can be plugged and used instantly.

d. Technology vendors promise the “plug-in magic” solution with ‘dependent’ commitments of the returns without actually being able to convince the operations on how they would reach from “here to there”.

e. Business fear rising costs and technology vendors are unable to assuage their fears as their business models pull them in different directions. The ongoing value generation through the analytical model is expected to be to much higher than ongoing investment which many times is viewed as “theoretical modelling”.

f. Technology teams are too focused on the technical issues like tools to be deployed, data architectures, effort involved and there is an “information-gap of depth” from the business.

g. Technology Vendors who invests into building industry based analytics solutions tend to view logistics industry through the prism of Financial, Mining industries etc. which at times makes their costs unsustainable. Logistics companies in turn look for “cheaper” options of technology vendors who have niche technology skills but are not able to relate to the Logistics industry and are thus not able to deliver the “magic” which impacts the return on investment. In order to harness the power of analytics, IT employees will need to become business managers, while business unit leaders will need to become analytics savvy. A base level of understanding of analytics will be a requirement at all levels, including senior executives, in order to understand not only the core technologies but also that economic value is driven by information-based services.

3. It’s Simple – Make a “Plan”
Integrating technology and business strategies for data management and analytics entails a constant dialogue between senior executives, operations and technology teams to build a long term road map rather than treating it like a typical annual budgeting process. We believe that this dialogue should start with these questions:

a. Given our strategy, business priorities, current status and challenges, what area of analytics should be our focus?

b. For these chosen priorities, how do our current technology capabilities compare with best-in-class examples among competitors as well as across similar industries?

c. How and what (this may not be exactly quantifiable) value will they create in the short and long term? Clearly segregate real time (tactical) vs strategic analytical needs.

d. Precisely who in our eco-system and organization will gain from it?

e. Who is responsible / should be responsible for working on an enablement strategy and ensuring its adoption?

f. To what extent would business leaders take personal responsibility for the success of this strategy?

g. What capabilities must we have in-house to create a plan or do we need external help?

h. Should we seek help from external analytics service providers to build, or is this one a strategic capability that we must build it in-house?
The essence of a good strategic plan is that it highlights the critical decisions, or trade-offs, a company must make and defines the initiatives it must prioritize. For data and analytics planning, companies need to address issues like choosing the internal and external data they will integrate; selecting, from a long list of potential analytic models and tools, the ones that will best support their business goals; and building the organizational capabilities needed to harness this potential.

Successfully balancing with these planning trade-offs, requires a cross-company dialogue at the top to establish investment priorities; to balance speed, cost, and acceptance; and to create the conditions for workforce engagement.

A plan that addresses these critical issues is more likely to deliver concrete business results.

4. Crafting a “Master Plan”
The Plan should focus on three core elements:

1. Data: A plan for assembling and integrating data is essential. Companies are buried in information that’s frequently siloed horizontally across business units or vertically by function. Complicating matters is a new twist: critical information often resides outside companies or in unstructured forms like excel, mails, registers etc. There could be data which is not captured at all or is intermittently captured but is critical for advanced analytics. Making this information available needs to be viewed as creation of a life-long asset and will require investments. This investment would provide far higher value than any other investment. It may require a reorganization of data architectures over time: shifting through tangled repositories (separating transactions from reports), external data pull needs, implementing data-governance standards that systematically maintain accuracy. In the short term, a lighter solution may be possible for some companies or outsourcing the problem to data specialists who use cloud-based software or to unify enough data to attack initial analytics opportunities.

2. Analytic models: Assembling data alone does not generate value. Advanced analytic models are needed to enable data-driven optimization (for example, of vehicle turnaround time or networks optimization modeling, reducing idle time) or predictions (for instance impact of delays on revenue, likely delivery time). The plan must identify –
   - Which models will create additional business value?
   - Who will be required to use them?
   - How to avoid inconsistencies and unnecessary proliferation as analytics is scaled up across the enterprise?

These models need to be linked to solve broader optimization problems across functions and business units. A Plan thus would require, building a range of models that can cover a large list of variables and then to implement systems that keep track of them. Robust models can be built but it’s important to resist the temptation of analytic perfection, too many variables will create complexity while making the models harder to apply and maintain.

Once answers to the above questions are in place the next set of questions that should be addressed are:

a. How can we create a resource pool (internally or externally) to build a data management and analytics plan?

b. How can we resource internally or externally, efforts to show an early impact and demonstrate potential to fellow business leaders? To help facilitate this process, management may need to revisit governance that is designed for budgetary control rather than building strategic capabilities. Investments in capabilities around analytics and management of data will drive benefits across functions but will remain hard to fund if every stakeholder is just looking at his or her slice of the budget pie.

c. A strong “test and learn” culture, with a focus on business outcomes, is essential. This shift in operating model can be likened to the difference between the methodical plan, build, and deploy cycle of a software application development and the daily production batches of a Web-services company.

It may sound obvious, but in our experience, the missing step for most logistics operations and companies is spending the time required to create a simple plan for how data, analytics, tools, and people come together to create business value. In simple words, it is the diligent process of creating a plan. The power of a plan is that it provides a common language allowing executives, technology professionals, and operational managers to discuss where the greatest returns will come from and, more important, to select the two or three places to get started.

Decades ago, only a few companies developed well-thought-out strategic plans. The pioneers achieved impressive results, and since then many new planning tools and frameworks have emerged.

Today, every company builds some kind of strategic plan. We believe that most executives will soon see developing a data-and-analytics plan.
3. **Tools:** The output of modeling may be strikingly rich, but it’s valuable only if managers and, in many cases, workforce understand and use it. Output that’s too complex can be overwhelming or even mistrusted. What is the need of the hour are some intuitive tools that integrate data into day-to-day processes and translate modeling outputs into tangible business actions (for instance, a clear interface for scheduling vehicles, granular information on loss due to wait time, or a way for commercial managers to make real-time decisions on spot purchases). Many companies fail to complete this step in their thinking and planning—only to find that managers and operational employees do not use the new models, whose effectiveness and thus utilization falls.

4. There’s also a critical enabler needed to push towards data, models, and tools which is “organizational capabilities”. Much as some strategic plans fail to deliver because organizations lack the skills to implement them, so as well data and analytics plans can disappoint when organizations lack the right people and capabilities. Companies need a road map for assembling a talent pool of the right size and mix. And the best plans will go further, outlining how the organization can nurture (internally or through partners) data management specialists, analytic modelers, and work-force who will thrive and strive for better business outcomes in the new data- and tool-rich environment.

5. By assembling these building blocks, companies can formulate an integrated data plan. However, it’s important to note that most logistics companies will need to plan for major data-integration across internal and external systems. The reason is that many of the highest-value models and tools increasingly will be built using a large range of data sources. Typically, these sources will include internal data from customers, transactions, and operations, as well as external information from partners along the value chain and going forward, from sensors embedded in physical objects (Internet of things).

5. **Key Planning Challenges**

Every plan will need to address some common challenges. As brought out earlier that establishing investment priority, balancing speed and cost, and ensuring acceptance by the front line are the areas where challenges are bound to be faced. All of these are part and parcel of many strategic plans too, but there are important differences in plans for data and advanced analytics.

**Companies face some of the key challenges related to investment priorities, balancing speed aligning to business goals and acceptance by front line leaders. These challenges have to be addressed while creating the master plan to build analytical solutions.**

a. **Matching investment priorities with business strategy:** As companies develop their data integration plans, a common dilemma is how to integrate their data across, say, transactions of operations across internal and external stakeholders and customer interactions. Integrating all this information can provide powerful insights, but the cost of a new data architecture and of developing the many possible models and tools can be immense—and that calls for choices.

Planners at one of the logistics company opted for models using store-sales data to predict distribution needs and labor needs at the Distribution Centers to keep prices low. By contrast, another logistics company selected models to aggregate customer data to achieve higher margin and create new services for their customers.

That, in a short, is the *investment-prioritization challenge*: both approaches sound smart and were, in fact, well-suited to the business needs of the companies in question. In a world of un-surety and scarce resources, how to choose between these (or other) possibilities?

b. There’s no substitute for serious engagement by the senior team in establishing such priorities. At one company, they created heat maps of potential sources of value creation across a range of operational activities throughout the company’s business system - and advantages that data and advanced analytics, modeling, training, and more could bring about. The map gives senior leaders a solid fact base that informs debate and supports smart trade-offs. The result of these discussions isn’t a full plan but helps in shaping up the plan.
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Or consider how a large logistics company formed a team consisting of the CIO, VP-Sales, and business-unit heads to solve a sales and marketing problem. There was dissatisfaction with the results of direct-marketing campaigns—costs were running high, and sales of the new offerings were disappointing. The core of the problem, they discovered, was a siloed marketing approach. Individual business units were sending multiple offers across the company’s entire base of customers, regardless of their profile or preferences. Those in need of 3PL Services, were getting offers on a range of freight forwarding services. The senior team decided that solving the problem would require pooling data in a cross-enterprise warehouse with data on businesses, histories, profiles, and more. This central database will allow them to optimize their marketing campaigns by targeting individuals with products and services they are more likely to want, thus raising the hit rate and profitability through the campaigns.

c. Align the data integration to your business goals: A robust planning process often is needed to highlight investment opportunities like these and to stimulate the top-management engagement they deserve given their magnitude.

d. Balancing speed, cost, and acceptance: A natural impulse on creation of a data and analytics strategy is to shift rapidly into action mode. Once some investment priorities are established, it’s not hard to find software and analytics vendors who have developed applications and algorithmic models to address them. These packages (covering pricing, costs, utilizations, labor, scheduling etc.) can be cost-effective and easier and faster to install than internally built, tailored models. But they often lack linkages to the business goals and real business cases. Company-specific business models, strategy and services are powerful enablers (or enemies) of successful data efforts. That’s why it’s crucial to give planning a second dimension, which seeks to balance the need for affordability and speed with business realities (including easy-to-miss risks and organizational sensitivities).

e. To understand the costs of omitting this step - a company trying to improve the performance of its small-business focused logistics products. Hoping to move quickly, the analytics group deployed a ready to use model on the fly, without a planning process involving the key stakeholders who fully understood the business forces at play. This model tested well on paper but didn’t work well in practice, and the company ran up losses using it. The leadership decided to start over, enlisting business-unit heads to help with the second effort. A revamped model, built on a more complete data set and with an architecture reflecting differences among various customer segments, had better predictive abilities and ultimately reduced the losses. The lesson: data planning and analytics modeling is more of a management challenge than a technical one, and there’s no shortcut in the hard work of getting business players and data specialists together to figure things out.

f. At a Shipping company, balancing potential gains from new data and analytic models against business risks was the challenge. Workforce were comfortable with existing operations-oriented analytics, but there was resistance to new models related to customer behavior, pricing, and scheduling. A particular concern was - whether costly new data approaches would interrupt well-oiled operations? These concerns were addressed by building a prototype (which used a smaller data set and spreadsheet analysis) in one region. Sometimes, “walk before you can run” tactics like these are necessary to achieve the right balance, and they can be an explicit part of the plan.

g. At another company, a key challenge was assuaging concerns among internal stakeholders. A black-box model designed to identify chronic-contract logistics pricing models with an above-average risk of failure was highly accurate when tested on historical data. However, the company’s directors questioned the ability of an opaque analytic model. In the end, the company opted for a simpler, more transparent data and analytic approach that improved on current practices but sacrificed some accuracy. Airing such tensions and trade-offs early in data planning can save time and avoid costly dead ends.

h. Finally, some planning efforts require balancing the desire to keep costs down with the need for a mix of data and modeling approaches that reflect business realities. Consider where companies have unique customer needs to be addressed, ways of setting prices which optimize margins always poses a challenge. In this instance one can put in place a standard moving average based model which can be manually corrected every fortnight for mid-sized contracts. But for large contracts one can develop a more sophisticated model to predict regional and seasonal patterns and optimize costing models, gathered through unstructured data and internal-operations data coupled with prediction algorithms to create pricing models by customer and by product. A balanced data plan needs to embrace the need for such mixed approaches.

i. Ensuring a ‘Focus’ on frontline engagement and capabilities

In another company sales rejected a Web application designed towards more effective pricing for selling their services. The sales said they would use it only if it allowed them more transparency on how the numbers were arrived at, which they considered important for maintaining the trust of their companies.

Problems like these arise when companies neglect a third element of planning: engaging the organization. As we said when describing the basic elements of the plan, the process starts with the creation of analytic models that frontline managers can understand. The models should be linked to easy-to-use decision-support tools and to processes that let managers apply their own experience and judgment to the outputs of models.

The aforementioned company redesigned the software interface of its pricing tool to include only 10 to 15 rule-driven covering the competitive and capacity-utilization situations etc. Similarly, the next company allowed managers to view parameters and even change some of them to arrive at balanced revenue and cost models.
6. Building The Human Touch: ‘Workers’ are more important than ‘Data’

Planning for the creation of such worker-friendly tools is just the beginning. It’s also important to focus on the new organizational skills needed for effective implementation. Far too many companies believe that majority of their data and analytics investments should be in data and modeling. But unless they develop the skills and training of workforce, many of whom don’t have strong analytics backgrounds, those investments won’t deliver. A good rule of thumb for planning purposes is to keep >33% of the analytics budget for development and training.

Companies can look at the ROI on Analytical Solutions based on effectively creating “Analytical Workers” having strong business and analytical acumen.

This investment should move towards creating “bimodal” managers who both understand the business well and have a sufficient knowledge of how to use data and tools to make better, more analytics-infused decisions. Where this skill set exists, managers will of course want to draw on it. Companies may also have to create incentives that pull key business players with analytic strengths into data-leadership roles and then encourage the cross-pollination of ideas among departments. One parcel-freight company found pockets of analytical talent trapped in siloed units and united these employees in a centralized hub that contracts out its services across the organization.

The plan should chalk out a roadmap for development of building “Analytical Workers”

7. Conclusion

When a Plan is in place, the Execution becomes easier: integrating data, initiating pilot projects, and creating new tools and training efforts occur in the context of a clear vision for driving business value—a vision that’s unlikely to run into funding problems or organizational opposition. Over time, of course, the initial plan will get adjusted. Indeed, one key benefit of data and analytics is that you can learn things about your business that you simply could not see before.

Like strategic planning, which over time has morphed in many organizations from a formal, annual, “by the book” process into a more dynamic one that takes place continually and involves a broader set of constituents, Data and analytics plans are also too important to be left on a shelf. But that’s tomorrow’s problem; right now, such plans aren’t even being created. The sooner logistics executives change that, the more likely they are to make data a real source of competitive advantage for their organizations.

Automation, technology and software promise new levels of efficiency and productivity along with the capability to execute complex and advanced strategies. That’s the good news. However the bad news is - just as a supply chain is only as efficient as its weakest link, a ‘sophisticated materials handling system’ is only as efficient as the bottlenecks in a distribution center. Data and Analytics need workers to adopt and adapt to it to make it a success.

Don’t fuss too much of trying to get your returns on investment numbers perfect. If you have a Data and Analytics plan as elucidated above and the modeling is aligned with the business strategy it’s a one way street to higher revenue and margins.

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