Selecting the Most Appropriate Digital Roadmap for Your Logistics Organization

Published 7 May 2020 - ID G00725945 - 14 min read

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Initiatives: Logistics Strategy and Operations and 1 more

With new and emerging technologies and huge growth opportunities in the digital space, supply chain leaders are now being asked to develop a strategy for digital. This research offers a range of tips for selecting the most appropriate digital roadmap for your logistics organization.

Overview

Key Challenges

- Logistics leaders are now being asked to develop digital roadmaps for the function, but many are unsure of how to go about it.

- The digital age is changing the types of technologies that logistics organizations are exploring and implementing.

- Many emerging technologies require baseline mainstream system capabilities to be in place before they can be developed. Many logistics functions currently lack this digital foundation.

- While emerging technologies are evolving rapidly, traditional barriers to gaining investment for mainstream technologies still exist. Logistics leaders struggle to educate the organization on the digital foundation required to explore more emerging technologies.

Recommendations

To better prepare themselves and the organization for designing an effective digital logistics roadmap, supply chain leaders responsible for logistics strategy should follow these four steps:

- Use the maturity model to define the progressive steps organizations should take on their journey toward digital excellence in logistics.

- Focus the roadmap by listing and segmenting the different types of technology that could be included in a digital roadmap.

- Assess the existing level of digital maturity for the logistics function to understand the technologies the roadmap should predominantly focus on developing and when.
Introduction

The digital age is radically changing the way organizations think about developing the logistics function and the types of technology they are looking to explore and implement. Many corporate leaders are now asking their heads of logistics to develop a digital roadmap, but many are struggling to define an approach that is right for their organization.

With the rapid emergence of new logistics technologies, an effective digital roadmap now needs to focus on developing mainstream technologies as well as exploring those that are new and emerging. The 2019 Gartner Digital Business Impact on the Supply Chain Survey asked respondents how ready their supply chain organization was to support digital activities. The results showed that 43% of respondents felt they were not ready to develop a roadmap that was able to cover both mainstream and emerging technologies (see Figure 1).

![Figure 1. Supply Chain Readiness to Support Digital Activities](image)

This research aims to help supply chain leaders responsible for logistics better prepare themselves for developing a digital roadmap by outlining the steps that best-in-class companies take when designing theirs.

Analysis

Gartner, Inc. | 725945
Use the Maturity Model to Define the Steps to Take Toward Digital Excellence in Logistics

Gartner’s research shows that the leading organizations that have been able to master digital capabilities have aligned their logistics technology development with the organization’s overall maturity journey. First, supply chain leaders should build out the foundational mainstream technologies, levels of integration and master data required to then successfully explore, test and most importantly scale new and emerging digital innovation.

To design the most effective digital roadmap, it is important to clearly define and understand the progressive steps required to achieve the ultimate goal of digital excellence. These appear in the digital maturity model shown in Figure 2.

**Figure 2. Gartner’s Maturity Model for Digital Logistics Excellence**

**Gartner’s Maturity Model for Digital Logistics Excellence**

**The Five Stages of Digital Logistics Maturity**

**Stage 1: Predigital Logistics Function**

The portfolio of mainstream logistics technologies is highly fragmented, with a large number of stand-alone solutions from multiple vendors/sources. There is limited integration of operational systems and the internal ERP and little to no corporate investment to begin exploring, piloting, or scaling new and emerging technologies.
Stage 2: Digital Logistics Function

Mainstream logistics technologies are rationalized, standardized and scaled across most operations and 3PLs, supporting functionwide process automation, data rationalization and operating efficiencies. High levels of integration exist between operational systems and the internal ERP. Emerging technologies are typically explored in isolation across individual operations and pilots are ad hoc.

Stage 3: Digital Supply Chain

Mainstream logistics technologies are well-integrated with other internal supply chain BI and analytics tools, supporting enterprisewide process automation, data rationalization and operating efficiencies. Emerging technologies are also explored at an enterprise level, and pilots are beginning in conjunction with other internal supply chain functions.

Stage 4: Digital Value Chain

Mainstream logistics technologies are integrated with key external trading partners to support multienterprise connectivity, process automation and data rationalization across the value chain. Emerging technologies are regularly explored and piloted in conjunction with key value chain partners and are beginning to be scaled where appropriate.

Stage 5: Digital Value Chain Ecosystem

Mainstream logistics technologies are continuously extended across the value chain ecosystem and regularly maintained or upgraded to ensure reliable multienterprise orchestration. Emerging technologies are well-integrated with already established system architectures and are being scaled across the value chain to deliver ongoing competitive advantages.

Recommendation: Use the model to define and communicate the steps required to achieve digital excellence, and as a guide for setting short- and long-term technology goals. The model will also help align your roadmap with the overall digital evolution of the supply chain organization.

Focus the Roadmap by Listing and Segmenting the Different Types of Technology for the Digital Roadmap

Listing and categorizing the various technologies available to the logistics function is a good next step when developing a digital roadmap. This is important because developing different types of technologies, especially newer ones, involves different approaches, levels of risk and return periods. These will need to be socialized across the organization before committing to implementing or exploring them.

As shown below and in Table 1, most logistics technologies can be broken up into two major categories: mainstream and emerging.

Mainstream Logistics Technologies
This category refers to technologies that have already been implemented (in-house or outsourced) by many logistics operations and are well-proven to provide cost, service reliability and/or integration benefits to the function. These particular technologies are now considered mainstream by the industry and have become essential foundational enablers for organizations looking to compete today.

**Emerging Logistics Technologies**

This category refers to technologies that are still emerging and yet to be established (in-house or outsourced) across the majority of logistics operations. Their cost, efficiency and/or integration benefits are still unproven, and returns have yet to be fully justified. In saying this, these particular technologies could potentially revolutionize the logistics industry, and could provide substantial competitive advantages and growth opportunities for early adopters if implemented and scaled successfully.

**Table 1: Mainstream and Emerging Logistics Technologies**

<table>
<thead>
<tr>
<th><strong>Mainstream Logistics Technologies</strong></th>
<th><strong>Emerging Logistics Technologies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Warehouse Management Systems (WMSs)</td>
<td>Artificial Intelligence/Machine Learning</td>
</tr>
<tr>
<td>Enterprise Resource Planning (ERP) Integration</td>
<td>Augmented Reality/Virtual Reality</td>
</tr>
<tr>
<td>Labor Management Systems/Workforce Management Systems</td>
<td>Autonomous Mobile Robots/Warehouse (Humanoid) Robots</td>
</tr>
<tr>
<td>Master Data Management (Logistics)</td>
<td>Blockchain for Logistics</td>
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<tr>
<td>Mobile Technology</td>
<td>Cloud Computing, Big Data and Advanced/Predictive Analytics</td>
</tr>
<tr>
<td>Network Modelling/Design Tools (Logistics)</td>
<td>Crowdsourced Transportation Platform, On-Demand Warehousing, Digital Freight Marketplaces</td>
</tr>
<tr>
<td>Radio Frequency Identification (RFID) for Logistics and Transportation</td>
<td>Drones/Self-Guided Vehicles</td>
</tr>
<tr>
<td>Slotting Optimization</td>
<td>Internet of Things (IoT)</td>
</tr>
</tbody>
</table>
Note: The logistics technologies shown in Table 1 are not an exhaustive list but should cover most of the technologies that organizations could include in their digital roadmap for the logistics function. The definition of most of these can be found in “Hype Cycle for Supply Chain Execution Technologies 2019.”

**Recommendation:** Use the list to help categorize the different types of technologies to be explored in the roadmap. This will assist when socializing them with critical stakeholders needed to support their implementation or development (e.g., senior management, IT department, third- and fourth-party logistics providers). The list also will make it easier for the organization to decide which technologies should be included and the most appropriate time to begin investing in and/or exploring them.

## Assess Existing Levels of Digital Maturity for the Logistics Functions to Provide Focus for the Roadmap

An organization’s digital maturity has a major impact on which type of technology is focused on at different stages. The 2019 Gartner Supply Chain Technology User Wants and Needs Survey shows that organizations lower on the maturity curve are much more conservative in their adoption of technologies (see Figure 3). Organizations that are higher on the curve are much more aggressive.

*Figure 3. Technology Adoption by Supply Chain Maturity*
The natural question then is, “Does a company’s maturity have a strong impact on the type of digital development plan that will be most effective?” The answer is absolutely “yes.” Gartner has performed more than 150 logistics maturity assessments across a range of industry verticals, and the results show that companies focus on developing mainstream and emerging technologies in different ways at each stage (see Figure 4). For this reason, it is important to assess your organization’s level of maturity, because it will define the most effective digital development plan to deploy.

**Figure 4. Maturity Model Shows the Different Digital Roadmaps Organizations Adopt at Each Stage**
Low Maturity (Stages 1 and 2)

Lower maturity organizations display cost-focused behaviors, have little or no technology in place and lack system integration at the functional level. These organizations are usually unwilling to invest in or explore technologies that are not well-proven to reduce costs or drive basic operational benefits. Their digital roadmaps predominantly focus on implementing and scaling mainstream technologies to reduce costs and drive standardization across individual functions. Most at this stage do not have the foundational system capabilities, levels of integration or master data to effectively explore, test or scale emerging technologies across the function.

Mid Maturity (Stage 3)

Organizations at Stage 3 are typically focused more on driving end-to-end efficiencies. Most have already implemented and scaled mainstream technologies across individual operations and driven out cost. Their digital roadmaps now focus heavily on integrating with cross-functional system architectures to drive end-to-end efficiencies. In parallel, they are beginning to explore and test emerging technologies across the operations as they possess the foundational mainstream technologies, levels of integration, and master data required to successfully test and pilot them.
Having already extracted most of the initial benefits from their mainstream technology implementations, organizations now need to look toward exploring emerging technologies to deliver further benefits.

**High Maturity (Stages 4 and 5)**

Organizations at the highest levels of maturity look to deliver ongoing customer value, leverage competitive advantages and increase market disruption. Culturally, they are open to calculated risks when exploring emerging technologies and investing in continuous technological innovation. Their digital roadmaps focus on constant extension of foundational mainstream technologies across the value chain ecosystem, while also maintaining the integrity of the core systems architecture and/or upgrading where required. In unison, they are heavily invested in implementing, integrating and scaling the emerging technologies that have been validated through pilots, and the constant exploration of bleeding edge technologies and/or partnerships with innovative startups.

**Recommendation:** Use Gartner’s self-assessment to pinpoint the logistics functions’ specific level of maturity (see “Assessing Supply Chain Maturity for Logistics”). Performing this assessment will help heads of logistics select the right types of technology in their digital strategy. This evaluation also allows them to educate critical stakeholders on the most effective development plan for their organization’s particular level of maturity.

**Use the Hype Cycle for Supply Chain Execution Technologies to Communicate Risks and Timelines**

Testing and implementing emerging technologies is a double-edged sword. While being a first-mover can provide substantial competitive advantages, it also involves an element of risk and can take a long time to see returns. For many organizations, this risk element and the cost associated with failure are what hold them back from implementing emerging technology solutions. Much of this has to do with the culture of the organization and its desire to lead the market or invest in technologies where returns are as yet unproven. Many supply chain leaders focused on logistics do not understand where these technologies sit in relation to risk, or the timelines involved before they become mainstream. This can make it very difficult to decide on and communicate to key stakeholders which technologies they should explore in the short and long term. Blockchain is a great example. Due to the hype surrounding this technology, many logistics leaders are being asked to explore it now, but Gartner research shows that this is still 10 years away from being mainstream.

Each year, Gartner produces a Hype Cycle for supply chain execution technologies (see Figure 5 and “Hype Cycle for Supply Chain Execution Technologies, 2019”). This is an interactive document that heads of logistics can use to understand different emerging technologies, where they are on the cycle, how cutting edge they are and how long they will take to become mainstream.

*Figure 5. Hype Cycle for Supply Chain Execution Technologies, 2019*
Note: Because the Hype Cycle is a fluid document that evolves year over year, many of the previously mentioned mainstream technologies have since dropped off on the right side of the cycle. These technologies are already well-tested and accepted in the market, and have been on the Plateau of Productivity for some time.

**Recommendation:** Use the Hype Cycle to socialize with key stakeholders such as senior management or IT regarding the timelines and risks involved with exploring and implementing different technologies before committing to explore or develop them in the strategy. If the organization is of a higher maturity, uses technology as a competitive advantage, and is more open to risk and a longer return period, then it should explore the technologies on the left side of the Hype Cycle. If the organization is of lower maturity and more conservative in its approach, and does not want to be an early adopter or is looking for quicker returns, then it should explore those further to the right of the Hype Cycle.

**Evidence**

The 2019 Gartner Digital Business Impact on the Supply Chain Survey explored companies’ readiness to support the impending digital business transformational wave that is fast...
approaching. It also explored their readiness to better understand awareness, competencies required and priorities of executive and functional leaders within the supply chain organization.

The survey was conducted online by an external partner vendor, between 2 July and 18 August 2019. In total, 336 respondents were interviewed in their native language across the U.S. (n = 115), Canada (n = 19), Germany (n = 53), France (n = 41), the U.K. (n = 61) and Mexico (n = 47). Interpret small base sizes (n < 30) with caution.

In order to enable the comparison and contrasting of key trends, quotas were established on key organizational and respondent characteristics:

- Qualifying organizations are manufacturers (high tech, industrial, consumer products, life sciences), retailers or healthcare providers, with enterprisewide annual revenue of at least $1 billion for companies in the U.S and at least $500 million or equivalent outside the U.S. These companies either already have implemented digital activities in at least one function of the business (such as digital marketing) or have plans to implement within the next two years.

- Qualified participants have a role in a supply chain function and are personally actively involved in digital initiatives at their company.

The sample universe was drawn from external panels of IT and business professionals. The survey was developed collaboratively by a team of Gartner analysts who follow these markets and was reviewed, tested and administered by Gartner’s Research Data and Analytics team.

Disclaimer: Results of this survey do not represent global findings or the market as a whole but are a simple average of results for the targeted countries, industries and company size segments covered in this survey.

Results presented are based on the 2019 Gartner Supply Chain Technology User Wants and Needs Survey. The survey was conducted between November 2019 and December 2019 to explore the role technology plays in supply chain, how supply chain organizations leverage technology for competitive advantage and their views on exploiting as well as investing in supply chain technology.

A sample of 350 respondents completed a web-based survey, with the organizations qualified according to their industry, with annual revenue of their organization being $100 million and above. The sample mix by region was North America (40%), Western Europe (40%) and Asia/Pacific (20%).

Respondents were required to have the role of manager and above, and their involvement in decisions regarding supply chain management (SCM) processes, strategy, and supporting technology was needed.
The survey was developed collaboratively by a team of Gartner analysts who follow the IT market and was reviewed, tested and administered by Gartner’s Research Data and Analytics team.

Disclaimer: Results do not represent global findings or the market as a whole but reflect sentiment of the respondents and companies surveyed.

Recommended by the Author

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Hype Cycle for Supply Chain Execution Technologies, 2019
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