Technology: Game Changer of Healthcare's Operations & Supply Chain Management

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The global healthcare is one of the world's largest and rapidly growing sector consists of the diverse sector, which includes medical equipment and supplies, pharmaceuticals, healthcare services, biotechnology, and

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alternative medicine sectors. With massive pricing pressure on healthcare providers to deliver high-quality care while lessening cost is a top strategic priority. Nearly one-third of hospital operating budget is consumed by one area which is often overlooked, i.e., ***Healthcare supply chain.*** As a result, $765Billion is wasted annually in lost, unused, or expired supplies. The supply chain is an intricate domain covering procurement, inventory management, logistics, material handling, transportation, warehousing, distribution, and many other functions both within the four walls of the organization and throughout the external supply chain. Supply chain management is a labour intensive and costly process in any healthcare setting.

The hospital systems grew, several factors came into play: Today, 17 to 30 percent of the organizations spend is for supplies. In the near future, out of the total hospital operating budget, the cost of supply management can exceed 45% and with nearly 30-35% attributable to supply costs alone.

According to a survey conducted in March 2019 by Sage Growth Partners, almost all hospital leaders (98 %) said hospital margins could be improved by supply chain optimization. About 52 % reported there is a high chance for an increase in the margin between 1-3% in case of better management, and 35 % believe margins can increase over 3%.

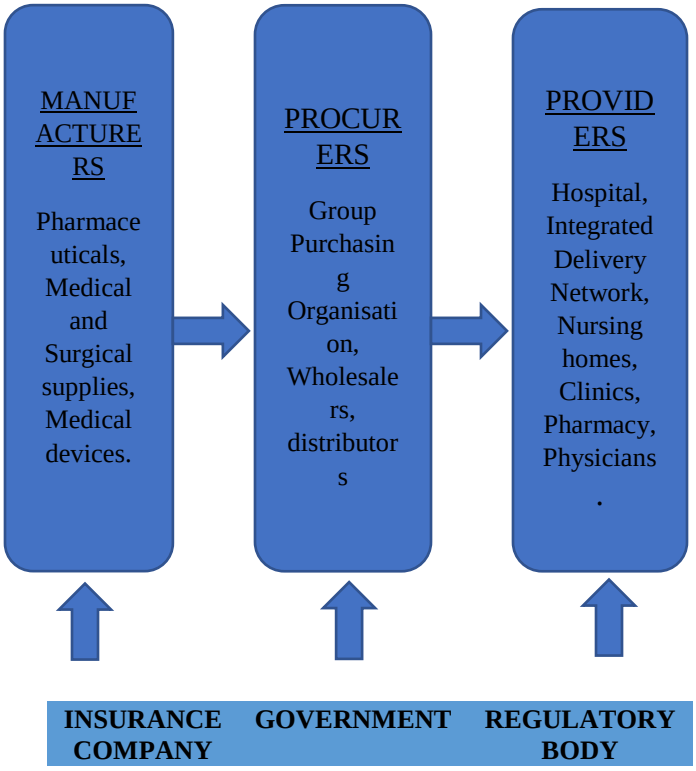
LAST YET SMART RESORT:

It's high time for the healthcare sector to progress ahead from being a technology laggard to a technology leader – or least be somewhere in the middle in the supply chain management.

Healthcare's supply chain is innately intricate, and therefore it's absolutely a difficult task to find a magic button that will take away the inefficiencies to cut down cost.

Finally, a magic button found by supply chain management leaders is turning to technology to provide innovative, affordable quality care with incorporate clinical data.

The survey (Navigant in 2018 on supply chain) found that for supply chain management, 37% of hospital leaders still use Excel or other Microsoft tools to track margins per Operation Research case. Another 27% use low-tech tools or simply don't track margins per Operation Research case or don't know if they do. Only the remaining 36% of respondents have a specific technology solution. The total cost of getting a product from the manufacturer to the end-users which is beyond the initial purchase price includes logistics costs, insurance, duties, taxes, and other fees. Based on their operations, stakeholders in the healthcare supply chain are divided into following groups:



Healthcare supply chain configuration (Adapted from Burns 2002)

HOW CAN TECHNOLOGY BE A GAME CHANGER?

Some of the serious consequences of purchasing through traditional healthcare include excess inventory levels, workflow disturbance, pricey rework, lack of inventory control, missed contract compliance, recurring product flow, stock-outs, expensive emergency deliveries, and increased health system labour requirements. At present, healthcare supply chain management is widely integrated technologically through Radio Frequency Identification [RFID] technology or Automated Guided Vehicles [AGVs].

According to the survey by Navigant 2018 on the supply chain, the adoption of advanced technology in supply chain management can give savings opportunity jump to $ 25.4 billion a year. Average supply expense reducing opportunity approaching 18% per hospital without impacting quality. Purchase decisions in healthcare can be optimized through data visualization and analytics. Main key for the effective supply chain is visibility and communication. And there is technology to help get healthcare there. For improvement of supply chain main valuable resource will be Cloud-based, AI and data visualization.

FUTURE OF HEALTHCARE SUPPLY CHAIN

In optimizing the healthcare supply chain, we depend on a wide range of technologies which include Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Transportation Management System (TMS), and Radio Frequency Identification (RFID).

According to Global Healthcare Exchanges, Data analytics is the most coveted capability in supply chain management, but compact budgets prevent investment. At this moment, for tight healthcare supply chain budgets, Artificial intelligence, and other advanced data analytics tools are also too pricey to accommodate. Nonetheless over time the artificial intelligence technologies prices are likely to fall, putting them within reach of supply chain experts once these technologies become more integrated into the health IT marketplace.

To streamline the operations and to improve efficiencies in the healthcare supply chain, there are many more promising technologies. A few of them are discussed below.

1. BLOCKCHAIN

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The flow of the supply chain starts with the manufacturer, follows updates by intermediaries, and ends by being authenticated by the buyer. In developing countries, almost 10–30% of the drugs sold are counterfeit. Blockchain through "trace and track" regulations can potentially help companies to maintain drug traceability from inception to consumption. Through end-to-end traceability, original drug unit changes non-alteration, serial number duplication, and validating the receipt of a drug can be prevented.

2. ROBOTIC PROCESS AUTOMATION (RPA)

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It can be used to replace the manual, time-consuming and error-prone parts of a supply chain. Introducing Robotic Process Automation (RPA) does not mean that some robot looking machines will take over the tasks, but it is about smart and intelligent software doing high volume, repeatable tasks that are usually mundane and boring for human beings, at the same time reducing errors. Manual tasks such as data entry, back office tasks which are typically time-consuming, repetitive, high in the volume are perfect to be handled by RPA and allow employees to focus on high-quality, complex matters. In spite of the initial upfront investment required to implement RPA technology, the overall rise in productivity and efficiency, along with a reduction in human errors lead to immense cost savings and improved finances. RPA can assist in vendor selection and procurement, shipping status communication and supply, and demand planning, transport materials, performing a preliminary analysis of vendor documents, evaluating the vendor and running a credit check, request for quotation, package, communicating to vendors, as well as helps in finalizing the vendor selection. Through RPA majority of the steps can be automated. Post-automation, RPA cycle time can be improved by 25-50% and processing time by 15-45% and elimination of manual effort by 40-60% and 20-40% improvements in the administration effort and data collation involved in supply and demand planning.

3. ARTIFICIAL INTELLIGENCE (AI)

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AI has a lot of potential applications in the supply chain. Chabot's operational procurement is one example. They can handle all the paperwork with accuracy, efficiency, and speed. **Machine Learning for Supply Chain Planning** help in forecasting inventory, demand, and supply. **Machine Learning for Warehouse Management assists in** supply flaws (overstocking or understocking) and demand forecasting. **Autonomous Vehicles for Logistics and Shipping** helps in speedier and accurate shipping which reduces lead time, transportation

expenses, and labour costs. **Machine Learning and Predictive Analytics for Supplier Relationship Management (SRM) and Supplier Selection helps in better** supplier selection and sourcing which is an increasing concern for enhancing supply chain ethics and supply chain sustainability. Data sets, generated from SRM actions such as audits, credit scoring, and supplier assessments, provide an essential room for further decisions regarding supplier selection.

4. INTERNET OF THINGS (IoT)

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The most common method for asset tracking is sequence numbers and bar codes. However, IoT sensors and cameras can help supply managers find granular data on the product and its location at any point. IoT also has the ability to improve fleet management by connecting fleets and tracking shipments. Overall, through IoT devices, companies can expedite the route planning and tracking of goods and can identify when and where goods are delayed in transit. This helps in the preparation of alternative routes and contingency planning and to speed up the supply chain.

5. WEARABLES

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Product downtime causes revenue loss for organizations involved in logistics and supply chain. Product inspectors may be able to diminish these losses with the use of wearables. Augmented reality glasses have shown promise in helping inspectors detect glitches.

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4. 5 supply chain technologies to watch Many promising technologies to help the healthcare supply chain streamline operations and improve efficiencies. Below are five to watch, according to BBN Times, an online source of expert analysis on global issues.

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