Disruptive Change at Bossard with SMART Factory Logistics

Intro

Tee Bin Ong, Bossard's VP of Sales and Marketing, eagerly prepared for a strategy meeting on "smart factory logistics," anticipating discussions on its role in Bossard's digital transformation. The key question was whether it would be a transformation trigger or a unique value proposition. The newly created website <www.SmartFactoryLogistics.com> hinted at its significance. Bossard, a global fastening technology leader since its humble beginnings in 1831, faced competition catching up with its smart bin technology. With the rise of IoT, Bossard capitalized on the trend, providing relief to customers dealing with critical manufacturing components. While competitors tried to emulate Bossard's smart bin system, the company, having over 15 years of experience, proprietary solutions, and a strong track record, recognized the need for a strategic move in 2016 to stay ahead in the evolving landscape.

Background

Bossard, initially a family-owned hardware store in Zug, Switzerland, grew into a global leader in fastening technology with a presence in Europe, the Americas, and Asia-Pacific. By 2016, it employed over 2,000 people across 26 countries, offering a diverse product selection exceeding one million items. With 2016 sales of CHF 695 million and an EBIT of CHF 78.5 million, Bossard boasted a robust EBIT margin of 11.3%, twice as profitable as the average competitor. Between 2012 and 2017, its share price quadrupled due to positive profit warnings and analyst recognition. Bossard's global footprint included 70+ service locations, 35 logistics centers, and 10 application engineering laboratories. Serving industrial giants like John Deere, Tesla, and Siemens, Bossard maintained high-quality standards and standardized systems. Tesla, in particular, became a significant long-term client, with Bossard as its sole fastening solutions supplier since 2010, solidified by a US$140 million three-year contract in 2014, prompting Bossard's investment in a dedicated distribution center for Tesla.

Global Fastening Industry

The global fastening industry, valued at $72 billion, was poised for substantial growth, particularly driven by increased demand in the automotive sector. Emerging markets in China, Brazil, Russia,

Poland, the US, and India were expected to contribute to this growth, along with rising consumption in electrical and electronics, aerospace, machinery, and maintenance and repair operations (MRO). The forecast anticipated the global market for industrial fasteners to surpass $100 billion by 2020, driven by the essential role of fasteners, or "C-parts," in various industries.

Fasteners, though not individually expensive, played a critical role in manufacturing processes, with quality being paramount to avoid catastrophic consequences, such as in aviation. Maintaining adequate stock of these components was crucial to prevent production outages. Despite constituting 15% of total costs, the remaining 85% was allocated to development, procurement, testing, inventories, assembly, and logistics, contributing to the overall cost of the fastening ecosystem. Bossard recognized the potential for substantial cost savings, particularly in logistics and engineering, aiming to achieve efficiencies that could significantly impact the total cost of ownership (TCO) of the end product.

Bossard's Early Innovations

Since the 1980s, Bossard has been proactive in supporting clients from the early stages of engineering design, optimizing fastening solutions to enhance product quality, safety, and production cost. Building close relationships with clients, Bossard extended its services to analyze C-parts logistics and supply chain, identifying opportunities for process optimization. The company excelled in uncovering hidden potential, boosting productivity, and improving total cost of ownership (TCO) for clients by analyzing various aspects of their production processes.

Bossard pioneered solutions to alleviate the management of C-parts, including the development of SmartBin, an automated reordering system combining Kanban bins and weight sensors. SmartBin optimized supply processes, reduced complexity, enhanced data analytics, and allowed for real-time monitoring. In 2014, SmartBin Flex, a wireless-enabled mobile solution, and SmartLabel, triggering orders with a button press, were introduced. The ARIMS platform integrated all orders, enabling the implementation of the Smart Factory Logistics Concept. This involved real-time communication and cooperation through the Internet of Things (IoT) across clients' value chains, positioning Bossard as a holistic partner for clients under the theme of "proven productivity."

By 2015, Bossard's sales force adeptly used IoT for vendor-managed inventory (VMI). Although VMI was becoming industry-standard, Bossard's unique analytics and optimization potential kept it ahead of the competition. The company faced the challenge of determining its next moves in IoT, considering the evolving landscape and exploring the next wave of automation to create and capture value effectively. Bossard's management deliberated on maintaining and developing its strategic advantage in the rapidly advancing field of IoT.

The Potential of IoT

According to McKinsey, the economic impact of IoT, involving connected sensors and actuators, could reach up to $11 trillion annually by 2025. The projected global revenue of IoT was expected to grow significantly, from €750 million in 2007 to €8,200 million by 2020.

The transformative nature of IoT extended to the supply chain, with a potential $8 trillion value at stake worldwide over the next decade, of which $1.9 trillion was attributed to supply chain and logistics. A study by Zebra Technologies and Forrester Research revealed a substantial increase in IoT technology deployment from 15% in 2012 to 65% in 2014. SAP predicted over 50 billion connected devices by 2020, influencing logistics operations, warehousing, and freight transportation.

McKinsey foresaw substantial benefits in inventory optimization, predicting that measures like those proposed by Bossard could save 20% to 50% of a factory's inventory carrying costs. IoT's impact also extended to asset utilization and predictive maintenance. In freight transportation, telematic sensors and multi-sensor tags promised enhanced visibility and security, while IoT facilitated last-mile delivery efficiency, exemplified by connected fridges automatically ordering supplies.

To fully leverage IoT, certain conditions were necessary, including IoT sensors and actuators, reliable data communication networks, data analytics capabilities, data security, skilled human resources, and appropriate organizational structures. The potential benefits of IoT extended to various stakeholders, allowing technology suppliers to develop new revenue streams and businesses to enhance operations and make data-driven decisions. A survey highlighted the increasing investment and belief in the effectiveness of data analytics, indicating a growing reliance on IoT-related technologies.

Make a move from Product to Service

In anticipation of the transformative impact of IoT on business models and competition, Bossard, a pioneer in smart factory logistics, recognized the need for strategic moves in 2015–2016. Competitors were attempting to replicate Bossard's smart bin system, and Tee Bin's team acknowledged the imminent challenge in maintaining a competitive edge despite Bossard's extensive experience and proprietary solutions.

Over time, Bossard observed a shift in customer preferences, with clients seeking relief from managing C-parts through automated ordering and inventory delivery. Tee Bin and his team envisioned a fundamental shift in Bossard's value proposition, transitioning from selling fasteners to offering service packages that allowed clients to optimize or fully outsource inventory management.

Bossard's system, with direct measures of inventory utilization, aimed to eliminate inefficiencies caused by order variations and human behavior. The proposed service packages—entry, advanced, and premium—were designed to leverage Bossard's engineering expertise, IoT platform, and big data analytics, emphasizing a shift from product-centric to service-centric value.

However, implementing this new approach faced internal challenges. Bossard's sales force, accustomed to selling fasteners with engineering expertise as a differentiator, initially met the new product suite with skepticism. Buyers within client companies were not incentivized to optimize total cost of ownership, necessitating a shift in the sales approach toward engaging with the management level. This change required active participation and training from Bossard's top management, including Tee Bin, who was prepared to personally engage with the sales force to drive the transformation.

Given the long-term partnerships with clients, managing the transition posed challenges, with potential resistance from buyers if Bossard were the first to adopt this new approach. The internal shift signaled a significant change in strategy and required proactive efforts to navigate potential hurdles and ensure successful market adoption of the new service-oriented value proposition.

From Smart Factory to Smart Ecosystem: SmartFactoryLogistics.com

Tee Bin, reflecting on discussions about selling IoT-enabled inventory management services, recognized the wealth of data Bossard could access by providing clients with inventory planning. With IoT-enabled SmartBins, Bossard could collect substantial data on clients' sales, stock levels, returns, and damages, offering valuable insights for analysis and C-part replenishment planning.

In the broader context of the supply chain, the power of data-driven insights had transformed many businesses. With the widespread implementation of IoT-enabled technologies, the supply chain was generating unprecedented amounts of structured and unstructured data—commonly termed big data. Organizations that effectively utilized this data for insights could make better decisions and strategic moves. In logistics, leveraging big data had the potential to optimize capacity utilization, enhance the customer experience, reduce risk, and create innovative business models.

To advance, Bossard needed clients' projected sales and forecasts for inventory planning. However, forecasting inventory volumes posed challenges for manufacturing companies, particularly in converting value plans into volume plans for numerous stock keeping units (SKUs). Tee Bin recognized that the flood of big data generated by IoT devices presented a challenge in terms of analysis for prediction and optimization.

Tee Bin envisioned leveraging the IoT data to predict clients' demands, transforming Bossard's core competence into inventory optimization. This would involve providing demand planning services, integrating data into business processes for analysis and further processing, and building datability competence—the ability to effectively use data. The potential applications included strategic forecasting, network planning, operational capacity planning, product portfolio optimization advisory, and market intelligence.

While this new challenge had the potential to elevate Bossard to a new level, questions arose about whether it was the right time for such a transformation. Tee Bin pondered whether Bossard was ready for this change or if it should consider it as an option for the future.

Key Developments in IoT for Bossard's Smart Factory Logistics

Bossard recognized that for some clients, the offer of IoT-enabled inventory management would only be compelling if Bossard could consolidate supply inventory management with all of its suppliers. In response, ARIMS 4.0, an integrated cloud-based system, was developed to automate inventory and delivery management from both Bossard and third-party suppliers.

To maintain competitiveness, Bossard made strategic investments at three levels:

Software Platform Development: Continuous investment in SmartBin software updates was crucial to ensure security levels and algorithm performance. Market intelligence efforts were essential to stay relevant by incorporating advancements in technologies like artificial intelligence and machine learning.

Application Development: Bossard considered additional investments in developing analytic tools linked to the SmartBin software platform. These applications could be customized according to specific customer requirements, such as a mobile application optimizing inventory refills at production sites.

Integration with Upper Level Systems: Bossard acknowledged the competition from industry giants like GE, Cisco, and IBM investing in IoT-driven smart inventory management. To survive this competition, Bossard aimed to make its solution compatible with any system the client company had in place.

While Bossard primarily planned to use analytics to optimize its own logistics processes, it would provide clients with data about their C-parts/fasteners. The challenge lay in integrating with upper-level Smart Factory Logistics software platforms responsible for automating and optimizing the entire manufacturing process. The lack of standardized integration interfaces for inventory IoT platforms

posed a challenge, but Bossard's SmartBin had the potential to become an industry standard for inventory parts, attracting interest from different industries.

Bossard's partnership with RWTH Aachen University for co-development aligned with its strategy. The university selected Bossard and its logistics system as a partner for its "Industry 4.0" demonstration factory, supporting Bossard's vision of imagining the future of smart factories.

Will Bossard's Smart Factory Logistics be a Disruptive Change?

Bossard, historically focused on developing advanced logistics solutions to reduce customers' Total Cost of Ownership (TCO) and boost fastener sales. Transitioning to a service model based on Smart Factory Logistics represented a strategic shift, where revenue would no longer come from selling screws but from being compensated for cost savings. This shift was reflected in Bossard's dedicated website <www.SmartFactoryLogistics.com>.

As a pioneer in smart factory logistics, Bossard's management team contemplated deploying the technology beyond its core market of equipment manufacturers. Potential markets for replicating the IoT-driven smart-inventory management service included hospitals, nursing homes, and other care institutions, where cost pressures were rising. Public hospitals, in particular, had opportunities to enhance efficiency but lacked expertise in this domain. Centralized purchasing and inventory stocking in warehouses were common, and the use of distributors investing in streamlining reordering processes was seen as a cost-effective alternative.

In hospitals, nurses manually checked supplies, and aging IT interfaces and interruptions in availability to patients made the process time-consuming. Private clinics, undergoing consolidation, and nursing homes, facing strict state control on prices linked to subsidies, were potential markets with different needs and challenges.

McKinsey estimated that IoT-based inventory optimization could significantly reduce inventory costs in hospitals, with potential global savings of $1-4$ billion by 2025. The overall value creation from IoT-based inventory optimization across industries was projected to reach $98-342$ billion annually.

The challenge for Bossard lay in assimilating small medical supplies like bandages, syringes, needles, and basic medicine to C-parts and integrating an automated inventory management system into the complex logistics of a hospital. Convincing the first clients to try the system required addressing specific concerns related to healthcare logistics and demonstrating the system's potential for efficiency improvement and cost savings.