

Accurate Inventory, Elevated Profits

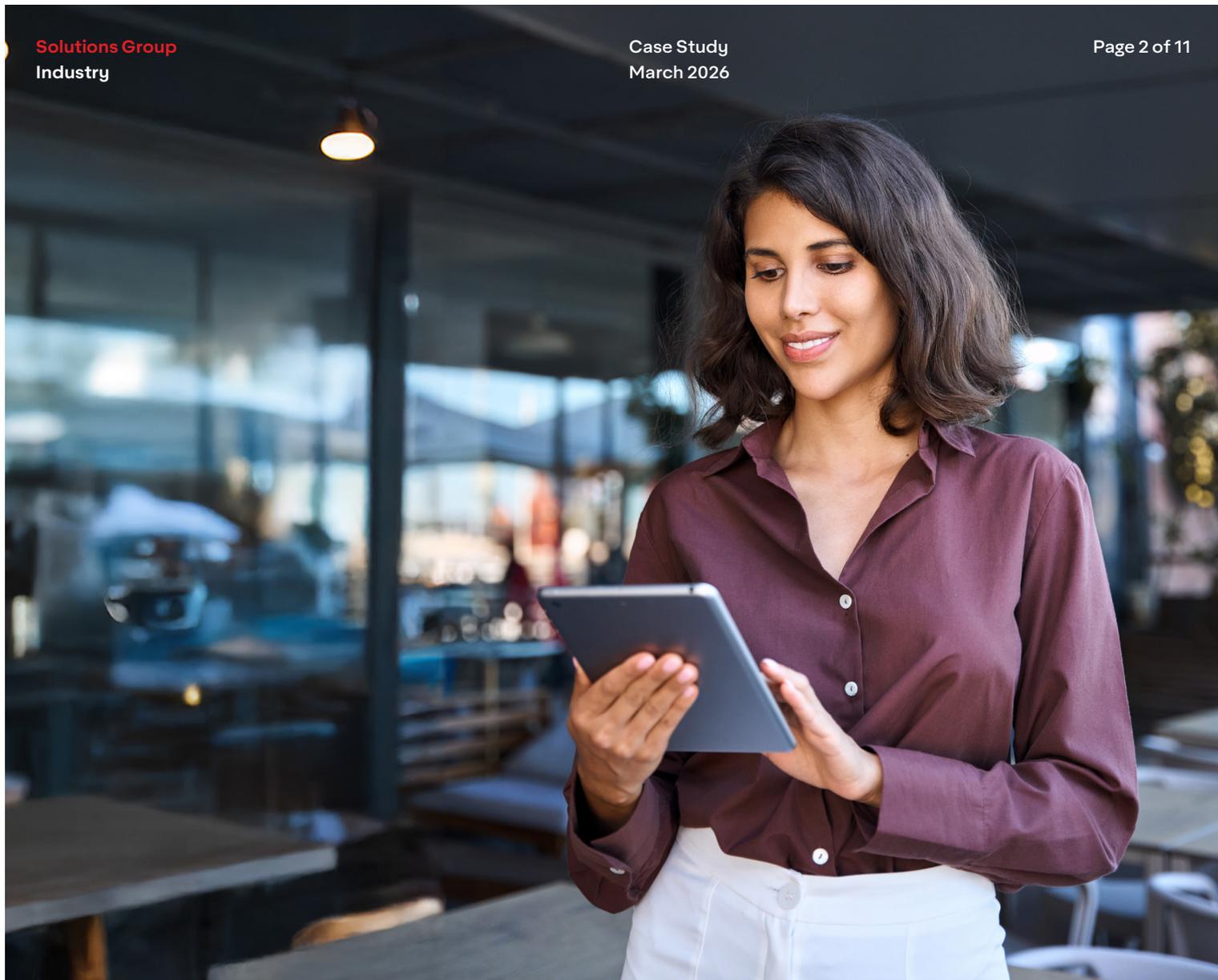
How RFID transforms
alcohol inventory
management in the
hospitality industry.



**AVERY
DENNISON**



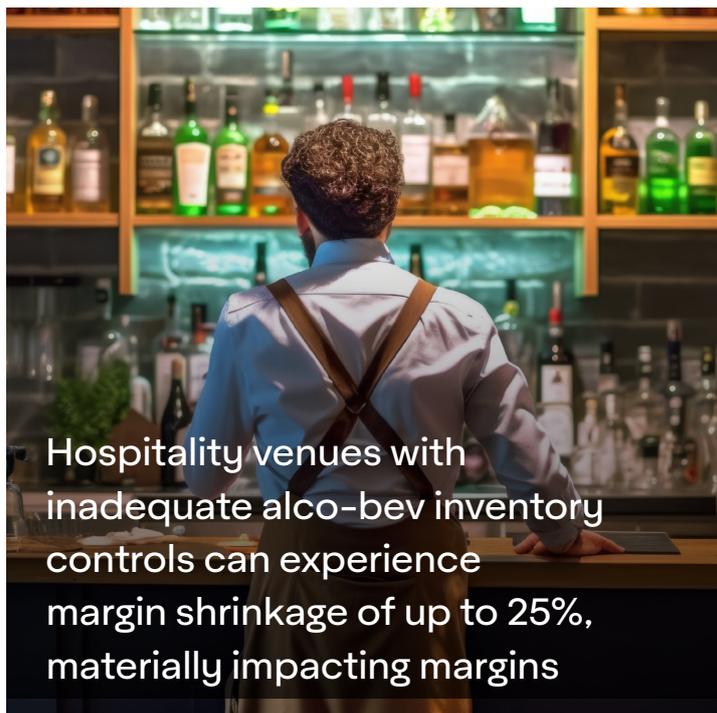
kristalball



Overview

The hospitality industry - particularly bars and hotels - consistently grapples with the complexities of managing high-value alcohol inventory. Despite being a high-margin asset, alcohol inventory management is time and labor intensive, often inaccurate and prone to margin loss. This case study explores how **kristalball – AI for hospitality!** leverages radio-frequency identification (RFID) technology from Avery Dennison and delivers a transformative solution, enabling unparalleled accuracy, increased profitability and greater productivity for the hospitality industry.

The Challenge



Managing alcohol inventory, predicting demand and ensuring seamless customer experiences have been persistent challenges in the hospitality sector.

Bar analytics lack automation and predictive insights essential to optimizing inventory. Inefficiencies often result in wastage, reduced customer satisfaction and missed revenue opportunities.

Common challenges:

- **Manual Counting and Data Entry**
Staff in an average-sized hospitality venue can easily take three to five hours or more physically counting alco-bev bottles and transcribing data into spreadsheets. *This process is tedious, diverts staff from guest service and is highly susceptible to human error.*
- **Inaccurate Stock Levels**
Inconsistent counts lead to discrepancies between recorded and actual stock. There is no visibility on actual consumption. *This results in either overstocking bottles blocking cash flow or stockouts, leading to lost sales and customer dissatisfaction.*
- **Significant Shrinkage**
Unaccounted losses due to theft, breakage, spoilage or over-pouring significantly erode profit margins. Without precise tracking, identifying the source and scale of shrinkage is nearly impossible.
- **Lack of Real-Time Visibility**
Manual systems provide only snapshots of inventory at specific times, preventing dynamic decision-making on purchasing, promotions and stocking based on real-time consumption trends.

These issues collectively undermine operational efficiency and directly impact the profitability of hospitality venues.

The Solution

kristalball is an innovative solution leveraging Artificial Intelligence (AI) and Internet of Things (IoT) to optimize inventory operations and maximize profits for the hospitality industry, especially bars, restaurants and hotels engaged in alco-bev sales.

Headquartered in Bengaluru, India, kristalball has revolutionized inventory management with its simplicity, accuracy and predictive analytics delivering visible financial, operational and productivity gains.

The kristalball AI & IoT solution integrates RFID tracking into its proprietary solution. After experimenting with various RFID labels in the lab and in the field, kristalball eventually found the perfect fit for their needs with Avery Dennison.

The chosen inlay turned out to be an excellent fit for their specialized requirements because it had to perform reliably under very specific conditions - with defined read distances and for liquid filled bottles.

While most RFID solutions were designed for retail use cases, this application was fundamentally different - a path-breaking innovation redefining inventory intelligence in the USD 730 billion hospitality industry and the solution worked - the right quality label was the only missing piece of the puzzle.

kristalball integrated the labels from Avery Dennison into its solution and successfully created 'digital twins' of every bottle. Combined with its proprietary algorithms, it has brought a unique and market-first digital inventory tracking solution to life that has replaced manual inventory methods for their customers.

While typical inventory tracking took hours, sometimes even days, kristalball operated in seconds.

The result sees 99.98% accuracy, in up to 90% less time, insightful predictive analytics that 'simplify life' operationally, 'maximize margins' and empower hospitality venues to '*re imagine hospitality*'!



‘From Chaos to Clarity – kristalball it!’

Unlike large ERP systems, the kristalball AI solution is agile, with an intuitive user-first design yet powerful as it unlocks meaningful operational and financial advantages for customers.

Operational simplicity helps venues save more than 3000+ hours of manpower annually while financial visibility helps venues bring back margins of USD 250,000+ to USD 650,000*+ annually. (*Approximate estimates for venues which do a reasonable amount of annual alco-bev sales in India. These values could vary based on the country of deployment, costs of alco-bev stock, cost of unexplained variances and cost of labor.)

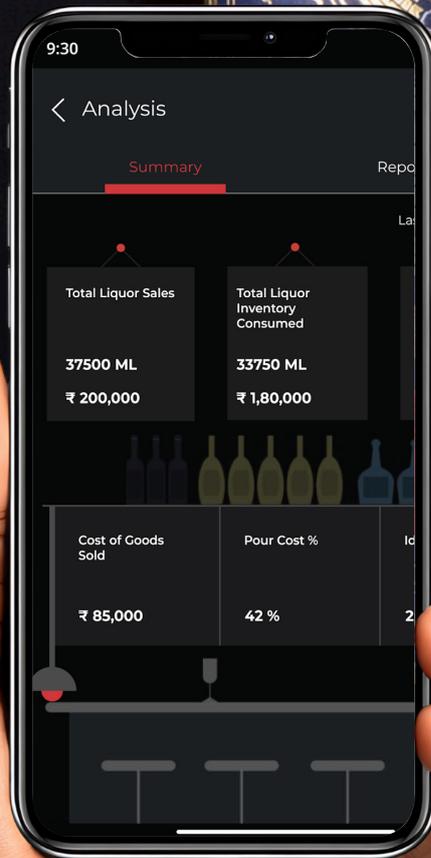
With kristalball, venues can get the following advantages:

- **Accurate & Precise Inventory**
kristalball’s patent pending technology redefines what inventory intelligence means – achieving a level of precision that goes beyond counting bottles to detecting in-bottle variance, including mixing and purity. Thus, unlocking an entirely new class of control, transparency, and trust in alco-bev management that has never before been possible in hospitality.
- **Real-Time Insights**
Hospitality teams can monitor consumption and other critical performance metrics including variance alerts, par level alerts, dead stock, slow-moving stock, pour cost etc. in real time – bringing control and confidence into daily operations. For owners and managers of a chain of restaurants, bars or hotels, being able to monitor performance remotely is a significant advantage.
- **Predictive Capabilities**
AI powered analytics forecast demand and optimize inventory against defined par levels, while automated alerts ensure teams stay proactively in control at all times.
- **Customer Engagement**
kristalball also enables Food&Beverage teams to understand how different alco-bev brands are performing based on kristalball’s actual consumption reports – no third party surveys, no human guesses – the consumption data accuracy of customer preferences enables venues to create personalized guest experiences that deepen connection and loyalty.

The challenge with innovative technology often lies in its adoption. When technology looks overly complex, cumbersome, or labor-intensive, users are quick to abandon it. From the outset, kristalball’s product philosophy has been to ‘put people front and center’ of product design. This has ensured that kristalball not only solves for operational and strategic ‘pain points’ but also, creates an intuitive and engaging solution that users can adopt easily and enjoy using.

“At the heart of everything we build is respect for the people who make businesses work. By simplifying complexity and improving clarity, our technology helps teams make better decisions and reclaim what matters most – time & margins.”

Smriti Krishna Singh, Founder and CEO of kristalball.



The Result

The RFID-enabled solution has offered a transformative approach to the hospitality industry, leveraging technology to address long-standing challenges in operations and alcohol inventory management.

It empowers bars and hotels to achieve unprecedented levels of inventory efficiency and, most importantly, significantly boost their profitability in the future.

– Optimized Operations

Reducing expired stock or wastage by up to 35%.

– Enhanced Productivity

Shortening inventory counting process from hours to seconds, providing actionable nudges to streamline processes and improve employee productivity by up to 85%.

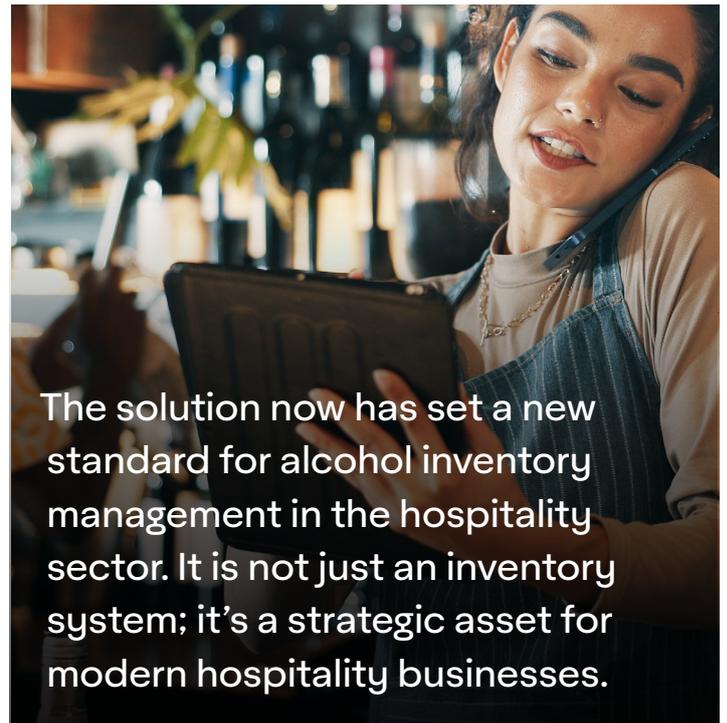
– Improved Revenue Realization

Offering accurate data and predictive insights to boost profitability by up to 20%, highlighting top-selling, top profitable drinks along with slow-moving and dead stock.

– Scalability and Flexibility

Adaptive to various hospitality formats, from individual bars to large hospitality chains.

The kristalball product continues to earn recognition and love across the hospitality industry in India and international locations. Whether it is a boutique bar, a small hotel bar or bars in large hotel chains, kristalball is seen as one of the most innovative solutions for alcohol inventory management. This would not have been made possible without Avery Dennison's high-performing RFID tags and the partnership between the two companies.



The solution now has set a new standard for alcohol inventory management in the hospitality sector. It is not just an inventory system; it's a strategic asset for modern hospitality businesses.

“Our recent project for the liquor industry with kristalball involves leveraging RFID technology to combat pilferage and track consumption patterns. This represents a shift for RFID adoption in India, where we’re moving beyond traditional segments such as apparel and retail, and venturing into unique and exciting new markets.

The technical challenges were considerable, requiring us to design a specialized tag that could be applied to various bottle types – from whiskey to vodka – and withstand a range of environmental conditions, including low temperatures and moisture. We found our company’s technical knowledge and label expertise were crucial in developing the robust solution in this case study.”

Tirthankar Kshetrimayum, Technical Marketing
Lead RFID, South Asia at Avery Dennison



Client Testimonials



Arun Ram
Sr. Director Finance,
Marriott International

In my time as a finance controller with hospitality, the biggest area of opportunity or a zone of weakness for a finance controller is beverage inventory. Beverage is nothing but liquid gold, and you see that walking in and out of the building. You have very little control of when it's walking in, when it's walking out, what money it's making. That's where kristalball came into play and showed us how we can have better monitoring or better control of F&B alcohol inventory. Previously, a month-end inventory would require two days of work, with kristalball, we can do that in about half an hour or an hour. In many of our hotels, we saw a significant reduction in our holding inventory after kristalball came in. We could control our cost better, we could control our inventory better, and monetize beverage much better, thanks kristalball.



Ashish Kapur
Owner,
Baccarat Hospitality

At Whiskey Sambar, managing cost control was always a nightmare. For bartenders at the end of shift to calculate the inventory was not just a time-consuming exercise but wasn't always accurate. In our business, the beverage cost was the "crux of managing the entire production cost." That's exactly where a consistent, technology-led solution through kristalball helped us tremendously. For the staff, the process of measuring the liquid at the end of every night was very simple and not labor-intensive. More importantly, it gave real-time feedback to how much of what was getting consumed. This allowed us to not only see what was being sold but also to use that data to reorder effectively, which in many ways cut down inventory that did not move in our ordering cycle. From cost controls and measuring sales to helping us reorder, and ensuring that we could measure whatever we put in, this is tremendously helpful. We need more such solutions which use the power of technology and measuring in our F&B business to give us calculated solutions. Thank you so much kristalball, it has a big effect on their business.



Deepak Jeena
Director of F&B,
JW Marriott Bengaluru

I personally believe the industry has gone through a lot of transition over the last decade. To do an inventory closure for the day end, we had to note down each and every item whatever the consumption is, what is the stock pick up, what are the transfers which have happened between one outlet to another outlet. Time is money and kristalball has been efficient which we have seen since the time it has been implemented in our property. It helps a great deal, a bartender can easily now go home two hours earlier as compared to the initial two hours extension because of closing the bar, data entry of stock movements which is now considerably reduced and everything is there in just a click. Menu engineering has become easier, and everything is simplified. Technology is always useful, I think it is one of the most amazing tools, which has been given to the industry and to the F&B industry per se, and I think it should be used everywhere.



Washique Khan
F&B controller,
JW Marriott Bengaluru

The biggest challenge we had with alcohol inventory management was taking the physical inventory. It was a huge task which used to take at least a couple of hours or sometimes even days. Another issue we used to face a lot was pilferages and how to address the variances, and reconcile it at the earliest. With kristalball a lot of jobs get eased out. The AI software which we have implemented is a huge game changer within the hospitality industry, having live inventory in our hand and to track how the stocks are depleting and what is happening.



Karthi Krishna
Director of Finance,
JW Marriott Bengaluru

It helps us to reduce our financial loss of course and the inventory loss, the next plus benefit from an operation point of view is if you see the incremental revenue on that, if the server wants to know about the product, it gives you a brief about the product, also, in the app it will show what are the high selling products, what are the low selling products and it tracks even the high volume of stock which is non-moving, slow-moving. So, it reduces the overall time of the F&B controller.



kristalball

kristalball is a technology innovator blending IoT and AI to deliver simple, powerful tools for bars, restaurants, and other hospitality venues. It is the world's first AI-powered SMART solution for alcohol inventory management. The kristalball platform automates & predicts inventory needs, empowers frontline teams with insights to optimize stock, save time and elevate guest experience effortlessly.

With kristalball, venues can:

- Predict inventory needs with 99.98% accuracy
- Boost productivity by more than 85%
- Protect margins & increase profitability by up to 20%
- Streamline operations and communication across teams

From bartenders to business owners, kristalball helps every team member get the most out of smart technology every day so that staff and managers can focus on great service – not stock counts. kristalball is committed to make hospitality simpler, smarter, and more profitable – for everyone. Leading hotels & bars are leveraging kristalball to **'Reimagine Hospitality!'**



Avery Dennison Corporation (NYSE: AVY) is a global materials science and digital identification solutions company. We are Making Possible™ products and solutions that help advance the industries we serve, providing branding and information solutions that optimize labor and supply chain efficiency, reduce waste and mitigate loss, advance sustainability, circularity and transparency and better connect brands and consumers. We design and develop labeling and functional materials, radio-frequency identification (RFID) inlays and tags, software applications that connect the physical and digital and offerings that enhance branded packaging and carry or display information that improves the customer experience. Serving industries worldwide – including home and personal care, apparel, general retail, e-commerce, logistics, food and grocery, pharmaceuticals and automotive – we employ approximately 35,000 employees in more than 50 countries. Our reported sales in 2025 were \$8.9 billion. Learn more at www.averydennison.com.

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