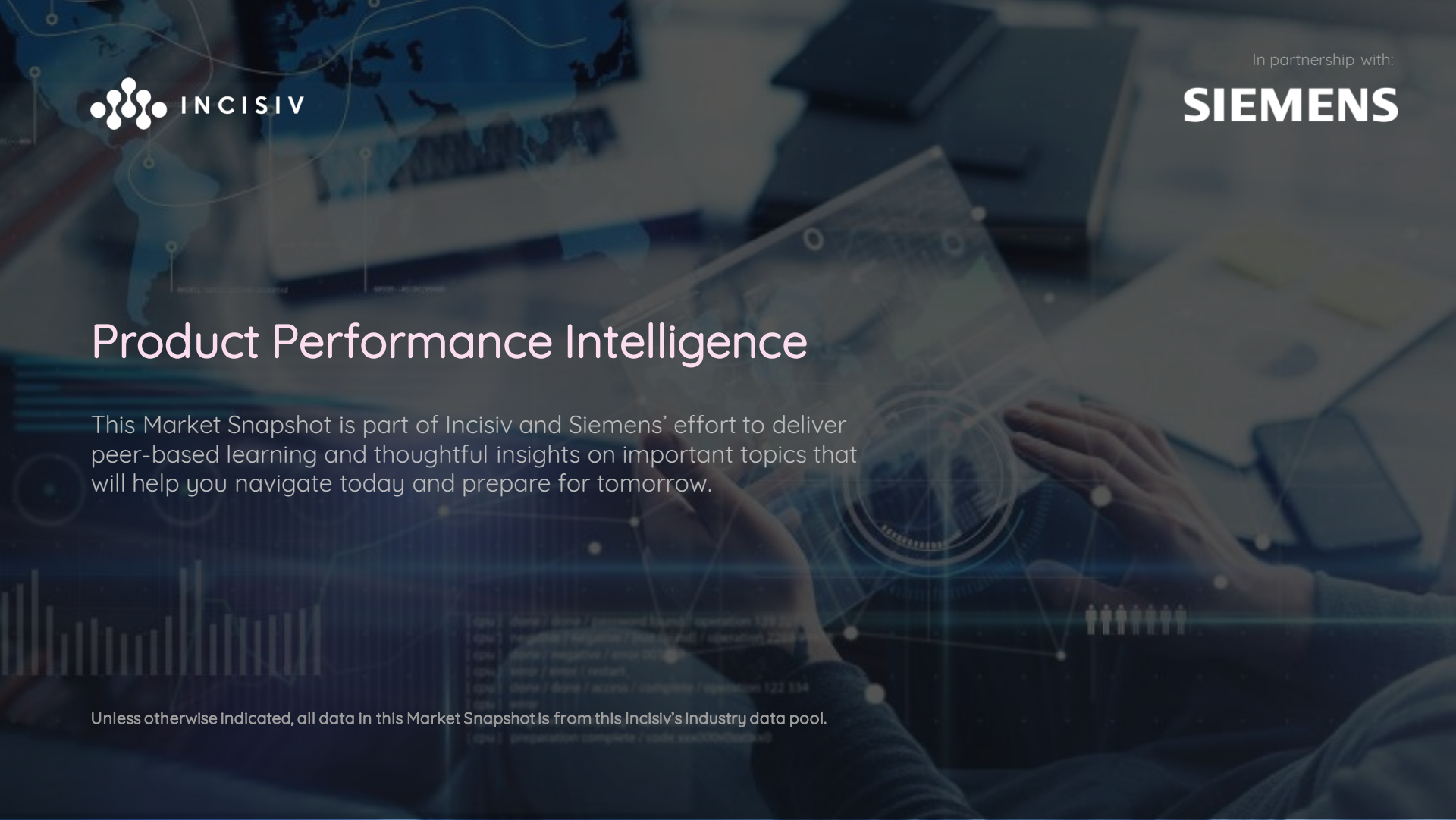


INCISIV

In partnership with:

SIEMENS

Product Performance Intelligence

This Market Snapshot is part of Incisiv and Siemens' effort to deliver peer-based learning and thoughtful insights on important topics that will help you navigate today and prepare for tomorrow.

Unless otherwise indicated, all data in this Market Snapshot is from this Incisiv's industry data pool.

Product Performance is the bedrock on which a brand is built. It not only helps companies understand the performance of products but also helps analyze performance in an external environment and forms input for product evolution.

- More than 65% of enterprises have adopted Smart Products.
- By 2023, there will be 15 Million connected devices. 48% of these will be smart home appliances.

Continuous monitoring of Product Performance and using that as an input for product evolution results in big wins:

- Up-to 20% Improvement in Customer Satisfaction (NPS)
- Up-to 30% reduction in customer attrition
- Up-to 10% reduction in operating cost
- Up-to 18% increase in usable product life

In today's complex global value chain, products are being transformed rapidly so that they don't operate in isolation enabling manufactures to receive proactive performance feedback

From a strategic point of view, interconnected products can be constantly improved using an agile development model making them customer-centric

Manufacturers are transforming their products using sensors, technology, and data storage cloud capabilities. The traditional concept of building products and then forgetting about them until the service period is changing. Manufacturers no longer depend on fixed service cycles to analyze their products and are now looking to incorporate real-time customer feedback into their design and development cycle.

Evolution of Product Performance

Traditionally: Reactive

Sell a product, react to customer complaints when a product breaks down, an offline feedback mechanism.

Current: Active

Prevent breakdowns and avoid service delays using digital sensors in the product.

Now to Future: Pro-Active

Use product performance data as an input to improve product design and performance

Outcomes

- Low customer satisfaction.
- Average user experience.
- Customer churn.
- Delayed feedback for product improvement.

- Improved customer satisfaction.
- Improved user experience.
- Reduced after-sales cost.
- Real-time performance tracking.

- High customer satisfaction.
- Low customer attrition.
- Reduced operating cost.
- Integrated performance tracking and product evolution.

Introducing measuring and monitoring technology into products through sensors allows the product to send data to the cloud, which can then be accessed remotely by the manufacturer. It enables devices to stay connected all the time.

- During the COVID pandemic, 84% of businesses felt that introducing IoT in order to create Smart Products was a key factor in successfully running their business.
- Smart home products market which includes automation systems like lighting and appliances is expected to reach $53 billion by 2022.
- Smart Home Products have a global penetration rate of 21.2%.(2021).

Companies are increasingly investing in converting their products into ‘Smart Devices’ for proactive performance analysis and to deliver high-performance products

By introducing sensors into products, companies can gather real-time data on the performance of a product. Cloud Computing enables efficient storage, management, and provision of this real-time data. Analysis of the data can help increase customer service efficiency and improve product design and the development of customer-centric products.

Continuous Product Development

By gathering data on how consumers use products, companies can detect flaws in their designs and incorporate constant feedback to design customer-centric products that address real-life problems.

Predictive and Prescriptive Product Maintenance

Data from connected IoT devices is collected and directly stored in the cloud. Cloud enables the analysis of real-time data to identify operational issues in advance. The information gathered is then used to solve problems before they occur, thereby increasing service efficiency.

Product Lifecycle Management

Product performance analysis can be used to understand how customers really use products. Their needs and usage habits can be monitored, and feedback incorporated into new product development cycles.

After Sales Service and Communication

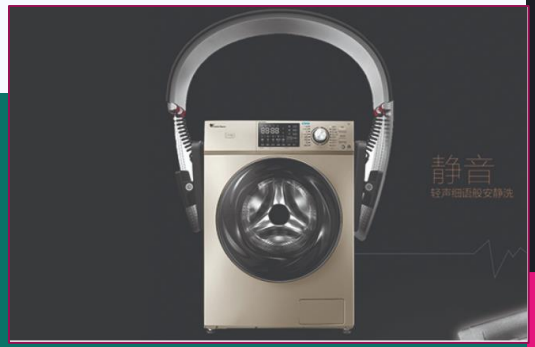
Companies can send service reminders to customers by analyzing performance data stored on the Cloud. User data can be securely stored and analyzed to recommend future actions to increase customer engagement.

#1 Continuous Product Development: Integrating customer needs into product design

Nowadays, most consumers interact with more than one connected product simultaneously and sequentially. Designers should design products with multi-level customer journeys in mind while focusing on seamless interoperability. With real time performance data analysis, designs can be altered throughout the product life cycle.

Customer-centric product design begins with customer usage data. This data helps designers conceptualize product design with research to ensure that the right customer problems are being solved. Data gathered on the following can be used to improve product design

- Peak product usage times and duration of use.
- Top customer queries and product functionalities used.
- Any problems encountered during product usage.



LittleSwan

Challenge

With the increasing competition in the Washing Machine industry(China), the price was no longer the differentiation factor. As a result, manufacturers were looking to design products that are comfortable and reliable for consumers.

Problem Analysis

Little Swan installed sensors in its washing machine to understand

- Causes of excessive vibration in the machine.
- Identify the most important and influential factors that cause noise.
- Analyze data to find ways to improve product design.

Result

- Data analysis helped in product redesign by improving spring reinforcing elements.
- Vibrations reduced by 50%.
- Noise was reduced by 3 Decibels.

"The core competitiveness of washing machines lies in precisely grasping consumer requirements. 'Quiet,' 'durable,' 'stable,' and 'energy-efficient' are the technical targets that are continuously pursued by Little Swan. In this process, the Simcenter Testlab solution from Siemens PLM Software plays an important role."
- Gu Chaolin,Chief Engineer of Performance Development, R&D Little Swan

Empathizing with customers by understanding the role product usage plays at the core of their daily lives in the context of each moment and state of mind sparks new product design ideas and innovation.

#2 Maintenance : Predictive and Prescriptive

Product performance analysis is critical to minimizing failures and adequately maintaining products to ensure consistency in their performance. With the changing needs of consumers, Preventive Maintenance is gaining importance by helping companies improve their reliability and build trust with their customers. Prescriptive Maintenance allows companies to identify what factors are not performing well, remotely adjust them, and alert consumers about usage issues.

Analyzing product performance can help with the following

- Understand product performance issues.
- Prevent product downtime.
- Monitor the health of the product.
- Reduce unnecessary maintenance costs.

"Predictive maintenance can reduce part replacement cost by 10% and labor cost by 25%"
- Incisiv Research

coway

Challenge
Provide customers with a long-lasting, good-quality product that they can trust.

Analysis
Coway uses data to analyze

- Each function that is used by the consumer, failure rate for each.
- Established a FRACIS System(Failure Reporting, Analysis, and Corrective Action) to prevent future failures.

Result

- Real-time water usage and product performance monitoring reports are sent to customers regularly.
- Indicates when the filter needs replacement.

Coway's smart air and water purifiers are compatible with Amazon's voice assist. The system can be synced to send maintenance reminders and alerts to consumers.

#3 Product Lifecycle Management : Analyzing product usage

Traditional product development has a one-way flow of information. Customer feedback is rarely incorporated into additional iterations of the product or into new products that are under development. Interconnected Smart Products have digital Twins that are created using sensors and technology. A twin is a virtual representation of the actual product that uses data analysis models and simulations to monitor product usage and performance.

Using a digital twin can help companies

- Gain competitive advantage by incorporating customer needs into the development cycle.
- Increase customer satisfaction.
- Improve product efficiency through virtual monitoring.

DeLonghi

Challenge

DeLonghi realized that innovation in 'Product Functionality' for household appliances can give the brand a major competitive advantage.

Analysis

The quantity of coffee, pre-infusion, and even water temperature were considered important factors in making the best coffee. The Smart Coffee Machine model controlled these factors while allowing consumers to manually operate the machine.

Result

- The machine increased user convenience by providing custom coffee recipes.
- Improved the quality of coffee made.
- Improved customer satisfaction by allowing consumers to control the machine through a mobile App.

"We are the first market in the world to launch La Specialista Maestro, which is the evolution of our hero manual machine, La Specialista. From the grinding, dosing, brewing and texturing, consumers have creative freedom as to how they make their coffee, whilst benefiting from cutting edge De'Longhi technology for precision and best extraction of flavor."

- Mr Paolo Albertoni De'Longhi CEO Australia and New Zealand

#4 Improved After Sales Service : Innovative Customer Service

To ensure value creation with connected devices, manufacturers are making customer service a top priority along the customer lifecycle. Using the data collected through Smart Products, companies can personalize their communication with customers by suggesting relevant products, guiding customers on product usage, notifying them of new product features, and suggesting timely repairs. This is a great way to improve customer experience and build customer loyalty.

Proactive services provided to customers can help generate new revenue streams by increasing the number of products serviced every year. Customer Service executives can better understand customer problems from remote locations allowing them to suggest corrective measures with higher accuracy.

"89% of consumers are more likely to make another purchase after a positive customer service experience".
- Salesforce Research

"A customer is four times more likely to switch a competitor if the problem they're having is service-based".
- Bain and Company

BOSCH
Invented for life

Smart devices help streamline the customer service support process
When customers speak to an agent, the agent is aware of the exact problem, as they have access to product performance data.

Customer Support Teams are alerted
- If there is a performance issue with the product.
- If any part of the product needs immediate replacement.

Result
- Consumers have a user manual on the App.
- They are alerted when the product is due for service.
- Quick and efficient interactions with service teams.

66% of adults feel that valuing their time is the most important thing a company can do to provide them with good online customer experience.
- Forrester

Analyzing data to understand product performance gives businesses a competitive advantage by enabling them to create longer-lasting, user-friendly, and differentiated products for their customers.

Products installed with sensors in 2020:

- Consumer electronics: 53%
- Home appliances: 72%
- Sporting goods: 21%
- Furniture: 10%

Benefits: Product Performance Monitoring

Improved Products: Complex products like pressure cookers, ovens, vacuum cleaners constantly provide feedback to the manufacturer. The resulting information collected can be used to predict - when maintenance is required and help design product improvements that are suited to the evolving customers' needs.

Reduced Operating Costs: Most businesses end up spending extra on after-sales services given to customers. Products stop functioning during the warranty period and must be replaced by the manufacturer. Through constant product performance monitoring failures can be predicted and resolved.

Enhanced Customer Service and Experience: Analyzing product performance can help manufacturers engage with customers even after the product has been sold to the customer. Additional sales can be generated through service related revenue streams like replacement of product parts.

Better understanding of Customer Preferences: The best way to see how a consumer operates a product is through real-time data gathering. It gives helpful insights into the usage and habit patterns of consumers. These insights are then incorporated into future products..

Improved Team Collaboration: A constant feedback mechanism for product development and analysis of product performance using data creates transparency amongst various product teams(From design to service), which allows for better communication and coordination.

Xcelerator Cloud

From startup to large enterprise, you can scale IoT capabilities to match product and market requirements. Software-as-a-Service gives you the power of the world's most comprehensive digital twin – now in a more accessible, scalable and flexible form

Internet of Things

MindSphere solutions enable analytics and AI capabilities for connected IoT devices. The data gathered from various devices/consumer products is collected in one central location using **MindSphere**, allowing real-time data analysis.

Benefits

- Mindsphere Solutions help predict future failures/downtimes, thereby improving operational efficiency.
- Allow global access to cloud-based solutions.
- Provide 24x7 access to device/product performance data.
- Large volumes of data can be gathered and securing stored using the cloud solution.

To learn more about MindSphere

SIEMENS

Low Code Application Development Platform

Mendix is the world's leading development platform that connects various devices, assets and data systems. It is a low code application platform that enables faster application development with fewer resources.

Benefits

- Improves operational efficiency.
- Automates the App development cycle.
- Allows for seamless connectivity of both physical and digital worlds.
- Provides an optimal user experience for various customer touchpoints through effortless and efficient user applications.

To learn more about Mendix

In partnership with:

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