



Managed Testing: Empowering Retailers to Manage Costs and Achieve QA Excellence



Table of Contents

Introduction.....	03
De-risking the digital world of retail	03
Modernizing and optimizing operations while upgrading customer experiences.....	04
Questions to ask to determine coverage of Managed Testing	05
Why Managed Services?.....	07
A phased approach to testing.....	08
A future-proofed Roadmap to Cost-efficiency	10
Traditional testing vs managed testing	10
Lean Automation.....	11
Five Major Benefits of Managed Testing	12
A Futuristic Approach to Retail Testing	14
Test Automation Frameworks	16
DCqaf – Retail Test Automation Framework	16
Robotic Arm Solution for POS Testing.....	17
Case Study	19
Conclusion	20




Introduction

De-risking the digital world of retail

The COVID19 pandemic was an important trigger for the global economy as it heightened risk aversion and restricted consumer mobility catalyzing phenomenal changes in consumer expectations, spending and saving patterns.

A competitive digital makeover requires retailers to assess their business requirements and digital capabilities and work with technology service experts to eliminate operational and business risks. It is imperative to choose agile and efficient quality engineering processes which employs tools like artificial intelligence and machine learning to eliminate risks in the digital transformation and create a seamless omnichannel user experience at lower cost. One of the ways this can be achieved is AI-enabled automating testing of web, mobile and POS applications as it ups user experience significantly, improves mobile responsiveness, secures customer data and transactions and ensures a faster check-out.

Reduction of errors in user interface while speeding testing can only come if automated testing solutions are chosen over manual testing. The latter is cost effective too.



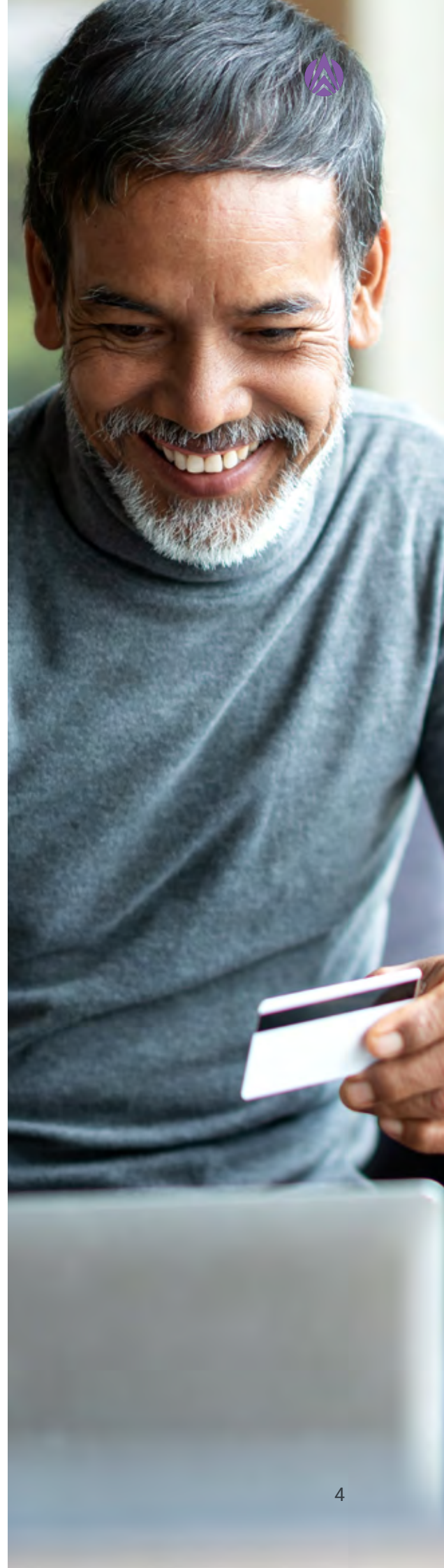
Retailers need to embark on a **digital transformation journey** to **enhance customer experiences** through seamless omnichannel interactions, build brand loyalty, minimize business risks, and stay ahead of the competition. Rapid innovation, deployment of robust technology solutions, investment in data, and integration of pandemic outbreak models are imperative to tackle the ongoing challenge.

Modernizing and optimizing operations while upgrading customer experiences

The online retail industry is in a mature phase and hence modernizing and testing operations require quick completion to stay competitive.

Your retail business's sustainability depends on its capability to deliver seamless, upgraded customer experience and service through its website and mobile applications, with zero loading speed issues, payment gateway integration problems, browser/platform combination issues, or other errors. Quality testing is key to get rid of glitches and bugs, providing excellent customer experience and digital commerce acceleration. It would help if you had a solid Quality Assurance (QA) strategy and execution in place to improve conversion rates and business efficiency.

Automating the testing of e-commerce, m-commerce, POS, and API-enabled applications is critical to delivering a smooth shopping experience to customers. You must ensure a vigorous testing cycle that provides error-free functionalities and better usability on their web and mobile application. Integration and usability testing across multiple environments have to be done by supporting frequent functionality changes and allowing quick and easy script modifications.





Questions to ask to determine coverage of Managed Testing

Managed Testing Services (MTS), is designed to mitigate risks, achieve a higher Return on Investment (ROI), and a lower Total Cost of Ownership (TCO) by enhancing testing efficiency, lowering costs and saving time. Retailers can focus on **improving customer experience** and **brand loyalty while Managed Testing Services provides complete QA ownership** across all IT systems and Software Development Lifecycle (SDLC) process. The automated testing service manages Quality Engineering (QE) right from defining the test strategy to test planning, test execution, test management, defect management, reporting, and optimization.

In today's scenario of fierce e-commerce competition, as a retail business, you need to ensure that your managed testing service is end-to-end, covering the entire suite as listed below.



The testing service provider must have an in-depth knowledge of the retail landscape, such as Merchandising and Sales Audit, POS, e-commerce, Mobile applications, Warehouse Management, Financial Planning, Demand Forecasting and Inventory Management.

Retailers need to understand the use of test automation and the cost factor involved to decide the appropriate coverage level. The managed testing service provider should continuously innovate and be on the lookout for new technologies to improve testing, making way for optimal test coverage, cost, and time to market.



Retailers should ask the following questions to determine the coverage of the Managed Testing Services.

1

Does the quality automation framework cover the retail application landscape that includes merchandising and sales audit, pos, e-commerce, mobile applications, warehouse management, financial planning, demand forecasting and inventory management?

2

Does testing the entire retail landscape a part of the test strategy?

3

Do they have a phased approach that would not lead to any data/functionality loss of the existing systems?

4

What is the percent of automation coverage for e-commerce and POS?

5

Does the quality engineering cover test strategy, test planning, test execution, test management, defect management, reporting, and optimization?

6

What is the timeline for **achieving QA maturity**?

7

Does the goal of having a Testing Center of Excellence (TCoE) a part of the test strategy?

8

How do they test automation in Continuous integration (CI) and continuous delivery (CD) mode?

9

Can they provide a 360° view coverage of the applications being tested?

10

What will be the cost-saving, effort reduction, and time to market forecast for the first two quarters?

11

Who are the clients for whom the provider has successfully driven test automation?

Why Managed Services?

Retail businesses today battle several challenges during the quality testing process. You may be struggling to create value due to increased cost of testing, underutilized team, efforts duplication, visibility of testing, quality of the delivered product, lack of standard testing process, and increased workload to specialized departments.

Helping conquer these challenges, MTS delivers end-to-end QA ownership across all IT systems and applications that help you create strategic value. It ensures full transparency throughout the transformation of test processes and environments. For instance, during the autopsy of a defect – you get a granular look at what went wrong and where – be it product, area, region, or even a line of code. It adds a lot of speed and clarity to the rectification process.

Retailers must understand that success in today's digital world rests on the foundation of customer experience. An end-to-end QA and automated testing process is crucial to drive exceptional customer experience. QA excellence equals operational excellence, service excellence and business excellence.





A phased approach to testing

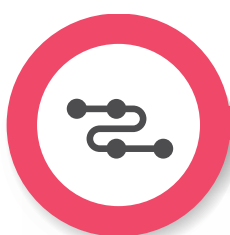
With MTS, you can follow a phased roadmap approach to test applications, so that the project works in unison instead of in silos. This low-risk and incremental approach can cover the full stack to web, legacy, packaged, and custom applications across systems like Enterprise Output Management (EOM), Warehouse Management Systems (WMS), and Point of Sale (POS) systems.

The robustness of your managed testing services depends on the QA service delivery model. Hence, you need to follow a phased approach.



Establishing the business case

The first step is to establish the right use cases to put the right KPIs in place and measure your managed testing methodologies. It helps align your project milestones with your desired outcomes. You need to have a 360-degree view of your business case that includes existing pain points, the scope of testing, roles and responsibilities, and readiness capability. Along with SME test consultants, you can chart out a definitive roadmap that ensures transparency, ownership, and a clearly-defined path to progress.



End-to-end analysis and design

The second step is to develop a solution that will help you meet your project objectives. From finalizing KPIs and assessing service maturity to creating a transition plan and making adjustments to the business case, it goes a long way to trigger key steps that result in realizing tangible business value. As part of the design phase, you must deploy and customize test automation frameworks, model-based testing, workbench solutions, and accelerators, layered with AI and ML-driven technologies, to scale faster and drive more accuracy and efficiency.



Implementation and scope of innovation

Once the project implementation kicks off, it is important to assess major components like market readiness, testing quality, project flexibility, and scope of innovation. You must ensure that your test environment is ready to go, along with an updated priority list to sort out issues that may occur during the transition. It is also important to start continuous monitoring of the KPIs so that you keep your costs in check while minimizing testing lead times.



Finalizing the exit strategy

Finally, the exit strategy needs to be created to effectively deal with contract closures for any number of reasons. It helps both the organization and the service provider to reach an agreement regarding the knowledge repository, the tool stack, and the knowledge transfer to ensure business continuity.





A future-proofed Roadmap to Cost- efficiency

Traditional testing vs managed testing

Traditional testing methodologies have been in vogue ever since the inception of software development.

Conventional manual testing is time-consuming and tedious as the product or application can be tested only after the development stages are completed. As changing requirements and upgradations could not be accommodated easily in the testing phase, the traditional testing methods proved to be a major bottleneck to cost-efficiency, resulting in a delay in time-to-market and lower ROI with each bug-removal and testing phase.

On the other hand, managed testing addresses cost efficiencies and speed in product development through optimized processes and practices using advanced tools and reusable assets. Using a unique testing methodology, managed testing provides optimized, agile, scalable, and consistent test delivery with the highest quality and timeliness standards. Equipped with Artificial Intelligence (AI) and Machine Learning (ML) functionalities, the testing methodology includes testing the retail system in sprints, saving a lot of time and effort.





Lean Automation

With automated testing being an integral part of agile methodologies, retail businesses today are taking the road to cost-efficiency by going lean on their QA and QE approach. They are keen on eliminating bulky manual testing methods that add no value to the ultimate goal of reducing time, cost, and effort. Striking the right balance between application quality and time-to-market, managed testing service helps retailers realize lower Cost of Quality (CoQ) and greater ROI.

The testing process is implemented in an agile environment with flexible teams spread across on-site, off-site, near-shore, and off-shore working environments. These resources can be ramped up and down according to the project demand.

Costs are further optimized by consolidating licenses, leveraging open source tools, and ensuring high service quality. Insulating businesses against operational and quality risks, lean automation is critical to retailers who seek to achieve DevOps objectives, improve quality, and accelerate innovation.





Five Major Benefits of Managed Testing

Going beyond just detecting bugs and fixing them, managed testing provides an approach that shapes, refines and elevates the product at every level of its development lifecycle.

Reduced TCO

Minimizing Total Cost of Ownership (TCO) plays a crucial role in maximizing **Return on Investment** (ROI) for businesses. **MTS helps you save 30% to 40%** of the overall cost by applying the DevOps culture to projects, which reduces cycle time and testing costs. The pay-for-what-you-use method helps retailers focus on their critical functional areas, while collectively testing the entire landscape without compromising quality. MTS provides more cost-efficient options by enabling retailers to choose between the traditional testing method and the new age AI and ML-based frameworks based on relevancy.

Continuous scope for automation

The **dynamic nature** of the **retail industry demands frequent technology upgrades**, thereby requiring continuous automation. To build robust, viable, and scalable systems and processes, **efficient automated MTS** with high performing accelerators and scalable automation framework is indispensable to retail businesses. By optimizing timelines and eliminating human errors, MTS covers your entire process automation (based on feasibility), automated User Interface (UI) testing, mobile automation, API testing, and application automation.



Going digital with more products and services

With consumer mobility restricted due to the ongoing COVID-19 crisis, **retail enterprises** are **forced to go digital to sustain their businesses**. **MTS** effectively ensures the **quality and prevents data spillover** while you transition from legacy to new-age applications by supporting both platforms. Flexible to functionality changes and script modifications, MTS includes testing of frequent upgrades such as new product additions and deletions, services, offers, discounts, and features in a holistic manner.

Measurable quality improvements

Quality checkpoints at different levels, such as **eCommerce, CRM, third party integrations, EOM, WMS, POS, and other systems**, is critical to bring equilibrium to the retail landscape. MTS provides clear Service Level Agreement (SLA) driven engagement, and outcome-based ownership on quality, by adopting time tested industry best practices/processes across the IT/ application landscape for consistent quality output. The testing approach follows customized operational, tactical, and strategic metrics that measure performances such as cost reduction, test quality, flexibility, time-to-market, and reliability.

Continuous scope for automation

In the **complex arena of retail software testing**, having deep knowledge in the retail domain, as well as automated software testing, is vital. With customers, partners, vendors, and supply chain at stake, retail businesses are bound to lose track of implementing their IT requirements, if resource skill gaps are not addressed. To manage capacity and save effort, MTS provides flexible teams with diversified skills and a single point accountable ownership that can be ramped up and down on demand.



A Futuristic Approach to Retail Testing

Introducing Aspire Managed Testing Services

Understanding the need of the hour and keeping in mind the future of retail, **Aspire Systems offers end-to-end transformation services** for retail to facilitate a modern retail experience for shoppers. Aspire Systems has been supporting retailers in business expansions and revenue growth for the past 20 years through service offerings ranging from customer-centric solutions to productivity-enhancing applications. Our retail consulting expertise spans across the length and breadth of the retail industry.

Aspire systems empower retail enterprises to focus on their core critical activities while taking complete responsibility for Quality Assurance and Quality Engineering. We follow-through with reporting and optimization, making the entire SDLC process seamless and smooth from defining test strategy, test planning, test execution to test management, and defect management.





Why Aspire Systems?

Industry Focus

Aspire has worked with several Fortune 500 retailers to up their testing game with managed services. We pride ourselves in having helped shift their operational paradigms. Our success rate come with the ability to first derive a holistic view of the retail landscape to better understand each application layer that falls under it. And we have the experience that gives us the foresight to know 'which-change-would-impact-where'.

Innovation

Aspire brings to the table best-in-class test automation framework (DCqaf), model-based testing, and in-house accelerators. Our customers get to embed our best practices with their retail testing efforts. With constant R&D innovation, we not only ensure faster delivery with improved ROI but also the level of adaptability to thrive in unpredictable markets. For instance, we recently built a completely automated, self-driven testing process, through AI-driven automation frameworks, to test a robotic arm at a retail store.

Maturity Model and Metrics Strategy

Aspire's comprehensive maturity model is adaptable to the context of how your business operates and helps you through any process changes. We evaluate the quality of processes time-to-time to achieve higher quality in governance and development for your KPIs. We also back it up by identifying KPIs to define the path of the testing journey.

Delivery Models

Aspire has the proven track record of empowering organizations to de-risk any event disruption accelerating the delivery of projects. Using a standardized process that guarantees a high degree of collaboration, we provide extensive coverage for 24X7 operations of your business. Our ability to scale up or down, without any knowledge spillover, can be a critical parameter for your testing success.

Numbers—driven

Cost Savings:

Up to **25-35%** cost savings within the first year of using hyper-testing methodology

Reduced Test Efforts:

Up to **50%** reduction in overall test efforts through continuous improvement and best processes

Improved Time to Market:

20% improved time to market through greater transparency of testing processes and procedures



Test Automation Frameworks

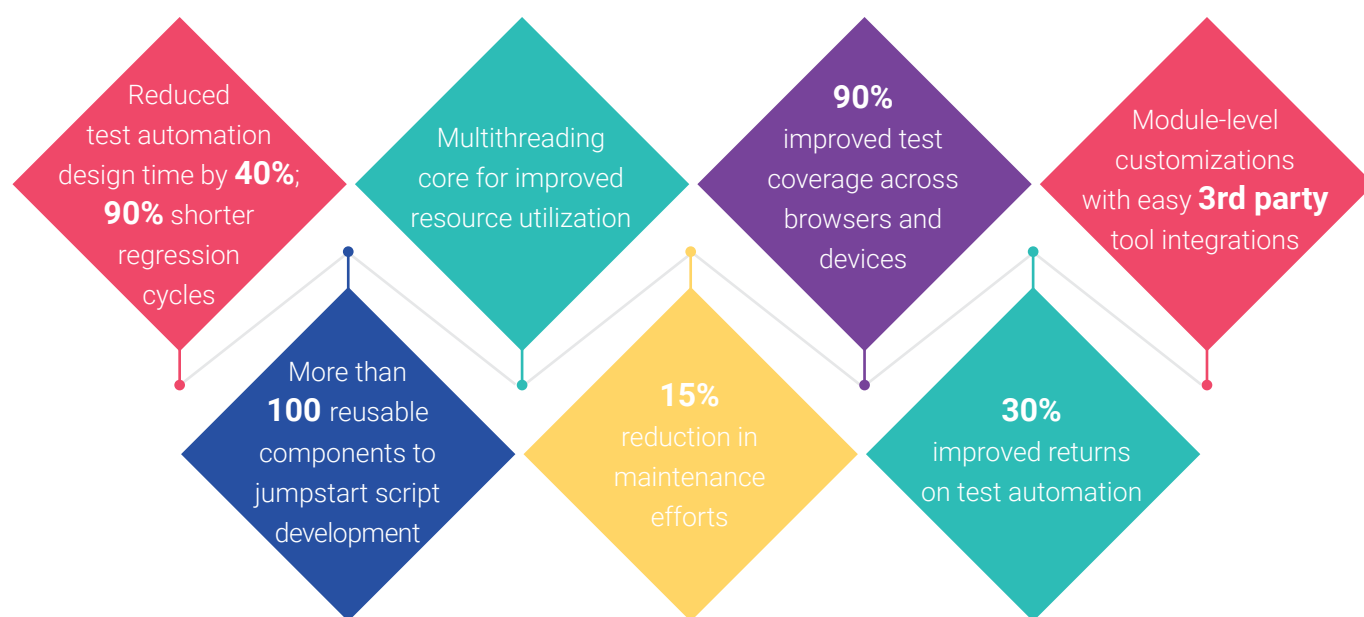
DCqaf – Retail Test Automation Framework

A lot of evidence points that the retail world's future is an all-encompassing horizon with the customer at its center. This means that seamless omnichannel systems are the means to ensure a thriving ecosystem. In a highly competitive environment like this industry, a solid testing framework is what differentiates the winners from the others. DCqaf framework's one-for-all solution has ensured that retailers, irrespective of their size, worth, or geography, can manage a fully-functional integrated testing system.

Aspire's revolutionary Digital Commerce quality automation framework (DCqaf) is a robust automation testing framework that has been designed to combat the complex challenges in the retail industry. With powerful, best-in-class tools integrated, DCqaf framework addresses difficulties that retailers face with intelligent methodologies to push them ahead of their competitors.



Right from collecting test data to generating custom test reports, this framework ensures that the entire testing process is accurate and careful to suit every operation in retail. Apart from the in-built arsenal of powerful automation tools like Jenkins, TestComplete, TestLink, etc., DCqaf allows effective integration of third-party tools, thereby allowing customization to the very last piece of code for the customer.



Robotic Arm Solution for POS Testing

POS systems play a key role in delivering seamless, unforgettable Omnichannel experiences to customers. The adoption of robotics has made the otherwise sophisticated POS testing simple and easy. Testing a POS system is of paramount importance as even the slightest error in the POS device's functionality can be disastrous and may lead to losing customers and revenue as well. The combination of a robotic arm, AI, and ML result in better efficiency and productivity as they introduce flexibility and learning capabilities to the previously rigid application.

Helping retailers achieve 90% test automation, better quality website, faster performance, and high surveillance on security breaches, the robotic arm guarantees a faster time-to-market with a greater ROI. Nearly 80% of time can be saved during regression testing using the robotic arm. The development and testing teams can prevent the defects from going into the production phase. This reduces the regression testing cost and improves test coverage.

Manual testers can execute about 40% regression test cases in a day, whereas a single robotic arm can execute 100 test cases during the same time. Hence, one cycle of regression testing can be completed in one day.



The robotic arm optimally combines automation and manual testing, lessening the need for human intervention, thus allowing retailers to focus on other critical tasks. Equipped with AI and ML capabilities, the robotic arm is connected to the POS machine port, built with high torque stepper, and integrated with a Graphical User Interface (GUI). This GUI bridges the gaps between the automation code and the arm. The setup consists of a card rack that can hold up to 5 cards at a time, and this can be increased according to the requirement. The arm is capable of calibrating different dimensions of the pin pad device. Three sensors are connected to the machine to detect the actions performed by the arm. Once the action is detected, a pop-up is triggered to confirm the completion of each action.

The robotic arm also performs payment terminal screen actions, inserts/removes chip and PIN card, etc. Receipt validation is essential, and once printed on the POS machine, it must be validated for the accuracy of details. A combination of a robotic arm and a camera is required to accomplish this. The robotic arm holds the receipt so that an image of the receipt can be captured for validation purposes. Then the image is saved in JPEG format, and the OCR comparison is made using computer vision APIs.

Along with all these solutions, the robotic arm also helps generate an insightful report. Gathering incoming data from the Automation Framework, test cases from the Test Management Tool, and defects from the Defect Management tool, the robotic arm generates useful analysis reports.





Case Study

How Aspire's end-to-end testing strategy reduced 96% testing efforts with an annual savings of \$1.5M for a leading retail client

Client

A major American department store chain, with stores in 16 Southern states and a growing digital presence.

Challenges

- Zero compromise on test coverage due to incremental changes during the transition
- Exhaustive testing to mitigate challenges such as configurable behavior, integration-level dependency, etc.
- Compatibility with multiple browsers to achieve integration
- Customer and transaction data migration from existing POS connected system to current POS
- Multiple rounds of regressive testing since the pricing system is integrated with several customer-facing systems

Our solution

- Aspire's DCqaf (Digital Commerce Quality Automation Framework) to interact with several varied components that encompassed the client's testing landscape
- Complete automation coverage over third-party tools like Fraud Management, Tax Calculation, Customer Verification, etc.
- Designed Test Scripts to verify configurable behavior along with core functionalities
- Compartmentalized testing approach to ensure zero defect leakage,
- Mobile App Automation using Appium for iOS and Android devices



Benefits

- Reduced 96% of the overall manual efforts
- Improved test efficiency while optimizing time spent on business-critical configurations
- Prepared around 750 Test cases for POS Testing - reported around 2500+ defects
- Achieved 100 – 150K savings per cycle (every month). Hence the yearly savings is around 1.5 Mn with a total savings of around 6MN for the past 4 years.

Conclusion

Retailers today are always on the lookout for innovative digital strategies that will keep them competitive and help retain or grow their market share. It is highly recommended that they implement ideas that have long-term as well as medium and short-term benefits. COVID19 has also taught everyone to build versatile systems that can absorb and be malleable to sudden shocks in consumer behavior.

Powered by digital connectivity, consumers today are also increasingly tech-savvy and conscious in their buying decisions. Empowered in a way by restricted mobility and digital money, consumers today prefer retailers who offer convenience, value, and safety. Even the smallest of lag during interaction puts off loyalty as there are a plethora of convenient and simple shopping options available. With Managed Testing Services, retailers can lay the proverbial cement of future-ready experiences for their employees and customers alike.



Practice Head



Janaki Jayachandran
Vice President - Testing

Janakiraman is the Head of Testing and Test Automation Service Line at Aspire Systems with an industry experience of about 18 years spanning across the SDLC. He also has a delivery experience of managing a 300+ people team with in-depth expertise in designing, testing, and implementing cloud-based SaaS products for various domains.



To know more about our testing services, please write us to: info@aspiresys.com

About Aspire



Aspire Systems is a global technology services firm serving as a trusted technology partner for our customers. We work with some of the world's most innovative enterprises and independent software vendors, helping them leverage technology and outsourcing in our specific areas of expertise. Our core philosophy of "Attention. Always." communicates our belief in lavishing care and attention on our customer and employees.

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