FROST & SULLIVAN

Swissray

2017 Global Magnetic Resonance Imaging Price/Performance Value Leadership Award

Contents

Background and Company Performance

Industry Challenges

Rising economic pressures and budget cuts in reimbursement environments have triggered complex and disruptive changes across the global healthcare sector. This is gradually transitioning care to a value-based care system in the area of Magnetic Resonance Imaging (MRI) imaging. Going forward, the shift to value-based care is likely to be the healthcare industry's cornerstone, where improving the quality of care and patient outcomes while reducing the overall costs would be the overriding goals. Emerging value and performance-based imaging systems feature technologies and device designs that anticipate the impact of today's value market in the MRI imaging provider landscape of transforming global markets.

Further, the current fiscal situation in the healthcare industry remains one of the greatest restraints for the growth of the MRI imaging modality market, where budgetary deficits at country level are stalling new system installations. Despite this, healthcare original equipment manufacturers (OEMs) are continuing to come out with a plethora of advancements such as developments in MRI coils, cooling systems, and other software upgrades. These provide improved imaging capabilities, encouraging continued interest from potential hospital users. Success for these OEM suppliers will be highly reliant on the development of MRI solutions that enable improvements in the cost of ownership, efficiency, and workflow enhancements, which leads to extended or new clinical outcomes. Balancing these outcomes will be central to any OEM's MRI developmental strategy in the global healthcare industry.

MRI equipment manufacturers need to adapt to this emerging environment and promote products with value propositions that revolve around clinical utility, improved patient outcomes, and pricing with business models that cater to regional demands.

Developed countries will increase efficiencies at reduced costs without compromising on quality: Performance- and value-based MRI systems can bear the workload and volume flow of day-to-day routine procedures, thereby reducing the patient load on dedicated, high-end MRI systems. Furthermore, these systems consume less energy and space, translating into higher cost-efficiency for both hospitals and diagnostic centers.

Developing and emerging countries find increased access to affordable and improved quality healthcare: Point-of-care solutions are the traditional models that help ensure availability and access to care in underserved areas. These solutions are facilitated by social approaches of governments, charitable programs, non-governmental organizations (NGOs), and particular diagnostic imaging systems by equipment manufacturers. The often have little or no long-term success.

Thus, the overall need for high-quality and a cost-effective imaging solution is encouraging customers across the globe to switch to value-based imaging systems. To capture market share, vendors need to meet regional demands (unmet customer needs and affordability issues). Major participants in the diagnostic imaging space are realigning their offerings around consultative selling and comprehensive bundled solutions in order to

effectively meet the needs of their global customers. Long-term access to affordable, quality care in developing and emerging countries has yet to be guaranteed by the current market participants. The market potential for affordable MRI systems is significant, especially in the end-user segments with limited budgets and in the largely untapped emerging and developing markets.

At this juncture, the importance of cost effectiveness and decision support tools in the MRI clinical pathway has to be closely monitored in order to ensure efficiency and quality of diagnosis. Though technology innovation in the MRI market has been delayed due to cost containment in R&D efforts, a strong innovation drive is expected in future that will be supported by infrastructure transformation and interoperability in the hospital environment. Because of these factors, companies that utilize their core competencies and customize their solutions to address gaps in the MRI market are best positioned to emerge as front-runners in this segment.

Price/Performance Attributes and Customer Impact

Guaranteeing Performance Reliability-imaging in MRI — Easy to operate, less expensive, and improved quality of care

Globally, MRI imaging systems are at an extended replacement cycle rate (the average is more than 9 years), which indicates an aging installed base. This is consequently leading to an increase in demand for medical imaging equipment services. However, budget constraints, economic downturn, and reimbursements continue to restrict the adoption of premium and mid-end systems in the global markets. Hence, customers/end users are looking for mid-powerful equipment that can provide in-depth radiology and workflow enhancements at an affordable price.

As part of the holistic approach to promote a sustainable healthcare business environment, Swissray—a well-established digital radiography (DR) OEM—ventured into the wide-bore MRI arena in 2017 boasting a set of comprehensive integrated features and functionalities at an affordable price. Swissray's value proposition centers on incorporating clinically relevant designs that are economical, coupled with state-of-the-art features to deliver best-in-class performance at a competitive price (priced less than $1 million).

For example: Swissray's *SR* Pulse 710™ is a wide-bore 1.5T MRI system product that compliments the high-field technology and supports a wide range of diagnostic requirements. Within the wide-bore 1.5T MRI segment, *SR* Pulse 710™ is expected to set-up a new standard of high-quality product with low customer ownership costs—a truly disruptive offer for a 1.5T wide-bore MRI system with unsurpassed patient comfort. Further, Swissray's *SR* Pulse 710™ components are designed and developed in North America, where they have been awarded with 87 MRI patents.

Prioritization of Features — A perfect balance in software and hardware that blends technology and clinical demand

The burgeoning cost pressure witnessed in private and public hospitals and imaging centers due to budget constraints has forced decision makers to constantly re-evaluate

their healthcare spending on MRI systems. To combat this issue, Swissray plans to emphasize its *SR* Pulse 710™ price point in comparison with comparable wide-bore systems. Additionally, it has a lower total cost of ownership and subsequent quicker return on investment.

For example: The *SR* Pulse 710™ MRI system's MRI magnet offers robust performance through exquisite workflow processing combined with state-of-art technology. In particular, there is a perfect balance of software and hardware that is seen in the configuration of the overall scanning toolkit.

- Radio Frequency (RF) System: *SR* Pulse 710™ MRI system comes with a 16 channel RF system, and high-density phased array coils. Up to three distinct coil arrays can be connected simultaneously for whole body imaging without needing to reposition the coils. This is much faster than conventional methods, which helps reduce the time it takes to reposition a patient. The standard coil package also includes a full array of dedicated orthopedic coils and 3 Torso Phased Array coils (S, M, L).
- For Patient Experience: The *SR* Pulse 710™ MRI system is equipped with a 71cm internal bore diameter and 550 lb. patient table support – which improves comfort for claustrophobic or very large patients. Indirect LED lighting, a built-in audio system and indirect airflow in the bore optimizes the experience for all patients.
- In Case of Optimized Workflow: Swissray's MRI system possesses a strong and easy-to-use application interface to effectively arrange scanning, display, and post-processing.
- Advanced Software Applications: The *SR* Pulse 710™ MRI system comes with dedicated scan packages for different body parts (neurology, musculoskeletal, whole body imaging, and angiography) to provide a comprehensive workflow. This aids the ability of radiologists in establishing local protocols for acquiring desired images.

According to Frost & Sullivan's independent analysis, Swissray's MRI product attributes showcase one of the best prioritization of software and hardware features with the intent of offering high-quality MRI imaging services at an affordable system price.

Perceived Value — A new brand image

Increasing healthcare spending in emerging economies is leading to improvements in healthcare infrastructure and the extension of customer and end user access to cost-effective diagnostic imaging services. Swissray's holistic approach to innovation and healthcare delivery in the MRI market is proving to be revolutionary thanks to its new business models and long-term partnerships. Since the *SR* Pulse 710™ beta tests, the performance and lifecycle value of Swissray's affordable MRI system has earned the trust of radiology and imaging professionals.

After debuting the *SR* Pulse 710™ at the Radiology Society of North America (RSNA) 2016, Swissray launched the system at the 2017 European Congress of Radiology (ECR) in Vienna in March 2017. The European introduction of *SR* Pulse 710™ system, underlined by new development strategies, positions Swissray's MRI as a workhorse (high throughput) and affordable MRI system with a relatively low total cost of ownership when compared to its competitors in the wide-bore 1.5T MRI segment.

Source: ECR 2017, Swissray Expo Booth and MD Buyline

According to Ms. Anne Sheehan, Director of MRI at Swissray, "Most new wide-bore systems are in the range $1 million to $1.6 million, and there has not been a reliable supply of refurbished wide-bore systems to address this market segment." And the new *SR* Pulse 710™ sets itself apart with its 71cm bore (1 cm wider than most competitors), state-of-the art features, and lower price tag (less than $1 million). This positions Swissray as "the most affordable 1.5T Wide-Bore MRI equipment"

Customer Value Enhancement

Swissray's goal is to not only comply with the industry guidelines and regulations, but to also take a step beyond into radiology needs. The company's approach to understanding end-user needs includes participation in international fairs, marketing initiatives, and its approach to collecting and utilizing healthcare professional input. These methods have proven to be strategic in positioning itself in the wide-bore MRI segment.

Ms. Anne Sheehan (Director of MRI) at Swissray, also added, "We think it will be quite the workhorse for diagnostic imaging centers, small and medium hospitals, and orthopedic clinics."

The combination of 71cm bore size equipped with ultra-homogeneous main magnetic field with a gradient strength of 33mT/m indicates a high-end hardware configuration that is extremely adaptive for claustrophobia-relief within its large body core. Furthermore, the new multi-element coil arrays with *SR* Pulse 710™ is built on a tabletop and it is selected through programmed protocols, which helps in reducing the time needed for repositioning patients during the scans. Additionally, the *SR* Pulse 710™'s 50 cm field of view allows the radiologists to obtain comfortable off-axis imaging with homogenous fat suppression for clinical accuracy.

The *SR* Pulse 710™ scanner also features a zero boil-off (ZBO) magnet designed for a helium refill interval of ten years, a weight-bearing table that can handle 550 lbs, a 16-channel RF system, and latest generation parallel imaging (ESPIRiT). Advanced imaging capabilities include Diffusion Weighted Imaging (DWI), Diffusion Tensor Imaging (DTI),

Susceptibility Weighted Imaging (SWI), MR Cholangiography and Dynamic Susceptibility Contrast (DSC).

The overall system design, with its low-cost maintenance and its affordable price positioning (less than $1 million), translates into high diagnostic value with unmatched speed and versatility in clinical applications. This makes Swissray's *SR* Pulse 710™ system a preferred choice among customers.

Product/Service Quality Functionality

Swissray partners with Alltech Medical Systems, which is based in Chengdu, the capital of Sichuan province in China. The *SR* Pulse 710™ is manufactured at the company's US affiliate, Alltech Medical Systems America, in Cleveland. Further, Swissray has been beta-testing its *SR* Pulse 710™ since March 2016 through Advantage Diagnostics, which operates six outpatient imaging centers in Ohio, US. One of the imaging center facilities has been scanning an average of 15 patients per day with the *SR* Pulse 710™, and a second installation is soon expected in the first half of 2017. As the user interface is quite intuitive in the *SR* Pulse 710™, and the beta-site technologists are able to scan on their own with 15 patients per day offering a high throughput capabilities, when compared to industry average of 15 to 17 MRI exams per day.

When it comes to the question of service capability, many of Swissray's field engineers have had prior MRI experience and Swissray is also prepared to invest heavily into their training to develop an effective customer service support.

Thus, positioned with combination of highest patient comfort, state-of the art technology, excellent image quality, great throughput, and the fastest breakeven potential, Frost & Sullivan recognizes Swissray's *SR* Pulse 710™ as a much-needed respite for hospitals and imaging centers that are looking for a high-throughput system at an affordable price.

Conclusion

A trade-off between patient-comfort designs and enhanced diagnostic information highlights is the major trend in modern MRI equipment research. In this highly sophisticated MRI market, technology innovation and service quality are the keys to success. Image quality remains the main factor for equipment selection for any MRI scan, and be it in terms of cost, space, or innovative features, the *SR* Pulse 710™ MRI system from Swissray is top notch regarding both its performance and its competitive pricing strategy in the global markets.

Overall, research says that Swissray's clients can derive the best and quickest return on investments upon using the *SR* Pulse 710™ MRI system. The factors mentioned in the above criterion depict a comprehensive edge over Swissray's competitors and act as the company's biggest assets in its market performance.

With its strong overall performance, Swissray has earned Frost & Sullivan's 2017 Price/Performance Value Leadership Award.

Significance of Price/Performance Value Leadership

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again. A key component of customer retention is the delivery of a high-quality product at a reasonable price. To achieve these dual goals (customer engagement and price/performance), an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Price/Performance Value Leadership

Best-in-class organizations are particularly successful in two critical areas: first, helping customers to appreciate and enjoy the product at every price point; and second, ensuring that customers perceive a demonstrable difference in performance features at every escalating price point. Ultimately, this balance allows companies to profitably deliver a variety of product options to customers, differentiate the product suite, and compete at every level of the market.

Key Benchmarking Criteria

For the Price/Performance Value Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Price/Performance Attributes and Customer Impact—according to the criteria identified below.

Price/Performance Attributes

Criterion 1: Functionality
Criterion 2: Ease of Use
Criterion 3: Product/Service Quality
Criterion 4: Performance Reliability
Criterion 5: Prioritization of Features

Customer Impact

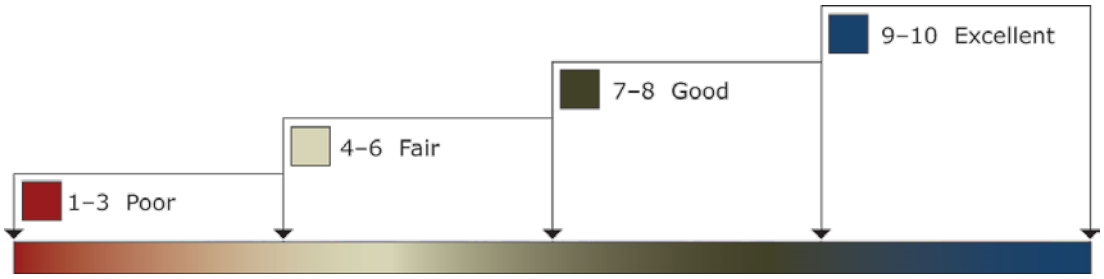
Criterion 1: Perceived Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practice Award Analysis for Swissray

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by Price/Performance Attributes and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key players as Competitor 2 and Competitor 3.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Price/Performance Value Leadership	Price/Performance Attributes	Customer Impact	**Average Rating**
Swissray	**9.5**	**9.0**	**9.25**
Competitor 2	8.5	9.0	8.75
Competitor 3	8.5	8.5	8.50

Price/Performance Attributes

Criterion 1: Functionality

Requirement: The product offers enhanced functionality to serve the broadest range of applications

Criterion 2: Ease of Use

Requirement: Customers typically feel that the products are easy to use to generate optimal performance

Criterion 3: Product/Service Quality

Requirement: Products or services offer the best quality for the price, compared to similar offerings in the market

Criterion 4: Performance Reliability

Requirement: The product consistently meets or exceeds customer expectations for performance over its life cycle

Criterion 5: Prioritization of Features

Requirement: The features that customers most value and expect are most commonly available and most aggressively priced

Customer Impact

Criterion 1: Perceived Value

Requirement: Customers typically feel that they received more from the product or solution than they paid for it

Criterion 2: Customer Purchase Experience

Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience

Requirement: Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service

Criterion 4: Customer Service Experience

Requirement: Customer service is accessible, fast, stress-free, and of high quality

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan Awards follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

	STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	**Monitor, target, and screen**	Identify Award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2	**Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4	**Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized Award candidates
6	**Conduct global industry review**	Build consensus on Award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7	**Perform quality check**	Develop official Award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8	**Reconnect with panel of industry experts**	Finalize the selection of the best-practice Award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best-practice criteria
9	**Communicate recognition**	Inform Award recipient of Award recognition	• Present Award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10	**Take strategic action**	Upon licensing, company may share Award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often, companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry players and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best in class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.