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2020 | BEST PRACTICES AWARD

amdocs

ASIA-PACIFIC 5G
CUSTOMER VALUE LEADERSHIP AWARD

Contents

Letter of Congratulations

I am proud to present you with this year's award for Customer Value Leadership in the Asia-Pacific 5G industry.

Frost & Sullivan's global teams of analysts and consultants research a wide range of markets across multiple industries and regions, and identify companies that consistently deepen customer relationships by offering superior products and services that deliver a clear, demonstrable return on investment. Against the backdrop of extensive primary and secondary research across the entire value chain, Frost & Sullivan is pleased to recognize Amdocs as the Customer Value Leader in the Asia-Pacific 5G industry.

Achieving leadership in customer value is never an easy task, and it is made even more difficult considering today's competitive intensity, customer volatility, and economic uncertainty, not to mention the difficulty of innovating in an environment of escalating challenges to intellectual property. In this context, your receipt of this award signifies an even greater accomplishment.

Frost & Sullivan recognizes that this accomplishment is the result of many employees, customers, and investors making daily choices to support your organization and contribute in a meaningful way to its future.

I enthusiastically acknowledge and celebrate these achievements, and wish you great success in the future. Frost & Sullivan is here to support you on any future endeavor.

Sincerely yours,

David Frigstad
Chairman
Frost & Sullivan

Background and Company Performance

Industry Challenges

5G has launched in the Asia-Pacific region. South Korea became the first country in the region to launch 5G networks in April 2019. Japan, the Philippines, China, Thailand, and Australia have also launched commercial 5G services. The interest in 5G technology is because 5G has various capabilities that exceed the widely used 4G standard. 5G enables faster download and upload speeds and can reach 1-millisecond latency compared to 4G with 50 to 100 milliseconds. 5G can support more device connections per square kilometer, and it also increases base station power efficiency by 30%-60%. These capabilities can upgrade the currently available use cases, e.g., from mobile broadband to enhanced mobile broadband, video call to 3D hologram call. It can also enable various new use cases that require new business models, such as autonomous vehicles and remote surgery, that necessitate low network latency.

The economic benefits that 5G use cases can generate are significant enough that it is fast becoming a national priority in many countries in the region. Many other countries, such as Malaysia and Indonesia, are also drafting the necessary regulations and planning for 5G spectrum allocations in the near future. With the rapid development of 5G deployments across the region, competition is heating up in the 5G hardware market. However, selecting the correct software is also important in 5G deployments. A TM Forum article published in 2018 suggested that failure to modernize operations support systems (OSS)/business support systems (BSS) could negatively impact 67% of potential 5G revenue. In particular, TM Forum highlighted the need for OSS/BSS to change into dynamic end-to-end solutions that can be fully automated with on-demand options for upgrades.

According to a recent survey, 52% of mobile operators globally believe that network-slice-as-a-service (NSaaS) will be a leading approach for 5G monetization. With this, mobile operators can provide enterprises with a slice of their mobile network that they can manage directly. However, to launch network slicing as a service offering, mobile operators still need to define parameters, such as bandwidth and latency. As such, a solution to manage the end-to-end network slicing operations is necessary. The solution must be operable within a multi-vendor setting as mobile operators tend to procure their mobile network infrastructure from various vendors, requiring high integration efficiency.

Network automation has always been an essential part of network solutions, but it can also be the limiting factor for the industry. A higher level of network automation is expected to become integral in 5G networks due to the larger volume and variety of data coming out of them. However, currently deployed solutions still require costly and inefficient manual troubleshooting, which would be unsustainable for 5G networks. In a Futuriom survey in 2018, mobile operators typically implement network automation to achieve multiple goals, such as shortening the time-to-market and increasing network security. The survey also showed that by 2020, 63% of mobile operators want to use data analytics for fault resolution, and 55% of mobile operators want the ability to automate network design and operations. The more the industry can automate, the more it can

hope to achieve with 5G technology as automation is key for 5G to scale. However, automation requires that mobile operators transform internal processes to accelerate the operational changes necessary to leverage 5G. This has been hard and is the reason for the slow progress.

Customer Impact

Amdocs provides various pertinent solutions well equipped to meet the demands of 5G networks. It also helps ensure its customers gain a good return on investment by adapting its business models. Frost and Sullivan notes that Amdocs could retain its customers in Asia-Pacific by renewing existing agreements or upselling Amdocs' products and services.

Price/Performance Value

Amdocs adapted its business model to ensure its customers' returns on investment. It offers minimum-viable-solution (MVS) and minimum-testable-value (MVT) approaches in delivering its products and services. These approaches enable high customer involvement in product development. Consequently, customers pay only for the functionalities required for their business operations, thus driving cost efficiencies for mobile operators.

Several of Amdocs's offerings, such as MarketONE solutions, use the software-as-a-service (SaaS) model. The SaaS model enables customers to eliminate hardware purchase costs as the solutions are deployed in the cloud. The SaaS model also enables Amdocs's customers to pay monthly fees that cover hardware, software, and upgrades. Compared to paying an upfront cost and annual maintenance fees, the SaaS model enables customers to have better asset liquidity that they can use to cover other operational costs. As the SaaS model requires minimal integration to the existing OSS/BSS system, software deployment can be faster, decreasing the time-to-market.

Brand Equity

Amdocs can leverage its excellent track record to retain customers in Asia-Pacific. In August 2019, the company signed a multi-year agreement with XL Axiata, a leading telecommunications company in Indonesia and Amdocs' decade-long customer. The agreement stipulated that Amdocs is to digitize XL Axiata's mobile services and fixed-line businesses. Specifically, Amdocs will deploy amdocsONE customer experience and monetization solutions to help XL Axiata improve customers' sales and ordering experience, conduct targeted marketing campaigns, and consolidate XL Axiata's monetization systems into a single convergent solution.

Following the merger of Vodafone India and Idea Cellular into a new business entity named Vodafone Idea, Amdocs was chosen to provide the new entity's consolidated postpaid operations. As of June 2019, Idea Cellular had approximately 23 million postpaid customers. The merger will migrate Idea Cellular postpaid customers to Vodafone India's existing Amdocs monetization solutions for better customer management. Overall, Vodafone Idea is now the largest telecommunications company in India, with over 320 million customers. It has been Amdocs's managed services customer for several years.

XL Axiata and Vodafone Idea testify to Amdocs's loyal customer base in Asia-Pacific, reflecting highly on Amdocs's brand equity.

Customer Purchase Experience

Amdocs's customers often choose to renew multi-year agreements with the company, showing their satisfaction with its products and services. In some cases, Amdocs could sign multiple deals with a single customer. One such customer is Globe, a leading mobile operator in the Philippines. Globe deployed Southeast Asia's first 5G fixed wireless broadband services in 2019.

In February 2019, Globe began utilizing Amdocs's Network Functions Virtualization (NFV) orchestration solutions to manage and automate Globe's enterprise offerings. In August 2019, Amdocs announced that it would provide Globe its 5G Policy Control Function (PCF) solution. The partnership between Amdocs and Globe continues in 2020, as Globe chose to deploy selected solutions from Amdocs's CES20 portfolio. This example proves that Amdocs has created solutions that effectively address customer needs, which propelled its customers to purchase more solutions from it to support business growth. Furthermore, ongoing mergers and acquisitions, e.g., the acquisition of TTS Wireless in 2019, help Amdocs better meet the needs of its customers.

Business Impact

As 5G networks roll out sequentially across Asia-Pacific, Amdocs has tremendous growth potential with its 5G service offerings. In 2019, it already proved the quality of its 5G solutions by being the preferred vendor for some of the region's earliest commercial 5G deployments. With its qualified workforce and high operational efficiency, Amdocs looks set to deliver tangible impacts to its 5G customers for many years to come.

Customer Acquisition

Amdocs's customer acquisition has largely focused on the existing 4G customer base, which is a prudent customer acquisition strategy. In 2019, Amdocs had launched and deployed various solutions to support 5G networks, such as Open 5G solutions and CatalogONE. Several of the company's existing customers have chosen to implement its 5G solutions to support their commercial 5G services. With a solid customer base for upselling, Amdocs's 5G solutions deployment is expected to continue. Many mobile operators in Asia-Pacific starting to adopt a multi-vendor approach presents Amdocs an opportunity to acquire new customers in the region with its 5G solutions.

In April 2019, KT, one of South Korea's largest telecommunications company, launched the region's first commercial 5G services. It uses Amdocs's service monetization and convergent charging solutions for its 5G services. The mobile operator previously deployed the solutions to support its 4G services. In February 2020, KT signed an agreement to migrate its current solutions to Amdocs CatalogONE, one of Amdocs' latest offerings. CatalogONE is expected to help KT quickly launch new 5G services by utilizing the solutions' cloud-native architecture. As of March 2020, KT has 1.78 million 5G customers on its network.

Operational Efficiency

Amdocs has more than 35 years' experience working with over 350 customers worldwide, of which more than 20 customers are in Asia-Pacific. Of its 25,000 employees, more than 7,000 are qualified in DevOps, which constitutes 75% of the company's projects. Over 11,000 of Amdocs's employees are located in Asia-Pacific, ensuring that regional customers can easily access Amdocs's services. Amdocs also have a partner ecosystem built over 20 years. Currently, the ecosystem has over 100 partners covering various areas, such as the Internet-of-Things, data intelligence, and security. The partner ecosystem enables Amdocs to provide the right products and services to its customers.

Amdocs's operational efficiency stands out best in the recent COVID-19 pandemic. As COVID-19 spreads across the region, many expect project delivery delays because employees are working from home. However, Amdocs can deliver its products and services not only within the agreed time frame but also with additional cost savings. This greatly enhances customer satisfaction.

Growth Potential

In 2019, Amdocs spent over USD273 million on research and development globally. Its strong customer focus is evident in its 5G solutions. In 2019, Amdocs launched multiple solutions catering to 5G deployments. The availability of these solutions has helped some of the world's first 5G deployments, highlighting Amdocs's initiatives to develop 5G solutions that match customers' timeline. Although Amdocs' competitors are reluctant to provide services to private networks due to the lower business benefits, Amdocs takes a contrasting approach by developing solutions for private 5G networks. These business decisions showcase Amdocs's strong focus on customers in the development of its solutions.

Amdocs also builds partnerships to serve its customers better. In September 2019, it embarked on a partnership with Samsung. The collaboration combined Samsung 5G network solutions with Amdocs's expertise with the Open Network Automation Platform (ONAP). The upgraded solutions would enable customers to quickly manage the delivery of various 5G services to end users. Amdocs also acquired TTS Wireless in 2019, which provides mobile network engineering services, specializing in network planning and optimization. The acquisition enables Amdocs's customers to accelerate and simplify 5G network deployments by combining Amdocs Open 5G solutions and TTS Wireless' field expertise. In the near future, 5G network deployments in Asia-Pacific are poised to continue, providing mobile operators ample growth opportunities. With its practical experience and customer-focused solutions, Amdocs has acquired competitive advantages set to be integral for future growth in Asia-Pacific.

Conclusion

As mobile operators roll out 5G services across Asia-Pacific, the availability of solutions supporting 5G networks has become necessary. In 2019, Amdocs demonstrated its 5G solutions' quality with its involvement in several of the region's earliest 5G network deployments. With a strong customer focus, Amdocs's excellent operational efficiency and qualified workforce ensure customer satisfaction with timely project deliveries. Its various business model options further strengthen its value proposition by providing cost efficiencies for its customers.

With its strong overall performance, Amdocs has earned Frost & Sullivan's 2020 Asia-Pacific 5G Customer Value Leadership Award.

Significance of Customer Value Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. Satisfying customers is the cornerstone of any successful growth strategy. To achieve this, an organization must be best-in-class in 3 key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Customer Value Leadership

Customer Value Leadership is defined and measured by 2 macro-level categories: Customer Impact and Business Impact. These 2 sides work together to make customers feel valued and confident in their products' quality and performance. This dual satisfaction

translates into repeat purchases and a lifetime of customer value.

Key Benchmarking Criteria

For the Customer Value Leadership Award, Frost & Sullivan analysts independently evaluated Customer Impact and Business Impact according to the criteria identified below.

Customer Impact

Criterion 1: Price/Performance Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Business Impact

Criterion 1: Financial Performance
Criterion 2: Customer Acquisition
Criterion 3: Operational Efficiency
Criterion 4: Growth Potential
Criterion 5: Human Capital

Best Practices Award Analysis for Amdocs

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 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

1–3 Poor
4–6 Fair
7–8 Good
9–10 Excellent
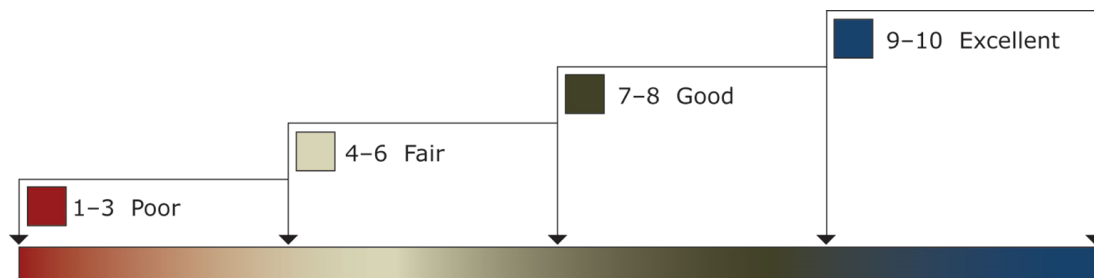
The Decision Support Scorecard considers Customer Impact and Business Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity 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, Frost & Sullivan has chosen to refer to the other key participants as Competitor 1 and Competitor 2.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Customer Value Leadership	Customer Impact	Business Impact	**Average Rating**
Amdocs	**9.0**	**9.0**	**9.0**
Competitor 1	8.8	8.5	8.6
Competitor 2	8.8	8.0	8.4

Customer Impact

Criterion 1: Price/Performance Value
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience
Requirement: Customers feel they are buying the 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.

Business Impact

Criterion 1: Financial Performance
Requirement: Overall financial performance is strong in terms of revenue, revenue growth, operating margin, and other key financial metrics.

Criterion 2: Customer Acquisition
Requirement: Customer-facing processes support the efficient and consistent acquisition of new customers, even as it enhances retention of current customers.

Criterion 3: Operational Efficiency
Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high quality standard.

### Criterion 4: Growth Potential

Requirements: Customer focus strengthens brand, reinforces customer loyalty, and enhances growth potential.

Criterion 5: Human Capital

Requirement: Company culture is characterized by a strong commitment to quality and customers, which in turn enhances employee morale and retention.

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.
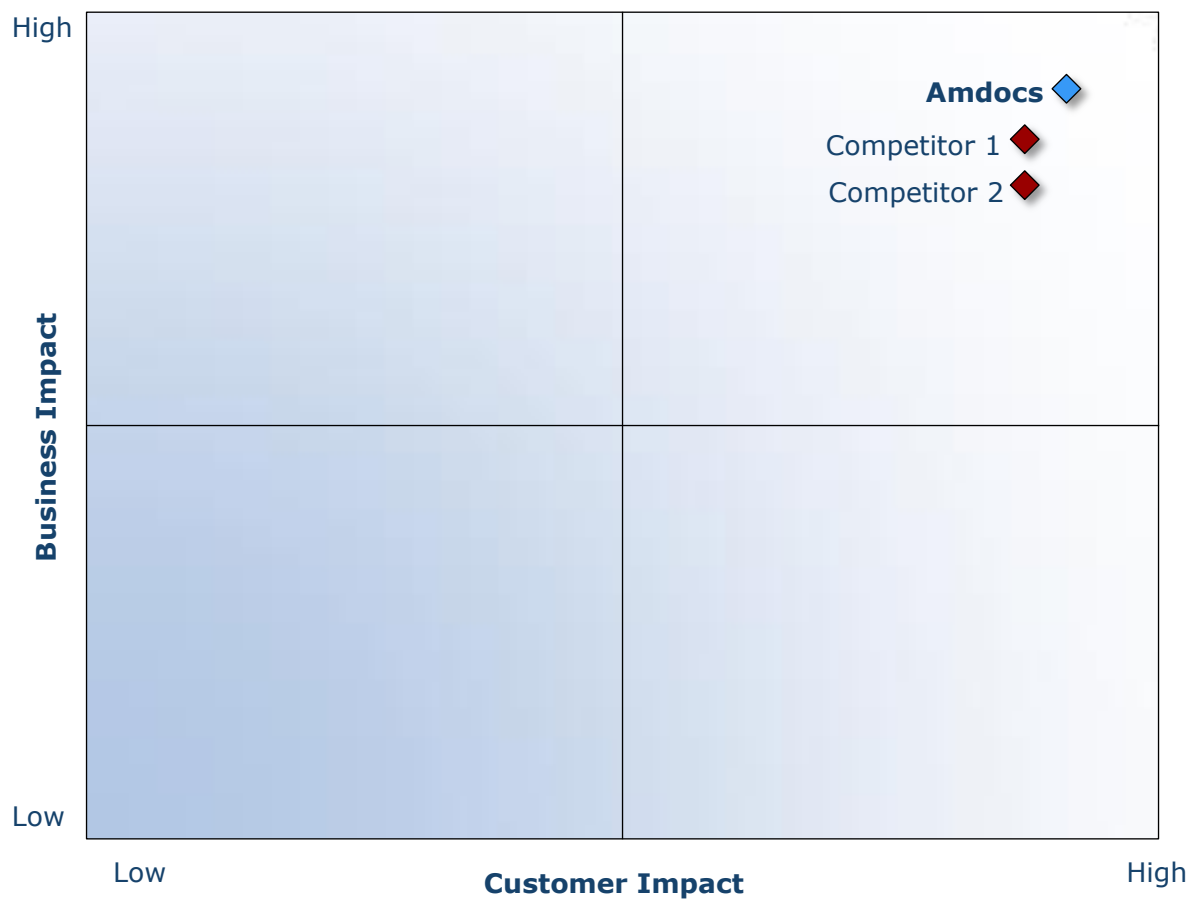
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and assess their fit with select best practices 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 world	• Conduct in-depth industry research • Identify emerging industries • Scan multiple regions	Pipeline of candidates that potentially meet all best practices 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 practices criteria • Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best practices 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 practices positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidates' 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 practices award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best practices criteria
9	**Communicate recognition**	Inform award recipient of award recognition	• Announce 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 is able to share award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess award's role in 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 the 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, resulting in 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 participants 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, helps clients 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 practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit http://www.frost.com.

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