Best Practices
in the Configuration, Marketing & Sales Management of Extended Warranties & Extended Services

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Advisory Group
Increasing Profits through Strategic Service

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STUDY BACKGROUND

Recently Blumberg Advisory Group and G35 Software partnered to conduct a study focused upon global professionals involved in the configuration, marketing and selling of Extended Warranty/ Extended Service [EW/S] offerings; providing solutions to product owners to manage the maintenance of the employability and capabilities of their products. Over 200 professionals participated in this extensive study. To qualify, survey respondents had to influence, recommend or make decisions regarding the revenue and financial risks of these offerings; entities that were exclusively sales channels were excluded from the survey.

Our objective in conducting the survey was twofold:

1. To collect a comprehensive set of findings currently driving the marketplace.
2. To provide insights related to the findings.

The primary focus of the survey was to study EW/S offerings engaged in the Business-to-Business [B2B] marketplace, but we encouraged a minority of feedback from the Business-to-Consumer [B2C] EW/S community as well. Participants were employed in sectors that represented an estimated 50-70% of the revenues generated in the B2B EW/S marketplace: Aerospace and Defense [A&D], Industrial, Medical Devices, Telecommunications, Heavy Vehicles, Information Technology [IT] and others.

As for the B2C EW/S marketplace, participants were employed in sectors that represented an estimated 70-80% of the revenues generated by the community: Mobile Devices, Consumer Electronics, Home Appliances, Lawn Care, Light Vehicles and others.

Our intention in including B2C entities was to obtain their inputs to better understand the evolving demands of B2B buyers to encounter the same purchasing experience as the one they currently engage in their B2C personal lives.

Note that the current US annual contract value of B2B EW/S offerings is an estimated 15%, or $25 Billion, of the total annual expenditures incurred in the maintenance management of a product; growing at an annual compounded rate of 15-20% per year. As for the B2C EW/S annual contract values, they represent an estimate $20 Billion; growing at a compounded rate of 5-10% per year. The large majority of B2C EW/S contracts are generated for light vehicles.

The primary growth engine for EW/S contracts will be the new business models of Product-As-A-Service, the growth of operating leases, the product technology complexity driving outsourcing of maintenance processes, product-to-product connectivity and others.

We also attempted to gain an understanding of how the participants operated their EW/S sales/marketing organizations. For example, we wanted to know who sells the service, when is it sold during the lifecycle of a product, how is it priced/billed, whether it can be extended or canceled, as well as how and when do enterprises contact their customers throughout the lifecycle of the EW/S contract.

We were keenly interested to learn about the different elements of the solutions that respondents provided in their EW/S offerings; entailing an understanding of the maintenance processes engaged (e.g. correct failure, calibrate), the resources employed (e.g. technicians, parts), as well as the kinds of entitlement guaranteed (e.g. 4 hour response time).

We look forward to the readers of this landmark study to employ our findings and insights as a tool to drive the effectiveness and efficiency of the marketing, configuration, pricing and sales of their EW/S offerings.

RESPONDENT PROFILES

We were focused on obtaining a broad cross section of respondents and enterprises in our survey based on years of experience in the EW/S marketplace, job function within their companies and corporate revenue size. Some of our key findings were the following:

- Most of the 200+ respondents (80%) work in North America, with the remaining primarily in Europe.
- Over 50% of respondents have 16+ years of experience in the EW/S marketplace.
- A large percentage of participants operate at a senior executive level within their companies; 19% are President/Owner/CEO level and 54% are Director/Vice President level.
- The large majority of companies represented were public companies.
- 80% of the participants were employed by a Business Unit of an Original Equipment Manufacturer [OEM] or their authorized distributor/dealer. Note that for a distributor/dealer to qualify as a survey responder, they had to have developed EW/S offering independent of the OEM.

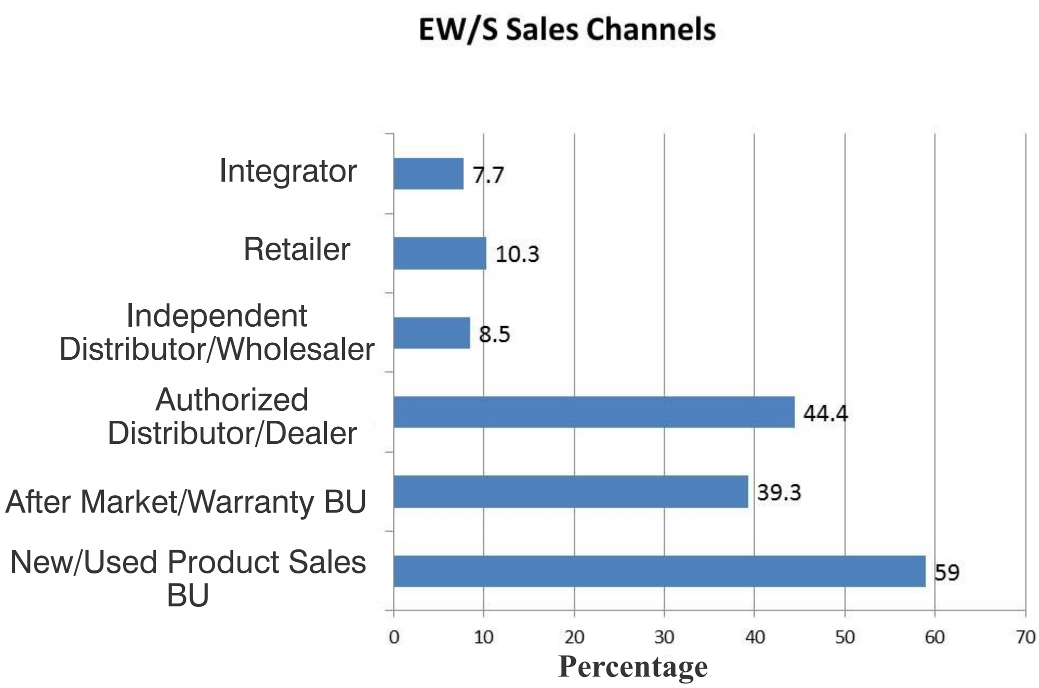
OEM new-condition and/or used-condition product sales teams, as well as OEM Aftermarket/Warranty Business Units [BUs], were the most employed channels to directly sell EW/S offerings; this is aligned with the survey participants being dominated by OEM enterprises and their distributors. [See Figure 1]

Insight

Several sales channel issues come to mind as the EW/S marketplace evolves:

- How will this trend of product access by end-users drifting from ownership to leasing/renting/sharing impact the EW/S marketplace? With more and more EW/S offerings being bundled in the fixed-fee of the lease/share/rent, will individual EW/S contracts "disappear?"

Figure 1



- Will embedded software, which is becoming of greater part of the value of a product, be decoupled from a product's EW/S contract and sold through a different channel?
- Will web-enabled self-service be more universally employed as a sales channel? Will customized solutions employing such tools become more common?

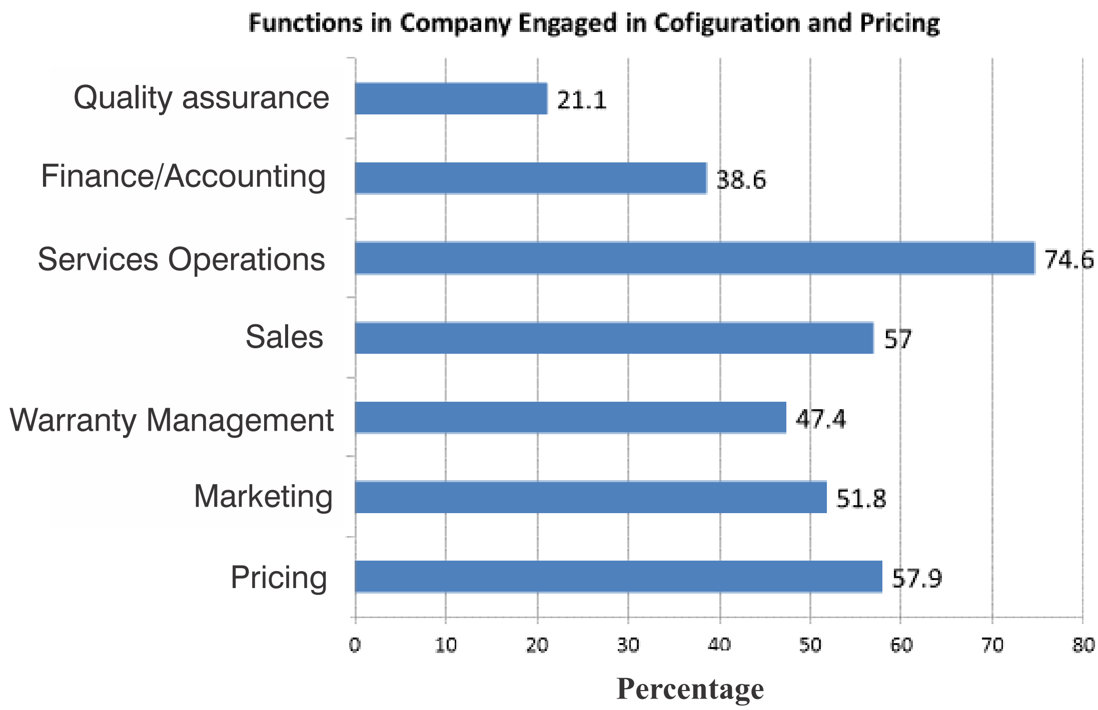
It is our belief that the legacy EW/S marketplace is about to be disrupted in a major way. A key question is whether the sellers of EW/S offerings are prepared to change their business model to adapt to this change?

Our survey indicated that tactical service operations personnel delivering the EW/S solutions were the predominate group involved in the configuration, as well as pricing of an EW/S offering. Sales, Marketing and Pricing strategic leadership are less involved than that of the tactical service operations [See Figure 2]; a role reversal from that of a traditional business model. Overall there are many groups involved in this activity

Insight

This finding suggests that there is a need to reset the balance between strategic and tactical entities; strategic decision making should be the driver of the configuration and pricing of an EW/S, this activity should not be left entirely to operating groups who can only carry out tactics.

Figure 2



One of the key issues regarding a strategic and operational focus is the financial materiality of the revenues generated from EW/S offerings. If EW/S generates relatively low sales compared to other segments of the business, leadership will often pay little attention to the EW/S segment; implicitly "allowing" tactical personnel to perform strategic activities. In order for EW/S revenues to be "front and center" for leadership, there must often be a talented advocate to tell the story of the importance of EW/S contracts on a financial, customer relationship and IP perspective.

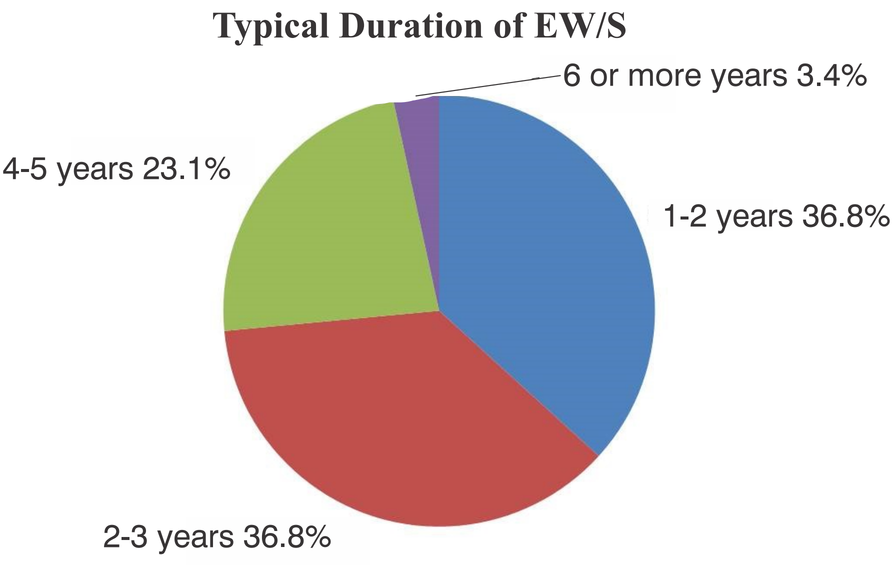
Many of the building blocks employed in the configuration of EW/S offerings were surveyed:

- Duration of service
- Level of customization
- Processes engaged
- Resources employed
- Entitlement levels

Duration of service

75% of EW/S contracts were committed to deliver solutions during a 1-3 year period [See Figure 3]. A primary driver for this relatively short period was evolving technologies limiting the lifecycle of product ownership to be within a 1 to 3-year

Figure 3



time span; why engage in a contract for longer than you intend to possess a product.

Insight

Contract durations may increase in the future as products become “platforms” with constant hardware and software upgrades to a product's capabilities. For example an iPhone could have a 5-year EW/S contract in which all or specific modules of the hardware can be exchanged every year, enrobed with the most recent software upgrades, at the same time retaining a break/fix solution. Note that Apples' new iPhone Upgrade Program does provide an EW/S solution very similar to this evolving trend.

For some long-lived products, such as commercial aircraft engines, EW/S contracts are often from 7-12 years of duration;

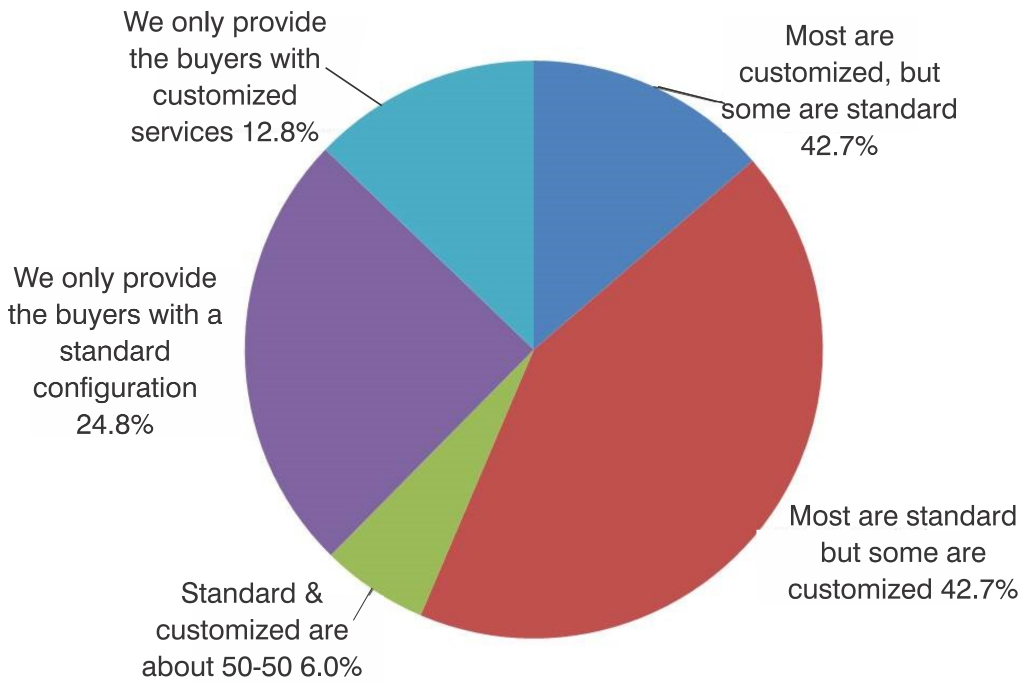
a big upfront indirect cost investment is required by the EW/S seller, thus requiring a long period to amortize that investment in order to maintain an attractive fixed-fee price point for the buyer.

Level of customization

Traditional EW/S offerings have been supplied in a standard configuration; our survey indicates that about 70% of standard programs are the only, or the primary, configuration of EW/S offerings. Customized offerings constitute an estimated 30% of all contracts; the driver for this low percentage is the often extreme complexity in managing the adverse financial risk of such offerings [See Figure 4]

Figure 4

What is the current configuration focus of your EW/S?



The study identified 3 tools that were primarily employed to configure an EW/S offering:

- 47% employed a customized software application within their legacy Customer Relationship Management [CRM] or Enterprise Resource Planning [ERP] systems
- 32% employed spreadsheets
- 13% employed a Configure Price Quote [CPQ] software application software product; these have been repurposed from software that is focused upon configuring a product

87.5% of the respondents' enterprises employed a formal process to configure an EW/S offering.

With the "long tail" evolving to dominate all B2C and B2B offerings, for both products and services, it is inevitable that customized EW/S solutions will play a more dominant role. The key driver for the successful transition will be the ability of mitigating the risks of the unfavorable financial and operational performance of these customized services. Note that a standard offering typically encompasses a large number of contracts with a small population of solutions, enabling financial risks to be more easily mitigated, versus that of customized offerings that engage a large population of unique solutions, with higher probabilities of large variances in actual costs versus estimated costs.

The current popular employment of spreadsheet to configure an EW/S quote entails many risks for the seller of the service; from inaccurate data transposition, to non-recorded operational changes, to non-disciplined quote revision control and much more. These risks can lead to major unfavorable financial risks for the seller.

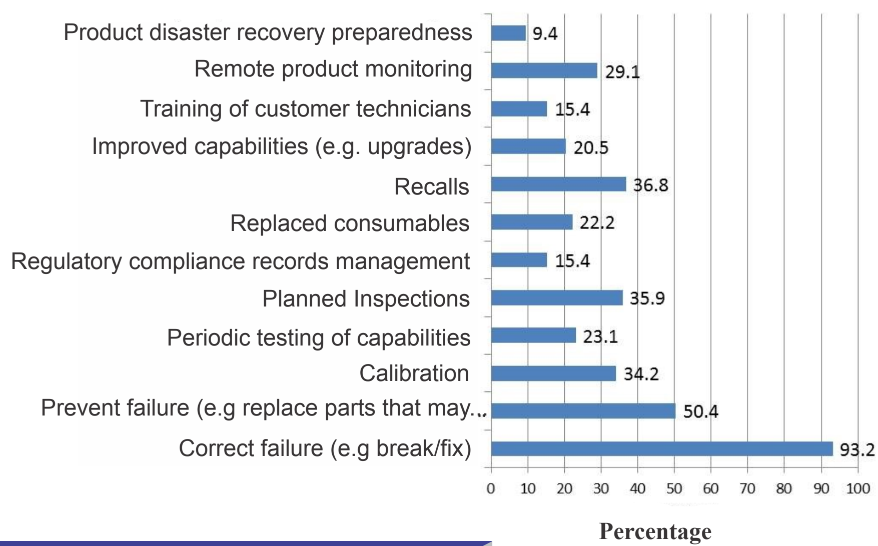
Processes engaged

We found that almost all EW/S contracts engaged in the maintenance process of Correct-Failure, also known as "Break/Fix." Approximately half of the respondents indicate that their EW/S offerings cover the Prevent-Failure process; whose purpose is to be employed to minimize the frequency of engaging in the Correct-Failure process. Approximately one-third of the maintenance processes engaged in EW/S solutions also included planned inspections, recalls, calibration, and remote support. [See Figure 5]

Interestingly, a product end-user would likely want to engage in a lower level of Correct-Failure solutions compared to that of Prevent-Failure solutions; theoretically the expenditures on services to prevent failure should reduce the expenditures on correcting failure, with a net total spend reduction on the combined work to correct and prevent failure. Why then the big gap of the percentage of EW/S solutions between the two? Could it be that Prevent-Failure solutions are not perceived as being a value proposition to the buyer? Maybe Correct-Failure solutions should always be bundled with that of Prevent failure solutions…something to contemplate moving forward.

Figure 5

Processes covered in EW/S Offering

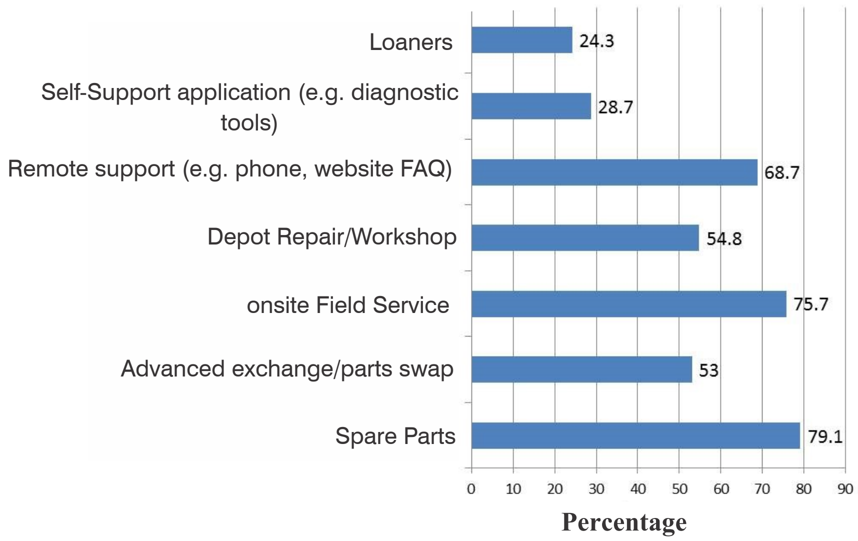


Resources Employed

Another consideration that companies make when configuring EW/S offerings deals with the resources employed in the solutions they deliver. There is a large mix of resources that can be provided as indicated in the survey results [See Figure 6]. Parts can be provided on a remove, dispose and install basis, or on an advanced exchange basis or on a loaner basis. Diagnostics devices, as well as application software can also be employed in a variety of processes. Facility resources of repair shops, warehouses and offices are employed in processes as well.

Figure 6

Resources Employed in Solutions



Insight

Identifying the types of resources employed in a process are segmented into 2 types: direct and indirect. Direct is parts and technicians, while indirect is personnel (e.g. planners, supervisors), materials (e.g. packaging, consumables), machines (e.g. forklifts, computers), facilities (e.g. shops, warehouses), and application software (e.g. work order management, inventory control). To complicate matters more, these resources can be provided completely by the EW/S seller, or the seller can outsource some of the work, or the seller can engage in a partnership with the buyer of the EW/S.

Entitlement Levels

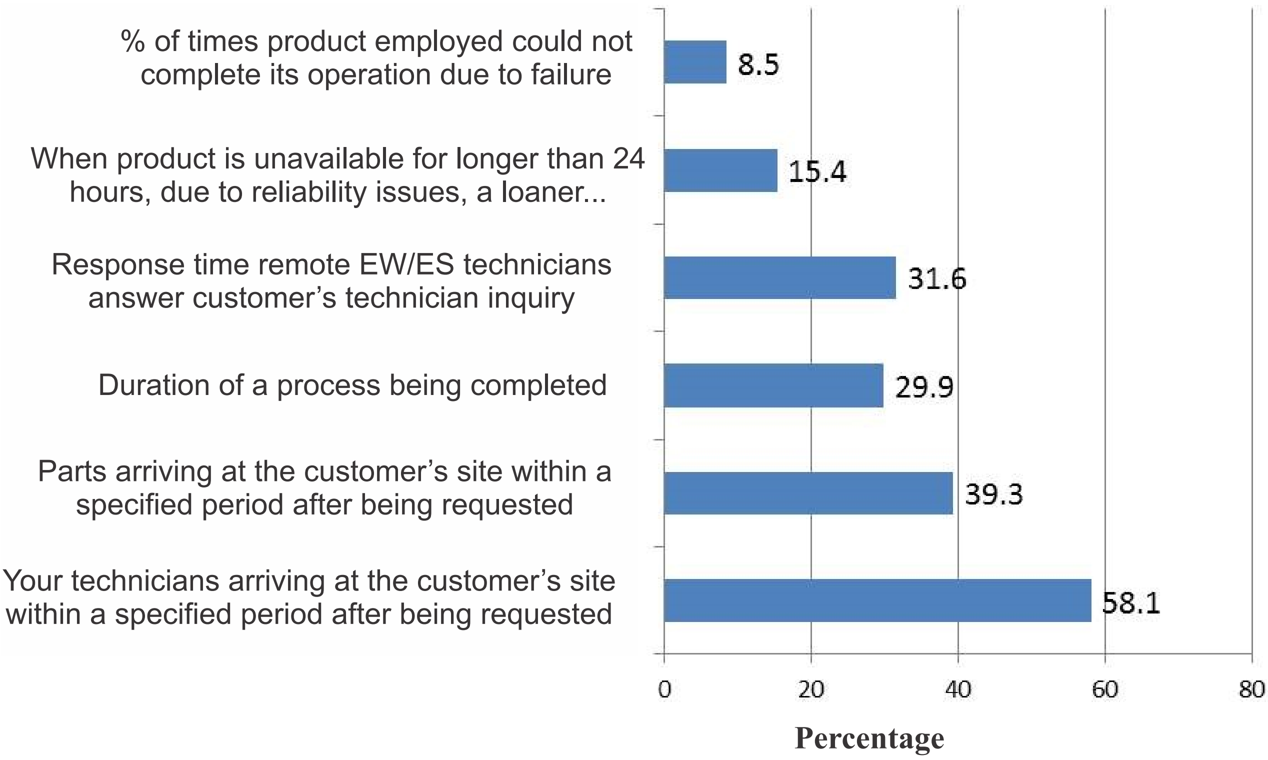
In the configuration of an EW/S offering, there is a portfolio of solutions provided, with each solution implicitly or explicitly hosting entitlements levels that may or may not be guaranteed; the entitlement levels are combined from 4 elements:

1. Period of performance
2. Duration of delivery
3. Effectiveness of delivery
4. Probability of occurrence

For example, an entitlement guarantees that 90% (i.e. probability of occurrence) of the line item parts demands are shipped, over a rolling 6 month period (i.e. period of performance), within 4 hours (i.e. duration) and are received in the right configuration/revision level, in the right condition and in the right quantity (i.e. effectiveness). [See Figure 7]

Figure 7

Levels of Entitlement



Insight

The higher the entitlement level, the more resources, and in turn buyer costs are incurred and in turn the higher the price of the offering. For example, an entitlement level of a 4-hour response can be 25% less costly than an entitlement of a 2-hour response. Guaranteed entitlements levels can be a major differentiator between competitive EW/S offerings, but they must be offered with great care; robust modeling is required to understand the risks of non-performance. Being that EW/S pricing is based upon a fixed fee, the seller's cost of achieving the entitlement levels could result in major unfavorable financial results as the seller spends much more than is received in the fee. Or the seller may not be able to meet their entitlement levels, and either pays a penalty and/or negatively impacts customer relationships, especially regarding future EW/S renewals. This is a very complex area within the configuration of an EW/S solution.

Survey results of the pricing methods employed for EW/S offerings were the following, with many participants engaging in several methods:

- 55% of participants employed a pricing methodology of Cost-Plus-Pricing; [(forecasted cost)* (1+mark-up %)], or [(forecasted cost)/(1-profit margin %)].
- 54% of participants employed Competitive-Pricing in which a price is derived based upon that of a specific competitor's price; the price offered to a potential buyer is the same or less than that of a competitor.
- 49% employed Market-Based-Pricing; the seller pricing is based upon a generally accepted range of prices within a marketplace.
- At 37%, the least popular pricing method was Value-Based-Pricing; driven by the buyer's perceived value proposition provided by the seller.

Also note that 54.1% of the respondents indicated that they negotiate the price of their EW/S offerings with their buyers.

Insight

Competitive-Pricing, Market-Based-Pricing and Value-Based-Pricing methodologies are decoupled from the expenditures incurred by the seller to deliver the EW/S offering. In order to achieve desired profitability from the EW/S offer, the seller's costs must be aligned with pricing, versus that of Cost-Plus-Pricing, where prices are aligned with costs.

For any fixed-fee solution, if a service delivery enterprise is highly efficient, profitability can be extremely favorable, but if the operations are inefficient, major losses can occur for the EW/S seller. Also if entitlement costs had not been properly reflected in the fee, "red ink" will often flow for the seller.

Value-Based-Pricing can often generate profit margins that are 25%-150% higher than that of the other methods, but can generate lower revenues, though still resulting in higher absolute profits. For example a Non-Value-Based sale price of $1,000, with a Profit Before Tax [PBT] % of revenues of 10%, generates $100 PBT, while a Value-Based sale price of $800, with a PBT % of revenues of 15%, or 50% higher than that of non-Value-Based, generates a $120 PBT.

So, the question to ponder is why is the Value-Based pricing methodology not more popular? The answer is simple, it is the most complex to craft; an intimate knowledge of the buyer's environment is required and a longer selling cycle is often necessary. Another driver for the low employment of Value-Based-Pricing can be that sales commissions are based on revenues versus profits; few sales team members will "push" Value-Based-Pricing if it takes a lot more work and their commissions are the same or even lower. So, another question to ask is why do I have a sales commission based upon revenue?

SALES EVENTS

Our survey questioned EW/S sellers as to the varied events that can trigger a buyer to create a sales event; the listing below is quite extensive.

1. Attachment event

The attachment event relates to a EW/S buyer concurrently engaged in the acquisition of a product; could be a sale, operating lease, or sharing transaction and the product can be in a new or used condition and if used, could be in an as-is condition or a remanufactured/overhaul/rebuilt condition

- 56% of respondents only present an EW/S offering at the attachment event; the remainder of responders, besides also being engaged during the attachment event, present EW/S offerings at other events of a product's life (e.g. limited warranty expiration, cross-sell)

  Attachment rates experienced by respondents;

  (# of EW/S contracts closed during period X)/(# of products transferred to buyers during period X)= Attachment Rate

  - 16.7% experience >70% Attachment Rate
  - 12.8% experience 51-70% Attachment Rate
  - 24.4% experience 26-50% Attachment Rate
  - 25.5% experience 10-25% Attachment Rate
  - 20.6% experience <10% Attachment Rate
  - 36.5% = Weighted Attachment Rate of survey responses
  - For responders that experienced Attachment
- Rates of >50%, the majority of their portfolios of EW/S contracts engaged in customized offerings.

Insights

There are many drivers for the attachment event, with one being the technology life cycle stage of a product. "Leading edge" products that the user marketplace has had little experience in operating and maintaining often creates "anxiety" in the potential unfavorable risks that could occur to the buyer; an EW/S offering often can play the role of "operational insurance." Many times an attachment price is discounted in order to increase the sale of these "leading edge" products in order to launch a new product. Upon product life cycle maturity, attachment rates often decline and prices increase.
Another major driver of attachment rates is the longevity of end-user product possession; the longer the duration of

possession, the higher the attachment rate. The logic for this driver is that the product possessor desires to mitigate the risk of not being able to obtain value from their long-lived product. For example if a product has a 10-year life, a 5-year EW/S contract will assure the end-user that at least 50% of the economic life of the product is asserted to create value.

An issue regarding EW/S pricing is the cost reduction incurred due to the expenditure claw-back of limited warranty claims; in other words, if the product is covered under the limited warranty of the OEM, should there be a price reduction of the EW/S offering relative to a product whose limited warranty had expired. Lots of limited warranty accrual accounting issues and inter/intra-cost transfer transactions must be reviewed; this can get ugly.

2. Pre-expiration of limited warranty event

- 5.8% experience an EW/S quotation rate of >70%
- 17.3% experience an EW/S quotation rate of 51-70%
- 23.1% experience an EW/S quotation rate of 26-50%
- 36.5% experience an EW/S quotation rate of 10-25%
- 17.3% experience an EW/S quotation rate of <10%
- 31.2%= Weighted quotation rate; actual contracts signed for this event are not known

Insight

This event increases the complexity of an EW/S quote; now we have a product that has been employed since the date of possession, and a host of maintenance activities have been engaged during the post-possession period. The question is whether deferred maintenance has occurred and will that maintenance be required to be completed before a contract can be sold?

This event is often driven as a result of an entitlement of a limited warranty not meeting the requirements of the end-user. For example the limited warranty states that a replacement part will be shipped within 2 business day, while the end-users needs a solution that provides the part within 4 hours; the change of an entitlement of an EW/S offering can come to the rescue.

3. At-expiration of limited warranty event

47% of responders provide an EW/S quotation to the product user.

Insight

The same insight discussed for pre-expiration events is applicable, but the duration between initial possession and this event is longer, resulting in some of the deferred maintenance costs being more pronounced.

4. Revision event to current EW/S contract

59.6% will supply an up-sell, cross-sell or down-sell quote during the life of an EW/S contract

Insight

Though down-selling is not often discussed, it is an important means of providing perceived value to a buyer. There are times in which little operational activity is being experienced by a seller for a contract. Rather than the seller "pocketing" the extra profits, some of the additional profits can be provided as a rebate through down-selling of a few entitlements.

5. **Extension of duration event of current EW/S Contract**

79.3% of respondents permit this event to occur

Insight

This event is often employed by a buyer to "stretch" their coverage before they remove the product from their installed base; it is an alternative to being engaged in a renewal event.

6. **Cancellation event of current EW/S contract**

- 36.9% do not permit
- 33.4% permit with penalties
- 29.7% permit with no penalties

Insight

Cancellations and contract transfers often go hand-in-hand. When a buyer is removing their product from use, obviously there is no need for the EW/S; so what can they do? The majority of sellers provide an out for the buyer by allowing for cancellation at no or some cost. The truly interesting opportunity for this event is the ease of transfer of the contract to a new possessor of the product; a win-win-win for the seller, who can continue to obtain revenues, the original buyer who no longer has financial obligations and the new buyer who immediately obtains coverage.

7. **Renewal event of expiring EW/S contract**

- 22.5% experience >90% Renewal Rates
- 38.0% experience 76-90% Renewal Rates
- 24.4% experience 50-75% Renewal Rates
- 15.1% experience <50% Renewal Rates
- 72.1%=Weighted Renewal Rate

Insight

It is estimated that for a product with a 10-year economic life, with a relatively steady production rate, with an EW/S attachment contract life of 3 years and a renewal contract life of 3 years, 18% of the installed base of the product will be covered under an EW/S contract.

BILLING

Another consideration when designing an EW/S offering is the frequency of billing the buyer.

- 34.8% of respondents indicate their buyers are billed for these programs one-time, upon signing of their initial EW/S agreement.
- 25.0% bill the buyer monthly.
- 24.1% bill the buyer annually.
- 13.4% bill the buyer quarterly
- 2.7% the buyer semi-annually.

For responders with the highest renewal rates, only a small minority bill up-front during the life of the renewal contract; most billing frequency is either monthly or annually.

Insight

Virtually all EW/S revenues are collected out of the period in which the seller incurs its costs; all EW/S contracts are driven by a subscription/fixed-fee in which scheduled buyer payments are not aligned with the events driving the seller's cost. The implications are major for the seller and the B2B buyer; there is a significant difference in the financial reporting of payments/cash flow versus revenues/income statement. For most B2B sellers and buyers, conformance to Generally Acceptable Accounting Practices [GAAP] is required; income statement and balance sheet issues such as revenue recognition, cost accruals and reserves, future liabilities and more must be addressed. Note that newly released revisions to GAAP for revenue recognition are another factor that creates challenges for the seller.

This segment of the survey required two answers: one regarding what tactics were employed most frequently in marketing their EW/S offerings, with the second identifying the most effective of the tactics; there were many differences in rankings between frequency and effectiveness [See Figure 8]

Another factor employed in marketing tactics is the frequency of notifying EW/S buyers to renew an existing contract [See Figure 9]

One last marketing tactic surveyed is the period before an EW/S contract expires; when does the seller notify the buyer of a need to renew the contract [See Figure 10]

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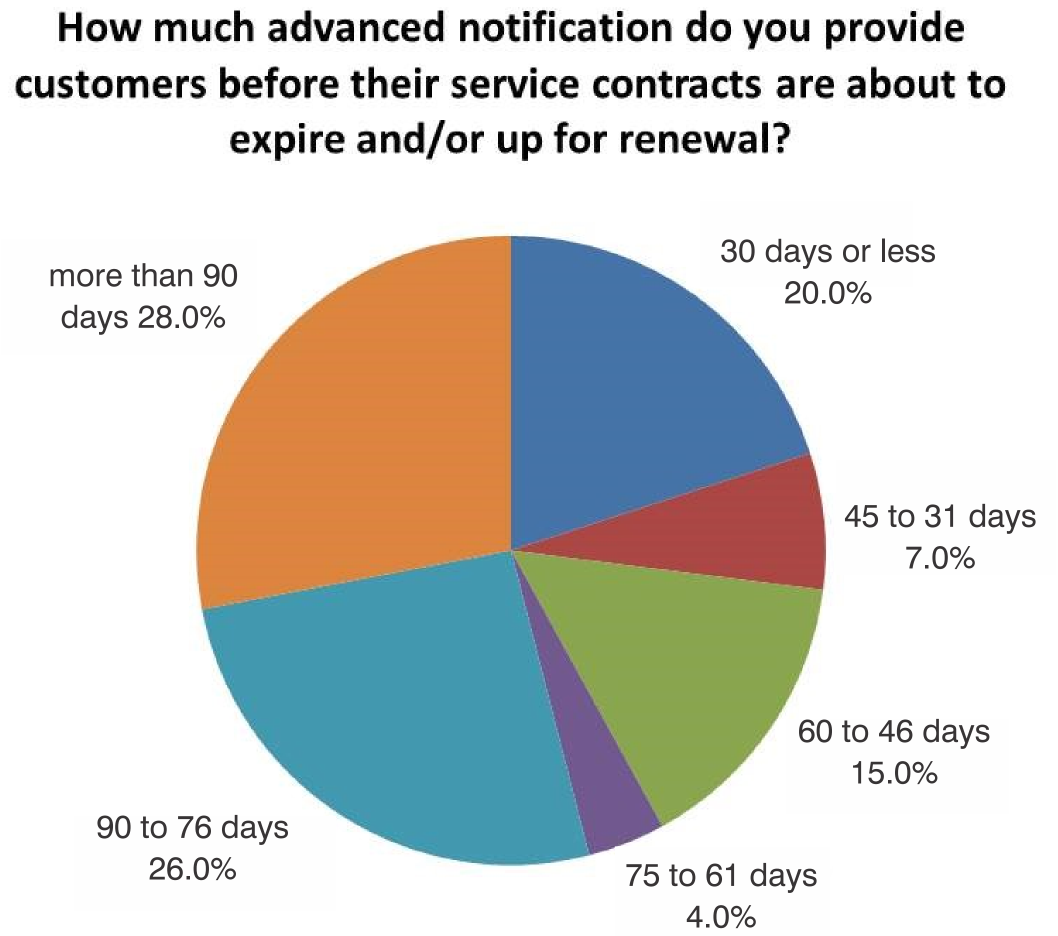
Figure 8

Marketing Tactic	Utilized	Perceived Effectiveness
Customer Endorsements/Testimonials	36.4%	72.6%
Telemarketing	23.4%	44.0%
Direct Sales	74.8%	68.3%
Public Relations	13.1%	44.5%
Reputation Management	32.7%	74.5%
Sales Aides (e.g. brochures)	68.2%	49.4%
Analysts Reports	20.6%	40.4%
Product User Reviews	11.2%	30.7%
Social Media	21.5%	28.9%
In-Bound Marketing	25.2%	25.5%

Figure 9

Notifying Buyer to Renew an Expiring Contract		
Frequency	**All Respondents**	**Respondents with Renewal Rate >90%**
1	33.0%	17.0%
2	31.0%	24.2%
3	24.0%	21.0%
>4	12.0%	37.8%

Figure 10



The basic tenets of block-and-tackle sales activities pay-off; working at remaining as "sticky" as possible with contract buyers will provide a steady stream of recurring revenues from a product that "keeps on giving."

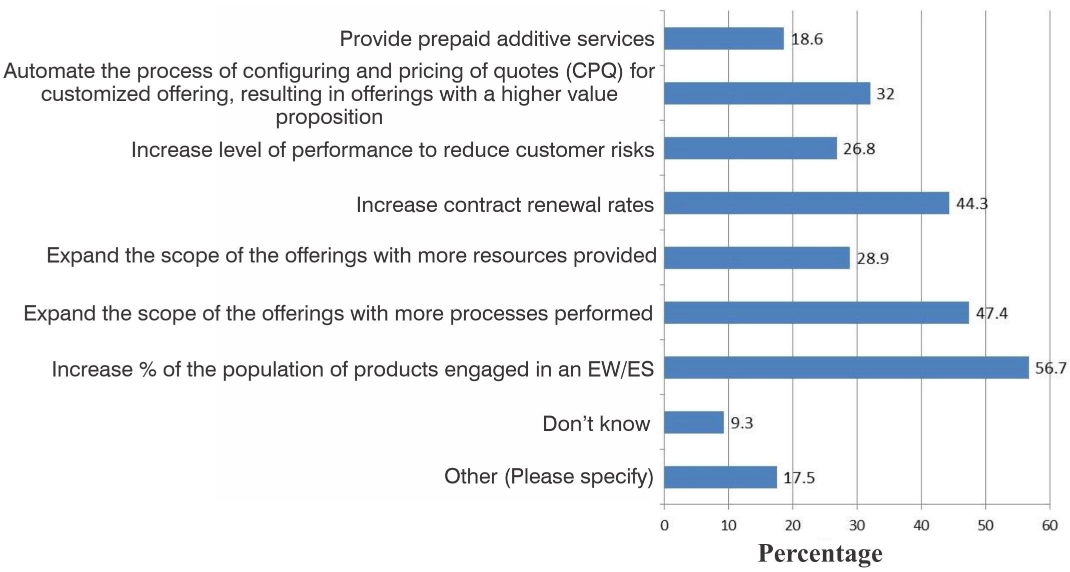
The survey respondents are optimistic that the EW/S marketplace will be expanding in the next 2 years [See Figure 11]

The strategies that respondents indicate they plan to utilize to grow EW/S revenue are varied. The big four strategies are to increase the product mix, increase the solution mix, be more effective in renewal rates and provide tools to empower the sales team to quote customized EW/S offerings. [See Figure 12]

Figure 11

EW/S Revenue Trends		
Change	**Last 2 years**	**Next 2 Years**
About the same	46.4%	38.9%
Higher	43.3%	43.5%
Much Higher	10.3%	17.6%

Figure 12
Plans to grow EW/S Revenue



Insight

Strategies that companies employ to achieve growth in EW/ES revenue are indeed noble, but the execution of that strategy can be very challenging. Typically an effective growth strategy entails a 2-3 year journey in order to experience results that focus leadership in allocating the resources to grow the EW/S business. The good news is that there are many paths to achieve revenue growth; one caveat is that the revenue growth must be accompanied by even faster profitability growth.

CONCLUSION

The EW/S marketplace is indeed complex, requiring many pieces to work together to create value for both sellers and buyers. Strategic and tactical issues will need to be addressed; from a more focused involvement by leadership, to more tools to effectively and efficiently customize offerings, to the empowerment of the sales team to create a greater value proposition for buyers, and to a more systemic approach at mining the potential recurring revenue events during the life cycle of a product.

New business models will enrobe EW/S solutions as part of a Product-as-a-Service offering, resulting in significant future growth; it is already occurring in the IT sector as part of "cloud" offerings, in the aerospace sector in "power by the hour" offerings bundled with operating leases, and in a host of other sectors.

We believe that your review of our report has provided you with many new insights that can assist your enterprise to move forward in your EW/S initiatives.

- **Duration of EW/S Contracts;**

  the longer the duration the greater the assurance of recurring revenues

- **% of EW/S contracts that are customized;**

  the greater the %, the higher the probability of higher renewal rates and higher profit margins

- **% of quotes that are converted to contracts**;

  the greater the % the more effective the sales team in providing a value proposition to the buyer

- **Attachment & Renewal rates;**

  the higher the rate, the greater the recurring revenue streams and "stickiness" of relationship with buyers

- **% of contracts revised for Up-selling & Cross-Selling;**

  the higher the rate, the higher the incremental revenues obtained

- **% of the installed base of a product model is covered by an EW/S contract;**

  the higher the rate, the higher the market share of the potential product maintenance management expenditures

- **% of EW/S contracts signed at time of limited warranty expiration;**

  the higher the recurring revenues re-captured due to the loss of the contract signing at the attachment event

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Michael R. Blumberg is a Certified Management Consultant (CMC) and president of Blumberg Advisory Group, Inc. His firm provides clients with strategic and tactical assistance for improving their overall profitability and the quality of technical support and aftermarket service operations. Michael is a result oriented, business leader with unequaled background in the High-Technology arena. He is highly skilled at developing innovative business strategies that effectively respond to industry trends and leverage advanced technology to improve the financial and operational performance of his clients. Mr. Blumberg is a prolific author and frequent speaker at industry events and conferences.

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Ron is Founder and CEO of G35 Software, Inc., a PA-based start-up that supplies a cloud-accessed, subscription-billed application software product that empowers a B2B sales team to configure and price customized quotes for extended-services delivering machine maintenance management solutions.

Prior to founding G35 Software, Ron was engaged for 35+ years working as a management consultant for Booz & Company, as a Business Unit Leader for an OEM and as the owner of a boutique management consultant engaged by such organizations as Acer Computer, General Dynamics, GE, Lockheed Martin, L-3, FLIR, JLG, DynCorp, Navistar, BAE Systems, Northrop Grumman, Coherent, Rockwell Collins, Bell Helicopter, US Army, USMC, FMC Technologies, DRS, Dassault, and many others.

He has published extensively, from trade journals such as Material Handling & Logistics, to professional publications such as the Society of Automotive Engineers, to academic journals such as Business Horizons (Indiana University), and has been quoted in the Wall Street Journal.

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