Ecommerce for a Mid-Sized Medical Device Company: A Consultant’s Report Approach

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Abstract

The medical device industry generates hundreds of billions of dollars in revenue every year. While the supply chain of some healthcare institutions runs with optimum efficiency through supply chain management (SCM) systems such as Infor Lawson, others are not always managed in such a fashion. These less efficient supply chains tend to be those of smaller facilities and standalone doctor offices that do not participate in the larger Group Purchasing Organizations (GPOs) that offer the supply chain efficiency, discounts, and economies of scale enjoyed by larger institutions (Jayaraman et al., 2014).

Many companies, except for the largest players in the field such as Bard, Cook, and Boston Scientific to name a few, are still operating their medical device sales to these smaller practices with phone calls, fax machines, and email. This practice of manual salesmanship can be time consuming, expensive, and labor intensive. But it doesn't have to be.

For this project, I will focus on an actual mid-sized company in the medical device industry (referred to in this report as “Med Dev Company”) that pulls in roughly $400 million in annual revenue. The company is positioned to increase revenue over the coming years, but could use a process that streamlines orders for some of its products, especially those for its smaller customers.

Med Dev Company sells a variety of medical devices, from simple disposable syringes and suture retention devices, to implantable catheters, to large surgical machines that require a high level of proficiency to operate. While not all of these products are able to be sold online through an ecommerce portal, many that are considered to be disposable, near the end of their product life-cycle, or tried and true “commodity” items, could certainly be sold via an ecommerce portal with ease. In a healthcare environment where device purchasing costs are often the difference between a clinic staying open or closing its doors for good, efficient and cost-effective management of device procurement is vital (Jayaraman, et al. 2014).

My goal for this project is to identify how the current sales process works at the Med Dev Company and the medical device industry in general, identify some key players in the medical device industry who operate in an ecommerce marketplace efficiently, assess the benefit and risks of ecommerce, and propose whether or not Med Dev Company should develop its own ecommerce environment for the appropriate products and customers. I will not be creating an actual ecommerce site for this project, however. The final output will instead take the shape of a consultant’s report to Med Dev Company, as well as an accompanying slide deck.
Literature Review

Product Overview

The term “medical device” encompasses just about any item you would find in a hospital, doctor’s office, or nursing home that could be used “in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals” (FDA Guidelines, 2015). Essentially, anything from syringes to an ultrasound machine, to pacemakers, to tiny implantable devices all fall under the category of “medical device”.

For the company under consideration, I will focus on the products that they manufacture, which include but are not limited to angiographic catheters, cancer treatment machines (and accompanying disposable probes), laser fibers for the treatment of varicose veins, peripherally inserted central catheters (PICC lines), ports, guidewires, syringes, and much more.

As I discuss the impact that ecommerce can have on Med Dev Company, it is important to define what is meant by the term. There has been some debate as to what exactly constitutes ecommerce, but for the purpose of this project I will go with the definition proposed by Turban et al. in Kidane et al: “E-commerce [is] the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet” (2016). This project is focusing solely on the “internet” aspect of ecommerce, and, more specifically, the “online store” realm of internet ecommerce (as opposed to the highly advanced SCM systems which may also qualify as ecommerce).

It is important to note the wide range of products produced by Med Dev Company, as many will not fit the bill of “ecommerce-appropriate”. However, many of the products will fit this category, especially the frequently used disposables such as probes, fibers, syringes, and guidewires. These are the medical devices I will be specifically concerned about for the sake of the development of ecommerce for Med Dev Company.

The reason why something like a laser fiber is more appropriate for an ecommerce site versus a PICC line is because of the customer base for these products, as well as the nature of the products’ use. For example, varicose vein laser procedures are not typically performed inside hospitals, but rather independently owned and operated doctor offices and clinics. These physicians usually operate in a small team, with one or two physicians on staff, a few nurses, and some front end administrative help. Their business is not always consistent and it is not always possible to know how many laser fibers an office will go through each day, week, or month. Their supply chain is not automated like larger institutions, and their inventory accounting is usually done on a need-to basis. For this reason, a quick, 24/7 link to a platform that offers simple, speedy access to the supplies they need would be a major time saver for the clinic as well as the Med Dev Company sales rep responsible for managing that office.
On the other hand, PICC lines are a staple medical device for any hospital, but not necessarily a small office or clinic. PICC lines are usually purchased in mass quantities because of their versatility to deliver medication, which leads to a high frequency of use in a variety of different treatments. Med Dev Company’s customers are able to anticipate the amount of PICC lines needed because the product is almost always accounted for through the use of some sort of SCM system, such as Infor Lawson. A system like Infor Lawson scans the device’s individual “barcode” before being implanted into a patient, thus removing that product from the hospital’s inventory. This completely automated system is set up to automatically re-order PICC lines, and in the same fashion many other medical devices, when the inventory falls to a certain level. This highly advanced way of ordering medical devices eliminates the need for a standard ecommerce portal for these large customers that use common products like PICC lines on such a massive scale.

**The Medical Device Sales Process**

As you could imagine, the sales process for medical devices is vastly different from just about any other industry out there (except, perhaps, for its cousin industry, pharmaceuticals.) In 2010, after the passing of the Affordable Care Act (ACA), a whole slew of regulations went into effect that have completely transformed the way business is performed in the medical device field. In addition to these regulatory changes “traditional business and purchasing rules are changing, [which] is partially due to the increasing integration of internet-based transactions in all kinds of markets, including healthcare” (Chee, 2011). One of the major impetuses for regulatory change was the concern around the patient treatment. Sarah Fontenot notes that “there has always been a concern that a patient’s treatment should be exclusively controlled by their particular medical condition and never influenced by financial considerations…gifts or other monetary incentives….or business decisions” (2013).

With the sweeping changes of the ACA, medical device salesmanship has moved away from dinners and other outings between sales reps and customers. There has been an attempt at increased transparency during sales transactions, and strict penalties have been placed on anything that could even slightly be misconstrued as a kickback or gift.

To understand why an ecommerce system would be a welcomed addition to the medical device sales process, it is useful to examine how the process is carried out for most companies and customers, large and small.

A modern sales interaction between a sales representative and a large customer, such as a hospital or GPO, may include product demonstrations or sampling (with approval through the proper channels, per the ACA regulations), several follow-ups and meetings to discuss the product under consideration, price negotiation, and eventually a decision of whether or not to move forward with that product. If the product is chosen by the customer, the representative typically takes the reigns in setting up a purchasing order and works with hospital administration or
GPO to get the new product included on their SCM system or pricing contract for future ordering. This is a standard procedure for companies throughout the medical device industry, including Med Dev Company, and it can take weeks or even months to close a deal.

On the other hand, Med Dev Company must serve “the little guys”, too. When a sales rep wants to make a sale to one of these customers, they usually go through the same exact steps (albeit much quicker than with larger institutions). Where ecommerce comes in handy is in the maintenance of the seller-customer relationship and the on-going sales process. Currently, if one of these customers is thrilled with their product and would like to order more, they must call, email, or fax the representative, who then puts in the order to Med Dev Company customer service. The information as to exactly what the customer wants has the potential to be misconstrued as it passes from doctor, to rep, to customer service, to distribution. Additionally, the process is slow and inefficient.

These smaller customers account for roughly 10% of Med Dev Company’s revenue, and while this may seem like a small fraction of the entire pie, the time and attention required by sales reps to cater to the needs of small customers is fairly similar to that of the larger customers. This is in part due to the extremely personal relationships and high level of trust these types of clinics and offices develop with their sales rep. However, this close-knit relationship is a perfect springboard for getting these types of customers comfortable with a Med Dev Company ecommerce site. Trust is paramount in making customers comfortable with online purchasing, no matter who the vendor is (Abyad, 2017).

In 2017, the medical device sales process involves savvy professionals to navigate these new regulations while still catering to the needs of its customers. This requires stricter documentation of transactions among seller and customer and constant monitoring by manufacturers’ internal legal and regulatory departments. From a regulatory standpoint, sales reps can sometimes be a liability to a company if they misstep and violate one of the ACA regulations. Although contracts with larger institutions such as hospitals and GPOs are typically automated and set to “cruise control” after the initial purchase, the liability exists all the same when these representatives interact with smaller customers. For this reason, the standard sales procedure mentioned earlier is not a one-size-fits-all solution.

**The Benefits and Risks of Ecommerce**

The benefits of ecommerce may seem obvious for most types of online shopping. However, the healthcare field is a different ball game. The benefits for selling shoes, electronic consumer goods, or clothes online are not necessarily the same as in healthcare. One of the main desires of any online shopper is convenience. As Brendan McGowan notes in his CIO article, there is a larger trend in healthcare for the incorporation of IT systems into the evolving end-user experience (2017). This not only includes the highly sophisticated SCM systems like Infor...
Lawson, but also the ecommerce portals that serve smaller customers, or customers unable to afford such levels of technology. Additionally, the ability to make swift, effective, decisions efficiently is highly desirable (Lo Storto, 2013). For this reason, the internet has played a large role in offering efficiency gains within the healthcare industry (Chee, 2011), and it does not appear to be letting up any time soon.

Medical device manufacturers’ ecommerce still stands to gain from these opportunities of increased efficiency that Chee is referring to. One company that has adopted the use of ecommerce as far back as 2008 is Cook Medical, a competitor to Med Dev Company in some sectors of the medical device industry. The Cook marketing team noted that orders submitted via phone, fax, and email were more prone to human error, took more time to process, and ultimately cost the company more money to carry out (“Cook Medical Makes”, 2013). Through the integration of ecommerce Cook was able to offers all of its customers, big and small, a simplified way to place orders for their frequently used items or one-off items.

Another benefit offered by ecommerce in the medical device industry involves price transparency. The Healthcare Financial Management Association defines price transparency in the healthcare sector as “readily available information on the price of healthcare services” (2017). Although a hotly debated topic, there are certainly benefits to price transparency as it pertains to the sale of medical devices. Since inventory prices are the most highly variable cost of any healthcare organization (Trojan et al., 2017), large or small, it is becoming increasingly important for these purchasers to know the fair price for the products they are buying. “Hospitals are encouraged to be aggressive in their inventory price negotiations so as to minimize costs” (Trojan et al., 2017), which can be exhausting and simply a waste of time for both the seller and buyer. This aggressive negotiation is currently necessary, however, since the reimbursement rates for medical procedures (i.e. the most common manner in which hospitals and clinics are paid by insurance companies to perform a certain procedure) have been steadily decreasing over recent years (Troncale, 2016). Much like hospitals, smaller practices, like the ones that would be targeted for Med Dev Company ecommerce platform, go through this same song and dance of price negotiation on a regular basis. If a “haggle-free” ecommerce site existed where the customer was shown the product with the price listed directly next to it, both he and seller could forego the painful negotiation process, saving both parties time and aggravation.

And finally, any order that is placed via ecommerce will free up time for the managing sales representative. Less time managing customer orders, visiting offices to check in on inventory, and negotiating prices means more time he can spend developing relationships with new customers, thus increasing revenue.

While there are plenty of benefits to developing an ecommerce solution to complement Med Dev Company’s sales process, there are certainly some drawbacks, too. One of the most obvious drawbacks is the upfront cost for a mid-sized company such as Med Dev Company to implement an ecommerce system. Everything from managing and hosting a secure ecommerce site, keeping it up to date with content changes, to hiring new employees to oversee its operation, will all
add up. However, there may be options available that will allow Med Dev Company to “dip its toe in the water” before it commits wholeheartedly.

Assuming the ecommerce site is set up and operates as it should, there are still other external risks that need to be accounted for. One example of these types of risks is poor design. “Poor website design can be a major factor that negatively affects consumer purchasing decisions,” (Lo Storto, 2013). Med Dev Company needs to ensure that the site it creates for the purchasing of its products is simple to use, responsive (i.e. available on mobile and desktop), secure, and only delivers the information that its customers care about. If the system is lacking in any of these departments, it may see decreased traffic over time due to customer frustration. Therefore, it is imperative that personnel are hired specifically to manage this system.

A third potential risk for implementing ecommerce is that it may be viewed as an unwelcomed change to the sales process by sales reps. While ecommerce could also offer them more free time, it may be a catalyst for breaking down barriers to price transparency, which can ultimately hurt sales reps’ bottom line sales numbers. Confidentiality clauses and a nearly complete lack of price transparency (i.e. one customer does not know what another customer pays for the same product) has led to increased device costs in recent years (Pogorelc, 2013). While this is, on the whole, a bad thing, sales reps are under the gun to meet certain sales figures. The higher the price they can sell a product to their customer, the more likely they will meet their target sales number. If they don’t achieve their quota, then their paycheck will likely be a bit leaner come payday. Therefore, any system that could potentially take away their ability to haggle for a higher price on the products they sell can be viewed as a negative.

Competitor Medical Device Ecommerce

Through my research it is apparent that some larger companies within the medical device industry have already adopted ecommerce as a supplement to their sales process. These are companies with billions of dollars of annual revenue, with whom Med Dev Company competes every day, such as Bard, Boston Scientific, and Cook Medical.

A company like Bard, for example, which is roughly ten times larger than Med Dev Company in terms of revenue and employees, operates what is calls “Bard E-Quest”. E-Quest is an ecommerce option that allows Bard customers to join the Global Healthcare Exchange (GHX), which is a tool that helps customers realize savings through direct orders to manufacturers, invoice automation, and other supply chain efficiencies (Bard E-Quest, 2017). Besides GHX, Bard also offers customers the opportunity to connect directly with the company to handle its business completely electronically, sort of like a personalized ecommerce site. As it stands now, it does not appear that Bard offers any ecommerce environment, similar to the one I am proposing for Med Dev Company, to aid in its sales process.

One company that is utilizing ecommerce to the fullest extent is Cook Medical. Cook offers an online portal simply titled “Online Ordering” on their website where
customers can login and order products by specific product number, or by browsing their catalog. One of the main benefits of this system, as noted by Cook VP David Reed, is that it “reduces the time spent ordering the products that [customers] use most frequently” (2013). Cook’s Online Ordering has a very friendly appearance, and a simple design that would be easy to understand for just about any user. Although only customers can login to see the exact layout of the product pages on the Online Ordering site, it is likely very well organized just like the rest of their product and ecommerce sections.

Finally, Boston Scientific operates an ecommerce site in a similar vein to Cook Medical. It is called “eOrder” and offers all of the online ordering services one would expect from an online shop, such as email confirmations with order tracking, multiple user access per account, and comprehensive order management tools and status updates.

With competitors already operating their own ecommerce sites, there is no reason why Med Dev cannot follow suit. A deeper investigation into the backend software, or even hardware, that these companies use to manage their systems can potentially shine a light on a simple path forward for Med Dev Company to achieve its goal of developing an ecommerce environment to assist in its sales process.
Production and Design Strategy

In order for Med Dev Company to enter the ecommerce market place, some research into the modern medical device ecommerce landscape is necessary in order to see how the company will fit into the space. With this being the case, my project production and design strategy will focus on the creation of a consultants’ report to be offered to the Med Dev Company sales and marketing team in order to help them navigate the path to realizing the goal of an ecommerce site. The main components of this report will be similar to the literature review sections, with the addition of an executive summary, a greater focus on competitors already in the ecommerce business, a review of the risk and benefits of ecommerce, and a suggestion as to which products should be offered online. The report will also include screen shots and wireframes of how the site should look and operate.

My consultants’ report to Med Dev Company will not stand on its own, however. Part of the production plan is to create a set of well-designed slides for presentation to the company, as if I were to actually meet with the sales and marketing team in person to explain the report. I will view these slides as essentially the consultants’ report, but in slide form. Additionally, I plan to create a mock-up of an online store using Shopify, or, if at all possible, find a store already in existence that is similar enough in nature so that I can highlight and call out the most important aspects of it.

Step one in my consultants’ report will be to highlight the current sales process within the medical device industry, and then focus in on how Med Dev Company can include an ecommerce site to assist in that process. This will be a good area to include a flow chart of the processes involved for large and small customers, and identify the exact spot where ecommerce can enter.

Step two is to understand competitors’ involvement in ecommerce sites. In order to properly assess the competition, I will devise a system by which I can analyze competitors who are already engaged in ecommerce. Some of the categories I will consider for this section are: ease of conversion (i.e. how difficult is it for a customer to switch over to ecommerce), selection of products available online, company support for ecommerce, and utility to sales (i.e. is it important in aiding the overall sales process). With competitors using different models for ecommerce, I suspect that these evaluations will vary greatly, but will ultimately allow Med Dev Company to decide how important certain aspects of the sales process are when it comes to ecommerce.

Next, I will rank Med Dev Company product portfolio on how viable certain products are for sale on an ecommerce site. The ranking system may take into account things such as: type of device (i.e. capital equipment, disposables, implantable device), lifecycle status, level of legal concern, and consumer demand. This section may be somewhat subjective. For example, a category such as “level of legal concern” may be higher or lower depending on which regulatory official or lawyer you ask. With this being the case, I will take a conservative approach in any
estimates that may be subjective. Other categories, such as “consumer demand”, which can be analyzed by sales figures, and “type of product”, are much more objective and can be more easily quantified or explained.

Finally, a robust “benefits and risks” section will be included in the report so that the sales and marketing teams can quickly assess the pros and cons of such a site. I envision this section as a side by side table that allows the reader to easily draw comparisons.

Spec Work for Consultants’ Report and Slide Presentation

For the actual design of the consultants’ report and slides I have created a simple set of brand guidelines that I will follow for the slide deck presentation as well as the official consultants’ report document. The colors and design reflect a high-tech company in the medical/healthcare industry. The main colors, blue and green, are appropriate for a modern company in the tech and healthcare space. The light blue and gray act as accent colors to complement the primary blue and green. All of these colors were inspired by the scrubs often worn by doctors and nurses in a typical hospital setting.

![Figure 1.1](image1.png)

The Med Dev Company logo uses the main blue and green colors from the brand guidelines. The logo is rounded, which is a popular trend in modern logo design, and, according to Martin Christie tends to “…project a positive emotional message. Using a circle in a logo can suggest community, friendship, love,
relationships and unity” (2017). All of these qualities are important to just about any company, but in an industry where humans are the center of focus (the devices are being used on people, after all) the notions of love, relationships, and unity are paramount. Additionally, the line going through the circle mimics the line of an EKG monitor to further connote a tech company that deals in the healthcare space.

The logo font should always use Montserrat Regular, with the M, D, and C all receiving capital letters. “Med Dev” should always take on the green color and “Company” should always use blue. “Company” should always be offset from “Med Dev”, with the capital C being in line with the E in “Med”.

**Flow Charts for Sales Process**

The consultants’ report and accompanying slide deck will also contain some charts that will help to explain in simple terms the rigorous sales process for the medical device industry. I will then compare the same process side by side to a system that incorporates an ecommerce environment to aid in the process, which will visually demonstrate where time and energy can be saved. The graphs will be similar to those of Figures 2.1, 2.2, and 2.3, below:
Medical Device Sales Process for Large Hospital System

1. Product Demonstration / Trial

↓

2. Several Follow-up Meetings to Discuss Results (can take weeks-months)

↓

3. Price Negotiation

↓

4. Final Decision from Hospital

↓

5. If purchased, sales rep works with administration to include product in hospital SCM system

↓

6. Subsequent orders made automatically via SCM system

↓

7. Relationship with customer is maintained by moderately frequent check-ins from sales rep

Figure 2.1
Medical Device Sales Process for Small Clinic

1. Product Demonstration / Trial

2. Follow-up meetings to discuss results

3. Price Negotiation

4. Final Decision from clinic

5. If purchased, clinic places order by phone, email, or fax to sales rep


7. Relationship with customer is maintained by moderately frequent check-ins from sales rep

8. Repeat steps 5, 6, and 7 for remainder of relationship with customer

Figure 2.2 Steps in gray are steps that can be eliminated with the inclusion of an ecommerce site.
Medical Device Sales Process to Small Clinic with Ecommerce

1. Product Demonstration / Trial

2. Follow-up meetings to discuss results

3. Final Decision from clinic

4. Clinic submits product order online for first order and any subsequent orders

5. Relationship with customer is maintained by moderately frequent check-ins from sales rep

Figure 2.3
Production Challenges

As I prepare my project there are some challenges that I anticipate during the production process. Chief among these is the fact that I can’t actually build a functioning ecommerce site as an example of how Med Dev Company’s site should operate. There are a few reasons for this, but mainly I cannot create an actual store that lives somewhere in the online world that shows Med Dev Company’s products for sale, even if the site was hidden or clearly identified as non-operational. The legal and regulatory repercussions of such a site making its way into the mainstream are too great to even consider doing this. Additionally, I would not want to use real product photos or estimate pricing for such a site as the data I use may become inaccurate within a few months, thus creating another legal concern. Simply put, it is better to not have this site living online unless there is a serious commitment to making it happen.

Another challenge that has presented itself during the production phase is the lack of access to Med Dev Company’s competitors’ ecommerce sites. While it is no secret that companies like Bard, Cook, and Boston Scientific have online ordering portals for their customers, they are only accessible to verified, paying customers who they have done business with in the past or are considering doing business with in the near future. This lack of insight will force me to estimate, based on other sections of their website, what their ecommerce hub may look like and how it may function. Also, there are other medical supply companies that are easily accessible online to the mainstream consumer that may give me a hint as how to best arrange my wireframes within the consultants’ report.

![Boston Scientific’s customer login page](image)

*Figure 3.1 Boston Scientific’s customer login page*
## Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Product Type</th>
<th>Clinical Specialty</th>
<th>Cook Medical Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Fr Colon Decompression Set</td>
<td>Sets</td>
<td>Colorectal Surgery, Gastroenterology</td>
<td>Endoscopy</td>
</tr>
<tr>
<td>6 Shooter® Saeed® Multi-Band Ligator</td>
<td>Hemostasis, Ligators</td>
<td>Gastroenterology</td>
<td>Endoscopy</td>
</tr>
<tr>
<td>6 Shooter® Universal Saeed® Multi-Band Ligator</td>
<td>Hemostasis, Ligators</td>
<td>Gastroenterology</td>
<td>Endoscopy</td>
</tr>
<tr>
<td>Achalasia Balloon</td>
<td>Dilation Balloons</td>
<td>Gastroenterology</td>
<td>Endoscopy</td>
</tr>
<tr>
<td>Arobar® 2 Calibrated Tip Wire Guide</td>
<td>Wire Guides</td>
<td>Gastroenterology</td>
<td>Endoscopy</td>
</tr>
</tbody>
</table>

**Figure 3.2** Cook Medical’s online product portfolio

**Figure 3.3** Bard’s Online US Product Catalog is arranged in a searchable database format
Figure 3.4 VitalityMedical.com’s home page for general medical supplies

Figure 3.5 VitalityMedical.com’s tier two product page offers a familiar ecommerce customer experience
Ecommerce for a Mid-Sized Medical Device Company: A Consultant's Report Approach

Med Dev Company’s Competitors’ Ecommerce Portals

<table>
<thead>
<tr>
<th></th>
<th>Ease of Conversion</th>
<th>Breadth of Product Offerings</th>
<th>Company Support</th>
<th>Utility to Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bard</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Cook</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Boston Scientific</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 3.6

In Figure 3.6, I ranked three of Med Dev Company's competitors’ ecommerce portals based on the information that those companies have made available to the general public. The reason I consider this a production challenge is because the ranking system is subjective, and is based off imperfect information. However, my reasoning for the ranks chosen for Figure 3.6 are as follows:

Bard’s Ease of Conversion received a 5 because the process to connect a customer to the Global Healthcare Exchange (GHX) can be complex. Their e-Quest online ordering system is fairly simple, but is not as robust as the Global Healthcare Exchange option. Bard offers nearly all of its products through the Global Healthcare Exchange and e-Quest, and offers a moderate amount of company support for the platforms (although GHX is not a Bard-owned company, which decreases the score in this category). Finally, the ability for a company to connect to GHX has the potential to completely automate the ordering system for a customer, which gives a high score in “Utility to Sales”.

Cook Medical’s Online Ordering is the easiest of all three to join, as the customer simply fills out a form and, after verification for the ecommerce team, is approved for purchases. Cook seems to offer wide variety of products (though not all products), and has a special internal team dedicated to the ecommerce customer experience. The utility to sales here is fairly high since customers have the ability to order and pay via invoice or credit card, which avoids any coordination between the customer and the sales rep.

Finally, Boston Scientific’s eOrder falls somewhere in between Bard and Cook in terms of ease of conversion. Their website does not offer great detail on the signup process, but it seems simple enough. Boston Scientific is a large company with a wide array of products, and it is unlikely that all are available through their ecommerce portal. Additionally, if a customer wants to order Latitude NXT equipment from them, they need to create a completely different account that runs through a separate ecommerce system. The company seems to be invested in the success of their online sales tool, and so they have received a moderately high score for Company Support, as well as Utility to Sales.
## Med Dev Company’s Products: Ranked for Online Sale

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Type of Device</th>
<th>Lifecycle Status</th>
<th>Level of Legal Concern</th>
<th>Consumer Demand</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwave Generators</td>
<td>capital</td>
<td>new</td>
<td>high</td>
<td>high</td>
<td>No</td>
</tr>
<tr>
<td>RFA Generators</td>
<td>capital</td>
<td>mid life</td>
<td>high</td>
<td>low</td>
<td>No</td>
</tr>
<tr>
<td>Probes</td>
<td>disposable</td>
<td>mid life</td>
<td>high</td>
<td>low</td>
<td>Yes</td>
</tr>
<tr>
<td>PICCs</td>
<td>implantable</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
<td>No</td>
</tr>
<tr>
<td>Ports</td>
<td>implantable</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
<td>No</td>
</tr>
<tr>
<td>Dialysis Catheters</td>
<td>disposable</td>
<td>mid life</td>
<td>medium</td>
<td>medium</td>
<td>No</td>
</tr>
<tr>
<td>Angiographic Catheters</td>
<td>disposable</td>
<td>legacy</td>
<td>medium</td>
<td>high</td>
<td>Yes</td>
</tr>
<tr>
<td>Laser Generators</td>
<td>capital</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
<td>No</td>
</tr>
<tr>
<td>Laser Fibers</td>
<td>disposable</td>
<td>mid life</td>
<td>medium</td>
<td>high</td>
<td>Yes</td>
</tr>
<tr>
<td>Guidewires</td>
<td>disposable</td>
<td>legacy</td>
<td>low</td>
<td>medium</td>
<td>Yes</td>
</tr>
<tr>
<td>Infusion Catheters</td>
<td>disposable</td>
<td>legacy</td>
<td>medium</td>
<td>low</td>
<td>Yes</td>
</tr>
<tr>
<td>Proprietary Infusion Catheters</td>
<td>Capital/disposable</td>
<td>new</td>
<td>high</td>
<td>medium</td>
<td>No</td>
</tr>
<tr>
<td>Supplies (Syringes, needles, suture buttons, scalpels)</td>
<td>disposable</td>
<td>legacy</td>
<td>low</td>
<td>high</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Figure 3.7*

In Figure 3.7, Med Dev Company’s most important, mainstream products are listed, along with four categories for evaluation. “Type of Device” is broken down into three categories: capital, disposable, and implantable. Devices labeled as “capital” are large, expensive, and require specific technical training to operate. “Disposable” refers to products that are used once during a procedure and are immediately disposed of after use. “Implantable” devices are devices that go into the human body for an extended period of time with the objective of treating some sort of chronic or extended illness.

Product lifecycle is also an important considering for deciding which products should be sold online. Newer products would likely not be good candidates for ecommerce since they need to attain a certain level of excellence in the market place before Med Dev Company would be comfortable making them so easily available. Also, legacy products, or products that have been around for decades and are no longer consider innovative or cutting-edge, are more likely to be sold online since they are tried and true products which reasonably high consumer demand.

Legal concern is also a factor for ecommerce sale. The Legal and Regulatory departments at Med Dev Company are certainly not willing to put the company at risk if they feel a product should not be sold online for any reason. Any product with a high level of legal concern would likely be excluded from an ecommerce site, despite factors such as consumer demand or lifecycle status. Products with low risks are very likely to be available online, while medium risk items will take into account other
factors, which will pull the company’s decision in one direction or another. For example, a disposable item like a dialysis catheter may not be suitable for online sale, even with only a medium level of risk, because the catheters are newer and have less demand. However, items like angiographic catheters, which are a staple product of Med Dev Company, have been around for decades and have a very high consumer demand. Angiographic catheters are not cutting-edge and are rather simple products, so they are more likely to be sold via an online portal.

And finally, consumer demand simply relates which products are being asked for by customers most frequently. Some newer products often have an artificially high consumer demand, while mid-life and legacy products receive a wide range of demand.

Taking all of these factors into consideration, a final column labeled “Conclusion” identifies whether or not the product is suitable for Med Dev Company’s ecommerce site.

Benefits and Risks

| Benefits and Risks for Med Dev Company’s Ecommerce Site | Benefits                                       | Risks                                                          |
|--------------------------------------------------------|-------------------------------------------------|================================================================|
| Increased customer ordering efficiency                  | High upfront costs for implementing system,    |
|                                                        | hiring employees to manage                      |
| Increased company order fulfillment efficiency          | Site must be well-designed and maintained on a |
| and accuracy                                            | constant basis                                  |
| More time free for sales reps to develop new            | Possible unwelcomed change to sales team       |
| relationships                                           | strategy (could hurt individual sales figures) |
| Price transparency                                      | Price transparency                              |
| Eliminate hassle of negotiations                        |                                                 |

Figure 4.1

Figure 4.1 shows a side by side comparison of the benefits and risks will be a helpful tool for the consultants’ report. Some items, such as price transparency, can actually be a benefit or a risk for the company depending on how the sales and marketing teams decide to view the issue. On one hand, not negotiation for price all the time will save some hassle, but it may also eliminate a sales rep’s chances of receiving a higher price for a product, thus hurting his numbers. This table serves only to highlight the issues, and is not necessarily meant to say whether or not Med Dev Company should proceed, or not proceed, with the creating of an ecommerce site.
Project Design and Evaluation

As stated earlier, my project’s final form takes the shape of a consultant’s report and an accompanying slide deck. The idea behind this approach is that the report and slides would serve as a method for presenting the findings about the viability of an ecommerce portal to the sales and marketing team at Med Dev Company. The consultant group that would be the presenters of the report is called Hamilton Consulting Group, a fictitious organization made up for the purposes of this project.

I began the design of the report and slides with the creation of a simple style guide, as well as a logo for Med Dev Company. The colors I chose were reminiscent of the color of scrubs worn in hospitals by doctors and nurses, which I felt gave a subtle “healthcare vibe” to the presentation. The colors (blue, green, light blue, and gray) complement and accent each other nicely.

The actual design of the report portion of the project was done using Microsoft Word. I applied a theme throughout the report that clearly represents Med Dev Company through use of the style guide and logo. Also, I chose to use the font Abadi MT Condensed Light for the text in the report and Powerpoint. There was no secret behind the selection of this font other than that I thought it was an appropriate departure from the usual stiff Arial, Calibri, and Helvetica fonts that are usually used in professional reports. It is still easily readable, but has somewhat of a flare to it that makes the overall appearance of the project more friendly and less “businessy”.

Although I attempted to create a template in Adobe InDesign, which I thought would give me more design options, ultimately, I decided to stick with Microsoft Word and create a template from scratch that fit the minimalist, clean look I was going for. The pre-designed templates available in Word were more hassle than they were worth, which is why I decided to start from nothing. Additionally, time constraints were a factor in trying to further my skill in InDesign, as opposed to working within Word, a platform I am already very familiar with.

When designing the report, I wanted to keep things simple so that the report could transfer easily into a Powerpoint design. I think I achieved this, for the most part. For the Powerpoint portion of the project I decided to make some changes to elements within the report, such as the exclusion of screenshots, as well as add some iconography. Icons are a great way to make a text-heavy presentation more interesting by providing the audience with a visual cue. The icons chosen for this project were retrieved from a website called Flaticons.com, and credit was given to the authors of the icons at the end of the presentation. The standard icon color was light blue, a choice that I felt accented the overall blue color of the slide deck.

Some elements in the Powerpoint that the audience may notice are absent are the website screenshots. These were purposefully left out of the slide deck for a couple reasons. First, the idea behind this project is that it would be a presentation given to a sales and marketing team live and in-person. Each member of the team would have a printout or digital copy of the report in front of them for quick reference and greater insight. The objective of the Powerpoint presentation is to merely call out important factors and highlight the primary points that the Hamilton Consulting Group
is trying to make. Therefore, the team can refer directly to the screenshots in their report. Additionally, including the screenshots in the slide deck, I felt, would throw off the overall look and feel of the deck. Between the consistent color scheme and iconography, I wanted to keep a uniform, clean, and professional appearance. While the screenshots are certainly helpful tools for the audience, I did not feel they were necessary to include in the slides.

Finally, the sales process charts, which were originally slightly different in the report and slide deck, have taken the same exact form. I felt that this was another benefit of keeping my design programs entirely within the Microsoft realm instead of delving into InDesign. I was able to seamlessly copy and paste components from the slide deck to the presentation, and vice-versa, with minimal to no readjusting. Although I certainly would have been able to recreate these tables and charts within InDesign, I saved myself a great deal of time by keeping to Microsoft products.

**Future Research Opportunities**

When this research project was initially conceived, the goal was to build an actual, functioning online shop for Med Dev Company. However, after consulting with supervisors and SUNY professors it was deemed that this may not be the best route forward, primarily for legal reasons. Instead, the project ended up taking the form of a consultant’s report with the accompanying slide deck about the viability of such an online shop for medical devices. If this project were to be taken to the next level, or further research is done internally by Med Dev Company to decide if ecommerce is right for them, then I would recommend the creation of a trial ecommerce site as a future research opportunity. The company can do a small, limited run with select customers to get a better feel for how the proposed site would work and would be able to collect live data on their system.

This brings me to my next opportunity for future research – a deeper look into competitor strategies. While Med Dev Company can certainly stand to gain a deeper understanding of the ecommerce world through the implementation of their own system, they may also achieve further insight through the study of competitors’ ecommerce sites. It is likely that some members of Med Dev Company, be it sales reps, IT professionals, or executive team members, have come across competitors’ ecommerce sites throughout their careers in the medical device industry, or perhaps were even involved in the development of one themselves. Professionals within the medical device industry tend to stay within the industry for long periods of their careers, if not their entire careers. This makes it very likely that there may be some internal resources at Med Dev Company that have yet to be tapped for deeper knowledge about the application of ecommerce to the company.

Another opportunity to learn more about this topic would be to poll Med Dev Company’s customers who would be prime candidates for using an ecommerce site. Something as simple as an online form that is emailed out to customers with simple questions about such a platform could set a benchmark for the company to decide if this is something that should be implemented. This was a limitation during this project.
because of the lack of access to Med Dev Company’s customer base. However, if the company deems that the consultant’s report presents a viable case, then this may be a logical next step for the company to gauge interest in the proposed ecommerce site.

Along with future opportunities for research on this topic, there were also some findings during my research that were surprising. One of these findings was the extreme level of automation already present within large healthcare systems, yet completely lacking in others. By this, I mean that some hospital systems have their supply chain completely locked in, down to the smallest products, to run at maximum efficiency. While I assumed that there was some level of supply chain management, I did not know that it was this honed in. However, I was equally surprised to learn that smaller healthcare systems and clinics lack almost any sort of automation whatsoever. Not only that, but they often times perform business transactions like they were still in the 1970s, primarily with phone calls and faxes. Given this disparity in technology between small and large customers, it would stand to reason that the smaller healthcare systems and clinics are simply unable to afford sophisticated systems, such as Infor Lawson, or other SCM tools, to help run their businesses. Due to this revelation, I decided to switch my project to focus solely on the smaller customers of Med Dev Company since they are clearly the customers where an ecommerce site would have the greatest impact.

Although large healthcare systems have automated SCM systems running at maximum efficiency, further research into whether or not a regular ecommerce site would benefit specific subsets of these organizations is certainly worth looking into. For example, if a small, specialized unit within a hospital needs to order specialized or rarely used (but nevertheless important) products from Med Dev Company, then a direct, easy link to the manufacturer may be the best way to go. Research into specific scenarios such as this were purposefully avoided throughout this project in order to focus on the task at hand, which was catering to the small customers of Med Dev Company. However, it is possible that, even with all the automated SCM, that an ecommerce site could still prove beneficial in some capacity.

Finally, as I look back on this project, there are only a few things I may have done differently. Chief among these things is that I would have liked to get more input about the sales process, specifically the demand for an ecommerce site, from Med Dev Company’s sales reps. Plenty of research was found online and I think it gave a solid understanding of the process, but I would be curious to know about the more nuanced approach that some sales reps take in their sales tactics. Perhaps there are unspoken “tricks of the trade” that are often introduced into the sales process that are just as important as any other step, but have gone unrepresented in this project. Time constraints were a factor in my decision to not canvas the sales team for input, but for future projects in this vein I would recommend more inclusion from a sales perspective.

Additionally, if time were less of a constraint, I may have enjoyed creating an actual functioning ecommerce site for Med Dev Company, even if it were through a simplified platform such as Shopify or WooCommerce. This production strategy would have involved much more clearance from the company itself, likely with
Marketing and Legal getting involved to approve such a project (even for a mock-up site). This would have been difficult to pull off within a three month time span, but may have offered me a chance to further my skill set in the world of web development, as well as offer Med Dev Company a more tangible product to consider.
Sources


Figure 1.1 is the simple brand guidelines for Med Dev Company that will inform the design of the consultant’s report and slide deck.

Figure 1.2 is the logo created to represent Med Dev Company for this thesis project.
This figure shows the Medical Device Sales Process for a Large Hospital System.

1. Product Demonstration / Trial

2. Several Follow-up Meetings to Discuss Results (can take weeks-months)

3. Price Negotiation

4. Final Decision from Hospital

5. If purchased, sales rep works with administration to include product in hospital SCM system

6. Subsequent orders made automatically via SCM system

7. Relationship with customer is maintained by moderately frequent check-ins from sales rep
Figure 2.2 shows the Medical Device Sales Process for Small Clinic. The gray steps can potentially be removed with the use of ecommerce.
Figure 2.3 shows the Medical Device Sales Process to Small Clinic with Ecommerce.

1. Product Demonstration / Trial

2. Follow-up meetings to discuss results

3. Final Decision from clinic

4. Clinic submits product order online for first order and any subsequent orders

5. Relationship with customer is maintained by moderately frequent check-ins from sales rep
Figure 3.1

This figure shows Boston Scientific’s ecommerce customer login page.

Figure 3.2

Figure 3.2 is Cook Medical’s online product portfolio.
Figure 3.3 is Bard’s Online US Product Catalog, arranged in a searchable database format.

Figure 3.4 is VitalityMedical.com’s home page for general medical supplies.
Figure 3.5: VitalityMedical.com’s tier two product page offers a familiar ecommerce customer experience.

Figure 3.6

<table>
<thead>
<tr>
<th>Med Dev Company’s Competitors’ Ecommerce Portals</th>
<th>Ease of Conversion</th>
<th>Breadth of Product Offerings</th>
<th>Company Support</th>
<th>Utility to Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bard</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Cook</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Boston Scientific</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 3.6 compares Med Dev Company’s competitors’ ecommerce sites.
**Figure 3.7**

**Med Dev Company’s Products: Ranked for Online Sale**

<table>
<thead>
<tr>
<th>Type of Device</th>
<th>Lifecycle Status</th>
<th>Level of Legal Concern</th>
<th>Consumer Demand</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwave Generators</td>
<td>capital</td>
<td>new</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>RFA Generators</td>
<td>capital</td>
<td>mid life</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Probes</td>
<td>disposable</td>
<td>mid life</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>PICCs</td>
<td>implantable</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Ports</td>
<td>implantable</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Dialysis Catheters</td>
<td>disposable</td>
<td>mid life</td>
<td>medium</td>
<td>medium</td>
</tr>
<tr>
<td>Angiographic Catheters</td>
<td>disposable</td>
<td>legacy</td>
<td>medium</td>
<td>high</td>
</tr>
<tr>
<td>Laser Generators</td>
<td>disposable</td>
<td>mid life</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>Laser Fibers</td>
<td>disposable</td>
<td>mid life</td>
<td>medium</td>
<td>high</td>
</tr>
<tr>
<td>Guidewires</td>
<td>disposable</td>
<td>legacy</td>
<td>low</td>
<td>medium</td>
</tr>
<tr>
<td>Infusion Catheters</td>
<td>disposable</td>
<td>legacy</td>
<td>medium</td>
<td>low</td>
</tr>
<tr>
<td>Proprietary Infusion Catheters</td>
<td>Capital/disposable</td>
<td>new</td>
<td>high</td>
<td>medium</td>
</tr>
<tr>
<td>Suppies (Syringes, needles, suture buttons, scalpels)</td>
<td>disposable</td>
<td>legacy</td>
<td>low</td>
<td>high</td>
</tr>
</tbody>
</table>

Figure 3.7 ranks Med Dev Company’s products for their online sale viability.

**Figure 4.1**

**Benefits and Risks for Med Dev Company’s Ecommerce Site**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased customer ordering efficiency</td>
<td>High upfront costs for implementing system, hiring employees to manage</td>
</tr>
<tr>
<td>Increased company order fulfillment efficiency and accuracy</td>
<td>Site must be well-designed and maintained on a constant basis</td>
</tr>
<tr>
<td>More time free for sales reps to develop new relationships</td>
<td>Possible unwelcomed change to sales team strategy (could hurt individual sales figures)</td>
</tr>
<tr>
<td>Price transparency</td>
<td>Price transparency</td>
</tr>
<tr>
<td>Eliminate hassle of negotiations</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4.1 is a straightforward comparison of the benefits and risks of creating an ecommerce site for Med Dev Company.