SmitTrak
Feasibility Study for a Possible New Product

Management • Marketing • Operations • Finance

Team 38

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# Table of Contents

**Executive Summary**

1. Recommendation. ................................................................. 1
2. Supply Chain Operations. ........................................................ 2
3. Financial Implications. ............................................................ 2
4. Recruiting Strategy. ............................................................... 3
5. Values and Risks. .................................................................. 4
6. Project Outlook. .................................................................... 4
7. Timeline. ................................................................................ 5

**Management**

8. Job Description for Sales Representative. ............................. 6
9. Critical KSAOs for Sales Representative. ............................... 8
10. Analysis of Job Characteristics Model. ................................. 9
11. Recruiting Advertisement. ..................................................... 11
12. Selection System for New Salesforce. ................................. 11
13. Evaluation System for New Salesforce. ............................... 18
15. Implementing a Team-Based Salesforce. ............................. 21
16. Cultural Values for New Salesforce. ................................... 22
Executive Summary

Innovative and convenient, the SmitTrak, a proposed new product by Smitt Corporation, has potential to expand global awareness of the company and establish lasting presence in a new market, building brand equity and increasing revenue. The SmitTrak is a futuristic, comprehensive wearable device that tracks one’s health and fitness, as well as blood glucose levels without breaking the skin.

The launch of this new device is a large capital investment that requires sweeping organizational change, penetrating the wearable technology market, and restructuring Smitt’s current supply chain. To hedge the risks associated with this project, we have compiled an in-depth analysis of how this project will impact your company.

Recommendation

We recommend you move forward with the SmitTrak project because of its return relative to its cost of capital. Though it requires investments in restructuring the manufacturing process, fixed assets, personnel, and advertising, the return we calculated from this project offsets the risks and additional costs of implementing it.

SmitTrak’s convenient and innovative value proposition will appeal to two market segments: individuals with diabetes looking for a non-invasive and discreet way to
monitor their blood glucose levels, as well as health-conscious consumers looking to monitor their health and fitness on-the-go. Wearable technology is currently an untapped market for Smitt Corporation, and the added blood glucose tracking feature makes the company a first-mover in a blossoming market segment.

Supply Chain Operations
Since Smitt Corporation is an established manufacturing company, we began by analyzing its existing supplier to decide if buying from this manufacturer is the best option moving forward. By creating quality control charts with data from the chips you are currently purchasing from Global Chip Supplier (GCS), we determined their microchips do not meet our specifications for the SmitTrak project. This led us to assess a potential new supplier, Microtronics (MT), that offers shorter lead times and is more cost-efficient relative to the quality of its product. By choosing to purchase from MT, we minimize the product’s variable cost thus increasing the SmitTrak’s profit margin.

Financial Implications
While assessing the SmitTrak’s production requirements, we determined it most economical to lease equipment given the 10-year horizon of the project. The option we recommend comes with free maintenance, a termination clause, and a match-rate premium allowing renewal of the lease halfway through the project and to lock in the agreed-upon leasing price. The duration of producing the SmitTrak is
currently uncertain because of the variance in the time required to implement the equipment after delivery. With this ambiguity in mind, we recommend crashing the project activities that occur before implementing the production system to ensure the entire process is complete in time for the trade show. Though crashing requires an additional investment, the project will fail if it does not meet this deadline.

Additionally, if sales in the first year of the project do not meet the requirements we calculated, it is in the best interest of the company to scrap the project and salvage the remaining value of the fixed assets. Alternatively, the project has potential to exceed our expectations in terms of demand, for which we have calculated a threshold where Smitt Corporation should expand the project after year one.

**Recruiting Strategy**

To ensure the successful launch of the SmitTrak, we recommend hiring a new sales force, specifically recruiting recent college graduates. To encourage these individuals to apply for a career with Smitt Corporation, the company must increase its presence on college campuses and rebrand itself as an innovative and intellectually rewarding employer. To attract the target applicants, we recommend implementing sales teams allowing for a more collaborative work environment, often valued by millennials.
Values and Risks

Although we estimate the SmitTrak project will be profitable for Smitt Corporation, ambiguity in projected demand, possible kinks in the supply chain, and an inflexible project deadline are only a few factors that could hinder the project’s success. Additionally, the reallocation of resources necessary to produce the SmitTrak will dip into the profits of Smitt’s existing divisions. However, we believe the increased profits and brand awareness that SmitTrak will create for the company outweighs the risks associated with the project.

Project Outlook

Launching the SmitTrak project immediately, our goals moving forward are as follows:

- Innovate a practical medical device, allowing individuals with diabetes to live comfortable, uninterrupted lives as well as provide preventative health information to any health-conscious individual
- Further Smitt Corporation as an industry leader in the diabetes monitoring and wearable technology markets, capturing additional market share
- Reorganize Smitt’s existing workforce to a more collaboration-focused structure to accommodate this innovative, technologically-forward project
• Mitigate financial risks, monitor the project’s progress, and maximize return on investment

**Timeline**

Production as well as recruitment efforts should begin immediately to fully establish a salesforce for the launch of SmitTrak. A sense of urgency is necessary in order to capture first-mover effects and effectively penetrate an emerging market.

Additionally, we based all financial estimates on current rates, prices, and economic conditions, assuming they remain stable throughout the projected 10-year horizon.

Once the product passes through the pipeline with inbound logistics and product development, we will begin marketing efforts immediately.
Management

The salesforce is an integral facet of the SmitTrak’s success because it channels the finished product to the consumer and revenue to the company. Smitt Corporation’s current salesforce is trained to sell to medical professionals, so it is necessary to replace our current sales team to better reach the new target market segments.

Adapting Smitt’s organizational structure to better accommodate this futuristic product is necessary to position the company in such a technologically-advanced market. By implementing an organic worker configuration, Smitt can better adapt in this dynamic new market.

Job Description for Sales Representative

**Job Title:** Sales Representative

**Job Summary:** The sales representative candidate is responsible for all interactions with existing and prospective customers to help them gain a full understanding of the SmitTrak. After each meeting with a prospective customer or physician, the sales representative will create a summary of what was discussed during the meeting which should include the customer’s needs, problems, and a short description of how the product can solve these needs. Strong communication, interpersonal skills and knowledge of the booming technology/healthcare industry are required for this job. Sales representatives are expected to create monthly sales goals and
approaches they are going to take to reach these goals. Sales representatives should expect to spend most of their time on the road traveling within their territory. Necessary skills for the job include active listening, interpersonal communication skills, persuasion, and knowledge of the healthcare and technology market.

**Responsibilities:**

- Manage sales territory and travel daily (up to 100% of the time)
- Present to healthcare workers and patients
- Set targets and performance plans
- Deliver personal performance reviews
- Analyze sales data on sales results and develop plans to address performance gaps
- Monitor competition, economic indicators, and industry trends

**Requirements:**

- At least a bachelor’s degree from a 4-year institute
- Outgoing personality to interact with all types of customers
- Competitive style to meet monthly sales goals
- Interest in the healthcare and technology industry
Critical KSAOs for Sales Representative

**KSAOs for job description:**

1. **Customer and Personal Service (knowledge)** - The sales representative’s main goal is to satisfy the customer and make sure they have a positive experience with Smitt Corporation.

2. **Persuasion (skill)** - The role of the sales representative is to state the benefits of the product and to persuade the customer that the SmitTrak will satisfy their needs. The customer may be hesitant about purchasing an unfamiliar product, but the sales representative must show the customer how the SmitTrak will add value to his or her life.

3. **Active Listening (skill)** - A sales role is about listening to the needs of the customer, then providing a solution of how the SmitTrak can fulfill the customer’s needs. The conversation between the sales representative and customer should be a dialogue where the sales representative is only doing 20-30% of the talking.

4. **Speech Clarity (ability)** - It is important for the sales representative to adjust the sales pitch depending on the audience and customers they are working with.

5. **Critical Thinking (skill)** - The sales representative may be put on the spot and have to answer a question for which they have not prepared. This requires
critical thinking as well as a full understanding of the product and industry to allow the sales representative to give the most accurate information to customers.

6. Industry Expertise (other) - The healthcare and technology industries are fast-paced and constantly changing. It is important for the sales representative to frequently read new articles and keep up-to-date with industry trends.

7. Commitment to Learning (other) - This job requires a deep passion to constantly learn more as well as commitment to the job and improving the goals set by the individual.

Analysis of Job Characteristics Model

<table>
<thead>
<tr>
<th>Core Job Dimensions</th>
<th>Critical Psychological States</th>
<th>Personal and Work Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Skill Variety (medium)</td>
<td>Experienced meaningfulness of the work</td>
<td>High internal work motivation (high)</td>
</tr>
<tr>
<td>Task Identity (medium)</td>
<td>Experienced responsibility for outcomes of the work</td>
<td>High-quality work performance (high)</td>
</tr>
<tr>
<td>Task Significance (high)</td>
<td>Knowledge of the actual results of the work activities (high)</td>
<td>High satisfaction with the work (high)</td>
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<tr>
<td>Autonomy (high)</td>
<td></td>
<td>Low absenteeism and turnover (high)</td>
</tr>
<tr>
<td>Feedback (high)</td>
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</table>

*Figure 1: Sales Representative Job Characteristics Model*
According to the Job Characteristics Model, the sales representative role at Smitt Corporation scores high on almost all the various characteristics except for skill variety and task identity. For example, there is high potential for internal motivation as a sales representative because the representative is solely responsible for reaching his or her monthly sales goals. Also, the sales representative does not have a manager directly overseeing day to day activities, so high internal motivation is necessary to succeed. We scored skill variety and task identity medium because though sales representatives will encounter a variety of customers and unique situations, the product they are selling remains the same.
A sales representative at Smitt Corporation has high autonomy and personal responsibility, which are both attractive to recent college graduates. Sales representatives are well-respected in the company and have a critical role in selling the final product to physicians and patients, serving as a bridge between Smitt Corporation and the consumer. In this specific advertisement, we show that the Smitt Corporation is innovative and technology-forward, communicating to applicants that a career with Smitt has long-term potential and is intellectually rewarding.

**Selection System for New Salesforce**

Currently, Smitt Corporation employs sales representatives who have past work experience, and these representatives work autonomously. Only 40% of salespeople have college degrees, but this statistic is projected to rise in coming years. Smitt
Corporation should hire recent college graduates to ensure that their employees have a business perspective and are more successful in their role. Because of this, we recommend Smitt have a greater presence on college campuses, forming relationships with students and administration as well as advertise Smitt’s team-based performance strategy. Today’s college graduates prefer a collaborative work environment, so students will more likely apply for a job at Smitt Corporation.

The new selection process for Smitt Corporation will start on college campuses where Smitt will increase students’ awareness of the company. Smitt Corporation will participate in two college career fairs per year, one each semester, in an effort to increase awareness and inform students of what the company has to offer. Also, this will allow Smitt Corporation to build a relationship with the University’s Student Career Services Center, and create a reputation as a company that hires well-prepared students right out of college. The recruiting process is broken down into three stages: the initial informational stage, the work integration stage, and the identity stage. All these stages play important roles and occur in different locations and at different times throughout the recruitment process.
<table>
<thead>
<tr>
<th>Selection Method</th>
<th>Cost to Administer (Per Applicant)</th>
<th>Validity</th>
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</thead>
<tbody>
<tr>
<td><strong>STAGE 1- Initial Informational Stage</strong></td>
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<tr>
<td>Biographical Information Blank</td>
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<td>.25</td>
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<tr>
<td>Structured Interview (Situational)</td>
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<tr>
<td><strong>STAGE 2- Work Integration Stage</strong></td>
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<td>Work Sample Test</td>
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<tr>
<td><strong>STAGE 3- Identity Stage</strong></td>
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<td>Personality Test (Extraversion)</td>
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<td>.44</td>
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<tr>
<td>Cognitive/Mental Ability Test</td>
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<td>.43</td>
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<td>Integrity Test</td>
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<tr>
<td><strong>TOTAL COST PER APPLICANT</strong></td>
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<td><strong>$1820</strong></td>
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</table>

*Figure 3: Selection Methods Used for New Salesforce*

Figure 3 shows all the selection methods we suggest, sorted by stage, as well as each respective cost and validity. The validity is the degree to which the test indicates that the person is likely to succeed as a sales representative. The recruitment process will cost roughly $1,820 per applicant, with the majority of the cost occurring during the work integration stage. This cost is a smart investment because properly selecting the right job applicants early on will lead to lower turnover and higher performance, saving Smitt Corporation money in the long run.
Travel to career fairs and marketing materials are additional costs that will be incurred throughout the process.

**Stage 1 - Initial Informational Stage**

After applicants learn about Smitt Corporation’s sales representative opportunity, they will enter the first stage of the recruitment process. This stage begins with the biographical information blank method, where the applicant submits their general personal information, a cover letter, and a resume through the company’s website. This gives Smitt Corporation an idea of whether the applicant can effectively express his or herself, and how he or she understands the job from the description. This portion of the process is relatively inexpensive, and serves to give the company an accurate first impression of the applicant.

After the information is submitted and processed, applicants that have skills consistent with the job requirements will be asked to conduct a structured situational interview. This interview is useful to gain an idea of how applicants will act in certain situations, offering information regarding the “Critical Thinking” KSAO. The interview is conducted online, through a third-party application to limit costs of travel.

This stage is completely conducted online, and is extremely important for the success of the process as a whole. We are confident that the people who proceed
after this stage are applicants that will add value to the company, and the total investment for Stage 1 is $495 per applicant.

**Stage 2 - Work Integration Stage**

The second stage is the most crucial in the recruitment process because it is the most indicative of how good of a fit a candidate is for a certain position. In this stage, applicants undergo a real-life simulation to see how they will perform in the position for which they applied. Smitt Corporation will conduct a work sample test, which will give the applicants a realistic job preview, showing them exactly what to expect out of the job that they applied to. In the work sample test, applicants experience a mock sales call with an actor who asks questions and negotiates in a way that is similar to what they can expect on a typical day on the job. This is the most expensive portion of the process, costing $950 per applicant, but shows the highest validity. This method is worth the investment because more than half of the time the test will filter applicants who are suitable for the job. The applicant’s critical thinking and reaction to real work situations is on full display with this method, requiring the applicant to physically come to the office to undergo this simulation. This is valuable because it allows workers to experience the culture of the office firsthand. The company culture, organizational structure, and employees are on display in this stage, and the applicant can ask any questions and clear up confusions about the company or the recruiting process. This stage gives the
company the most realistic idea of how an applicant would perform on the job if Smitt Corporation were to hire the person. Assessing how the employee will solve a problem on the spot, this stage focuses on the “Customer and Personal Service” KSAO.

**Stage 3 - Identity Stage**

The final portion of the recruitment process before applicants receive job offers is the identity stage. The purpose of this stage is to ensure that applicants possess the personality and communication skills necessary for the position, including a personality test, cognitive/mental ability test, and an integrity test.

The personality test is integral for this specific role because one of the main requirements is an outgoing personality and ability to communicate successfully with multiple audiences. The Big Five Personality test offers information about the person’s emotional stability, extraversion, conscientiousness, agreeableness, and openness to experience, and generally can explain up to 75% of an individual’s personality. All these factors have a large impact on a person’s ability to get along with others, and offers a great indication of whether the applicant can successfully handle the duties of the sales role.

The next aspect of this stage is the cognitive/mental ability test. For this, applicants take the Wonderlic test which is a timed test that offers insight about a person’s
willingness to learn and their problem-solving abilities. Conducting this test costs $125 per person, but since a large part of sales is learning new practices daily, Smitt Corporation must ensure applicants are capable of this and that they can handle unexpected situations they could encounter on the job. The KSAO we would measure for this part of the selection system is “Commitment to Learning” because the personality test emphasizes how committed the sales representative is to the role.

After the Wonderlic test is completed, applicants take a general integrity test. This test is important for this specific role because there is a lot of freedom in daily activities. Sales representatives receive company cars, expense cards for gas and meals, and car insurance, so it is vital that Smitt only hire people who are trustworthy. This test asks direct questions about previous experiences related to ethics and integrity along with questions about situations that could arise in this role to detect if the applicant is prone to dishonest or inappropriate behavior. Sales representatives also spend the majority of their time alone with little guidance, so they need to be self-accountable to complete the tasks expected of them.

The final stage of the recruitment process is simply to ensure the person is morally, socially, and intellectually fit for the sales representative job. All these tests are completed online, and do not require the applicant to travel anywhere. None of
them are extremely time consuming, but offer a lot of information to the company about the applicants. After this stage is completed, people within the human resource department make final decisions about who receives job offers using information from all three stages of the recruiting process.

Evaluation System for New Salesforce

Smitt Corporation is currently using a results and relative approach to measure the performance of the sales representatives. The managers and employees set goals together, then the manager follows up every year to check and review results. Based on how many sales were made over the year, representatives are ranked and given bonuses based on where they fall relative to one other. This is not the best evaluation approach for Smitt Corporation because it creates the mentality that sales numbers are the most important. We believe that moving forward, Smitt Corporation needs to put a greater emphasis on training well-rounded sales representatives. The best way to do this is by using an absolute approach for the sales representative’s performance evaluation. This approach is fair and reduces any bias a manager may have when evaluating the sales representatives, and it puts a great emphasis on the process by which representatives make sales, not just the numbers themselves. When using an absolute approach, managers create a standard of what ideal performance should look like and measure each sales
representative against that criteria. Two general approaches with using an absolute performance evaluation are graphic rating scales and behaviorally anchored rating scales (BARS). We recommend using the graphic rating scale because the managers rate the sales representatives and then place them on a team. This ensures that each team is assigned fairly and is equally equipped to reach its sales goals. The graphic rating scales include the three performance KSAOs we used during the selection process: customer and personal service, critical thinking, and commitment to learning. When designing the performance evaluation system, it is important for the managers to keep in mind the administrative, strategic, and developmental purposes of performance management. It may be difficult to achieve all three, but it is possible with effective managers who show willingness and commitment to improve individual and/or team performance continually. Performance management begins at the administrative level, where managers assess their employees and make sure they are using the most effective people to do each job. Next is strategy implementation and strategic congruence across all performance evaluations, where managers review sales representative’s performance to make sure it represents the company’s goals and values. Last, is developmental which involves employee coaching and making sure managers agree on the performance management criteria when designing the graphic rating scale.
Another aspect of the evaluation process we recommend Smitt Corporation change is the time between evaluations. Currently, managers give sales representatives feedback yearly, and only based off their sales numbers. We believe that it will be far more beneficial for managers and representatives to communicate on a monthly basis. This will create an environment in the company that is based more on communication and asking questions, resulting in less fear of failure among the representatives. At the end of every month, managers and their sales representatives will schedule a brief catch-up, either in person or over the phone. During this meeting, employees and managers may answer questions surrounding sales practices and discuss means for improvement on either person’s end. Sales results over the month are discussed, but they are no longer the primary focus of these evaluations.

Compensation Allocation Strategy

The compensation system we recommend for Smitt Corporation is to focus more on base salary to create stability and comfort for the employees and make it less commission-focused. Based on our analysis, we expect the average sales representative’s total compensation to be 80% base pay and 20% commission. This way, the salary is less commission-based, discouraging sales representatives from simply trying to meet sales objectives, and allowing them to focus more on creating
value for customers. We believe, based on the Expectancy Theory, sales representatives will respond positively to this compensation system. After implementing this system, managers and employees can use the three components of this theory: expectancy, instrumentality, and valence, to ensure the compensation system is effectively motivating sales representatives. To do this, one should ask his or herself, “If I try hard, will I perform well?” as well as “Will performing well lead to an outcome?” and finally, “Do I like the outcome?”. If employees answer “No” to the latter question, stating they do not believe their compensation reflects their performance, then the sales representatives and managers should adjust the current compensation strategy to better motivate sales representatives and drive better results.

Implementing a Team-Based Salesforce

Based on Meg’s proposition and our own analysis, we recommend Smitt Corporation implement a team-based salesforce. There are many advantages with a team-based salesforce, because everyone is responsible for helping the team reach its combined goal, and if one person does not carry his or her weight, it will affect everyone else’s bonus at the end of the month. The team-based approach will increase productivity and accountability for each individual because the success of the team depends on everyone’s combined performance. In addition, team
members who are working toward a shared goal are more likely to collaborate, giving one another productive feedback and suggesting new sales methods, which will ultimately increase the team’s performance as a whole. Also, collaboration allows team members to support and encourage one another, increasing autonomy and thus decreasing the need for additional management. This saves money in sales managers’ salaries and allows Smitt to allocate manpower elsewhere in the company. The team-based performance management is beneficial not only to Smitt Corporation in saving money and increasing sales, but it is ideal for recent college graduates who value working in teams. Specifically, working in teams allows new hires better opportunity to learn from senior sales representatives through guidance and mentorship. Through mutual encouragement and collaboration, a team-based sales strategy is most efficient for selling the SmitTrak.

**Cultural Values for New Salesforce**

We recommend Smitt Corporation instill customer commitment, teamwork, respect for others, passion, and enthusiasm in the new salesforce. Based on these values, we recommend Smitt Corporation change their mission statement to “Delivering high-quality and cost-effective care for our customers to give them confidence throughout their everyday lives.” To assess the degree to which Smitt Corporation’s business reflects this statement, it should review feedback from managers,
employees, and customers. Effectively conveying company values to customers begins with management’s awareness of these values and their respective behavior. Executives should require management to memorize these company values and brainstorm ways to instill this values in their employees, outlining specific ways employees should behave to positively impact customers. To be proactive, managers should look for these cultural values in potential employees during the selection process. Then, managers and hired sales representatives should build meetings around this mission statement and continuously assess how well employees reflect these values in the office as well as to customers. Managers and employees can effectively measure one another’s behavior using peer and customer feedback after each interaction. By requesting feedback from a customer after a sale, managers can pass on accurate feedback to sales representatives and suggest ways to better incorporate the company’s mission statement into their sales tactics. If the sales experience was unsatisfactory for the customer, management will review training materials and company values with the sales representative to improve the customer experience.
Marketing

Team 38
Marketing

An integrated marketing strategy is crucial to inform consumers of the value the SmitTrak will add to their lives. To convey a clear and consistent message to consumers, we recommend using multiple channels for communication including a pull strategy with direct advertising, a fitness-oriented product website, and convincing selling techniques. By reaching directly to consumers, we will increase Smitt Corporation’s market share in the healthcare and wearable technology industries.

To effectively market the SmitTrak to the right consumers, we have outlined the most suitable target market segments for the device, as well as sample marketing materials, customer relationship management techniques, and the influence of Smitt Corporation’s relative market share and brand name.

Segmenting New User Bases

In terms of overall marketing and customer acquisition strategy, we have identified two key user bases within the United States to target: diabetes patients, who we anticipate will use the new wearable device the most, as well as current wearable users who are looking to track their overall health. Diabetes patients will greatly benefit from an innovative, convenient, and more discreet device. Instead of the
prehistoric at-home testing monitors, the SmitTrak adds value to customers with a significantly more convenient design and is nearly as accurate as traditional monitoring. The convenience, ease of use, and superior technology of the SmitTrak are key benefits that segment this population.

Since the number of individuals suffering from diabetes is expected to grow from 382 million in 2013 to 592 million by 2035, the at-home diabetes monitoring market will continue to grow in the future. Thus, as the demand for blood glucose monitoring devices increases, so too will the desire for better and more convenient at-home options. The convenient wearable design with a variety of health-tracking capabilities is the optimal solution for the growing demographic of diabetic patients who live active lifestyles in the 21st century. Specifically, the younger generation of tech-savvy consumers with diabetes will take interest in the SmitTrak because wearable devices are trendy and popular among this generation.

In addition to diabetic patients, we will target current wearable users and health-conscious consumers within the United States. With its additional health tracking features, the SmitTrak will lead the market as the most advanced wearable device for health-focused consumers who want to track their wellbeing on-the-go. Adding a blood glucose tracking feature to a standard fitness tracker captures a psychographic segment of individuals who are hyper-aware of their health but may
not have diabetes. Customers in this group have higher standards of health and are willing to pay for a higher-end wearable technology like the SmitTrak. Currently, one in ten Americans over the age of 18 owns an activity tracker, indicating a large market for a product like the SmitTrak, and this population will continue to grow as more U.S. consumers become increasingly comfortable with wearable technology as an everyday device, similar to the rise of the smartphone. Each group seeks a key benefit that the SmitTrak provides and in turn it vertically differentiates itself from other, similar products with its added health tracking features.

Value Proposition
The SmitTrak’s value proposition consists of superior convenience, ease of use, and innovative technology compared to its competitor’s products. Expanding on the value proposition, the SmitTrak follows a “more for more” differentiation strategy and the product provides increased benefits relative to competitors, but in turn, the consumer pays a premium price. Old, outdated glucose monitors require a finger prick to measure the current blood sugar level, and this must be done multiple times a day. Traditional blood glucose monitoring devices are captive products that require individuals to buy a main device once, but they then must constantly buy test strips, which can be expensive over time. What differentiates the SmitTrak is its seamless wearable technology that conveniently provides accurate health.
monitoring on-the-go. No other wearable device on the market can measure blood glucose levels, sweat, body heat, activity, and body electrical impulses without puncturing the skin. With the SmitTraks’s next generation health monitoring technology, consumers can track the most advanced vital signs all on their wrist. This gives the SmitTrak a competitive advantage over similar products. The SmitTrak is the ideal wearable for any health-conscious individual, with or without diabetes, looking to take a deeper look into their health.
Figure 5: Glucose Monitoring Product Positioning Map
Figure 6: Wearable Technology Product Positioning Map
In the glucose monitoring product position map, we recommend convenience on the y-axis with price on the x-axis. Compared to traditional healthcare companies like Bayer and Abbott, the SmitTrak differentiates itself in the convenience of monitoring, which justifies its price point. In the wearable technology market, we recommend quality on the y-axis and price on the x-axis. In this market, SmitTrak is the highest quality in terms of health monitoring but comes with a high price when compared to other similar wearables like Fitbit. Because of the SmitTrak’s ability to measure more health signs than any other wearable in the market, the technology is more expensive than most wearable products. In both maps, the relative size of the company logos indicates its current market share. The SmitTrak logo is substantially larger in the blood glucose monitoring market than the wearable technology market because Smitt Corporation has yet to enter this particular market.

**Positioning Statement**

To correctly align the SmitTrak in the market, we recommend the following positioning statement: “For the next generation of health-conscious consumers and diabetics alike who seek to monitor their health on the move, the SmitTrak is a discreet and convenient wearable health tracker. Unlike traditional wearable devices, the SmitTrak accurately monitors sweat, body heat, body electrical impulses, and blood glucose levels in addition to the traditionally measured vitals.” To break the
positioning statement down, we begin with identifying the target segment and addressing their needs. Then, we showcase the brand’s competitive advantage. Finally, we differentiate the SmitTrak from other existing products in the blood glucose tracking and wearable health tracking markets. This positioning statement clearly defines the SmitTrak’s position within the market as well as whom it will serve and how it provides superior value compared to the existing competition.

Establishing a Salesforce

Now that the SmitTrak is prepared to enter the market, a new dedicated salesforce must be properly trained to communicate the benefits to consumers. SmitTrak’s most attractive features are its convenience and its versatility. Sales representatives should compare traditional monitoring for diabetes with the new SmitTrak technology directly, giving specific ways that the SmitTrak is superior to outdated diabetes tracking devices. For example, traditional blood glucose monitoring devices are invasive and take time out of the day, while the SmitTrak technology allows customers to continue on with their day with no interruptions, and it does not require the customer to puncture the skin. For consumers who do not have diabetes, sales representatives must convince them that the SmitTrak is for everyone. Simply, the SmitTrak is of higher quality than a Fitbit, and less expensive than the Apple Watch, both previously illustrated by the product positioning maps, all while the
SmitTrak has the added feature of blood glucose tracking. Customers who do not have diabetes may not see the value in the blood glucose tracking feature, however, sales representatives should inform all customers of the rapid growth of the population of diabetes patients in the United States, and iterate that it is beneficial to any person to simply be aware of his or her blood glucose levels. To gain credibility, it is important to emphasize to consumers that Smitt Corporation has been recognized in the industry as a trustworthy and notable corporation, and it is the first firm to integrate diabetes tracking technology with an everyday wearable health tracker.

Equipped with specific information about the SmitTrak and why it is superior to competitors, it is important to teach sales representatives how to approach customers. We believe the SPIN (Situation, Problem, Implication and Need Payoff) approach is appropriate for selling this product. In addition, it is important to mention to the sales representatives that they should not do most of the talking during a sales pitch, rather they should listen to the customer’s current situation and problems and tailor the benefits of the SmitTrak to the consumer’s needs.

Establishing Retail Channels

In terms of initial distribution rollout of the SmitTrak, we recommend using a multi-channel retail approach that includes online websites as well as retailers. We will sell
the SmitTrak on the company website and through a few higher-end retailers. This is a selective distribution approach whereby only certain retailers, based on best fit, will have access to the SmitTrak. We will take a direct channel approach by selling through the company website because the main buyers will be informed consumers purchasing the SmitTrak as a convenience/specialty product. On the other hand, if the consumer buys from an indirect channel like a retailer, this is a shopping product decision because these retailers sell similar products in addition to the SmitTrak. The customer perceived value for the SmitTrak increases when selling the product exclusively through the SmitTrak website and higher end retailers, because consumers psychologically associate the product with a higher value. In the beginning stages, the company’s main goal is growing awareness for the product as well as creating interest, and the initial distribution of the product should facilitate that goal accordingly.

Calculating the CPV

The Customer Perceived Value of the SmitTrak is based on all the costs the customer incurs to acquire this product compared to the benefits they receive from utilizing this product. Costs are not just monetary value, rather all costs including time and inconveniences the customer faces in acquiring the product. Customers at times may not judge values accurately or objectively, but instead on what they
perceive the product is worth, usually based on previous encounters with similar products that serve as a reference point. Traditional blood glucose monitors capture the consumer, requiring the periodic purchase of test strips to use the device, but the SmitTrak is a one-time purchase that does not require additional captive product accessories, so it is worth the additional cost.

For non-diabetic patients, the SmitTrak costs less than other wearable devices that do not have the added blood glucose tracking feature. With an effective marketing strategy and with consumer-generated marketing, the SmitTrak’s perceived value will increase as more satisfied users spread the word about this new, innovative product. We believe the best starting price for the SmitTrak is $299 USD, placing it in the upper price range relative to the wearable technology market. We based this price on similar competitors’ products and used a 150% markup on cost, as recommended by our finance team. The margin for the SmitTrak is high, allowing the Smitt Corporation to reinvest this money into research and development for future SmitTrak models. The SmitTrak’s price includes a premium that will capture consumers’ attention and allow them to wonder why the SmitTrak is such a great product. However, it is still affordable for users who are looking to manage their diabetes, as well as those who simply seek preventative information about their health.
Selecting a Promotion Strategy

While there are many different forms of promotion that apply to this product, paid advertising should allow the marketing team to provide a clear and consistent brand message about the value proposition of the SmitTrak. Advertising makes direct contact with the consumer and differentiates it from other similar products. We recommend a pull strategy because it allows Smitt Corporation to interact directly with consumers, building greater brand equity and leveraging higher product margins in the process, and it will attract consumers to our brand rather than to a retailer. Since the success of the SmitTrak depends heavily on the consumer’s perceived value of the product, the marketing team should take advantage of an objective advertising budget in order to build equity with customers and maximize return on marketing investment.

The second most important form of promotion is a public relations campaign to create buzz about the product. Product publicity, a free form of marketing that leads to a more informed consumer base, places the spotlight on SmitTrak’s glucose monitoring and wearable technology breakthroughs. After creating public interest for the SmitTrak, personal selling allows sales representatives to discover each individual customer’s specific needs and explain how SmitTrak will add value to that person’s life. To establish these one-to-one relationships between Smitt Corporation
and the consumer, Smitt Corporation’s new sales representatives will market the product to consumers at conventions and trade shows, allowing the sales team to inform and personalize the SmitTrak experience for each consumer. Since the SmitTrak is a new product, we anticipate sales promotions will hinder the traction of the product. To establish high brand equity and maintain it over time, keeping the price at a constant $299 USD communicates to customers that the SmitTrak is worth the premium price while issuing discounts early on will train customers to perceive the product as less valuable. While sales promotions may boost revenue in the short-term, these discounts harm SmitTrak’s brand image in the long run. Sales promotion would be an excellent promotion strategy when the brand becomes more mature, but for now it hurts the position of the SmitTrak as a high-end wearable in the market. Once again, we recommend the marketing team pursue an advertising strategy first, followed by a public relations campaign, then a personal selling approach, and finally a sales promotion stance.
Correctly Marketing the SmitTrak

Building off the SmitTrak’s promotion strategy, we recommend the promotion agency use a repeatable theme and word hook when marketing the SmitTrak. Ideally, SmitTrak’s repeatable theme should demonstrate healthy living and fitness. The consumer will associate SmitTrak with an on-the-go, health-conscious lifestyle. Similar to how well-known athletic brands use sports as a repeatable theme in their promotions, Smitt Corporation would use activities that promote a healthy lifestyle (illustrated in figures 7 and 8). By using a repeatable fitness theme in the SmitTrak promotion, consumers will receive a clear and consistent brand message about the product.

In addition to a repeatable theme promotion strategy, we recommend the promotion agency also utilize a word hook. The word hook we propose is,
“SmitTrak: The Next Generation of Health Monitoring.” With this word hook, consumers will see the SmitTrak as vertically differentiated in the market because of its superior technology. The consumer perceived value of the SmitTrak will drive its brand equity and therefore ingrain the SmitTrak in the market as a next generation wearable. Through constant exposure to the SmitTrak’s word hook, each customer will know what makes the SmitTrak different from other products. The photo examples we created, in Figures 7 and 8, are a combination of the recommended word hook and repeatable theme of the promotion strategy. Through both of these promotion strategies, the SmitTrak will properly position itself in the market to create the most value for Smitt Corporation and its consumers.

Figure 8: SmitTrak Brand Poster
Another important form of advertising to reach consumers is the website. Their first impression of the landing page on SmitTrak’s website is a large factor in the purchasing process. We recommend using a simple and convenient layout that highlights the value of the SmitTrak. Convenience and telling a simple story gives consumers a clear idea of how the device will add value to their lives. The proposed website is consistent with our other recommended marketing strategies and promotes the brand in the same ways. For example, we chose to promote our word hook and consistent brand layout by clearly positioning both on the homepage of the website. We will keep the message we want to send to consumers consistent on all fronts and the website mockup is no different. Additionally, we recommend using Google Analytics to manage website traffic and measure user behavior on the
website to improve the overall user experience. Constantly tailoring the website and its message, with the help of Google Analytics, allows SmitTrak’s brand to continue to grow over time. This proposed website enables consumers to clearly grasp the SmitTrak’s value proposition.

**Aligning CRM with the SmitTrak**

Another technology tool firms should implement in their marketing campaigns is CRM. To effectively use CRM, Smitt Corporation should first acquire the right customer, craft the value proposition, institute the best processes, motivate employees, and learn to retain customers. Implementing CRM technology as well as properly training employees to focus on customer’s needs will streamline this process of managing relationships with consumers. Lastly, it is important to build customer relationships based on trust and people interested in the product, rather than trying to build relationships with disinterested customers who may resist the product and subtract from the SmitTrak’s brand equity. When comparing other company’s success with CRM, we realized the most successful companies have spent years modifying the structure of the enterprise and solidifying integrated marketing communications before implementing CRM.

Though CRM can bring significant value to a company, CRM also has the potential to ruin relationships with customers if the strategies are not used appropriately.
Relationships work both ways, so it is only possible to build a valuable relationship with a customer if the person responds positively to CRM efforts. If Smitt Corporation fails to build effective relationships with customers who value the SmitTrak, and follow disinterested customers instead, Smitt corporation is at risk of losing potential sales to its competitors.

**Market Layout for the SmitTrak**

<table>
<thead>
<tr>
<th>U.S. Market Share in Blood Chemistry Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR</strong></td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
<tr>
<td>2016</td>
</tr>
</tbody>
</table>

**Figure 10:** Smitt Corporation’s RMS in the U.S. Blood Chemistry Market

<table>
<thead>
<tr>
<th>Global Market Share in Total Electronic Wearables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMPANY</strong></td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Fitbit</td>
</tr>
<tr>
<td>Apple</td>
</tr>
<tr>
<td>Xiaomi</td>
</tr>
<tr>
<td>Garmin</td>
</tr>
<tr>
<td>Samsung</td>
</tr>
</tbody>
</table>

**Figure 11:** Smitt Corporation’s RMS in the Global Total Electronic Wearables Market

According to figures 10 and 11, the relative market share (RMS) for Smitt Corporation is around 11.6% on average in the U.S. blood chemistry monitoring.
market over the past five years and 0% for the global electronic wearables market. Smitt Corporation management should take into account that consumers’ brand awareness for Smitt Corporation is lower compared to other larger brands in both markets such as Apple and Bayer. In the blood chemistry monitoring market, Smitt Corporation should implement a product development strategy because Smitt Corporation already exists in this market, but is introducing a whole new product. On the other hand, in the global electronic wearables market, Smitt Corporation should implement a diversification strategy because this is a new market and a new product it is going to launch. According to the Boston Consulting Group Growth-Share Matrix, the SmitTrak is a “question mark” because of its entry into a fast-growing market that Smitt Corporation currently has low market share in.

A key deciding purchase factor in both markets is a brand’s equity in the eyes of the consumer. To build brand equity, Smitt Corporation needs to position its brand as well as its new product in the minds of consumers within the diabetes monitoring device and wearable health tracking markets where it can differentiate itself from competitors with value-added benefits such as convenience and ease of use. However, management should prevent the SmitTrak from becoming a generic wearable product, undifferentiated in the electronic wearables market. The electronic wearables market has become saturated with competitors driving prices
down, thus lowering margins for one another. To combat the competition, we suggest a price skimming strategy for the SmitTrak during the initial roll out to build Smitt Corporation’s brand equity and to signal to customers that the SmitTrak is the only wearable on the market with blood glucose monitoring capabilities. The SmitTrak’s price sets it apart in the market and indicates its superior quality relative to most wearable/glucose monitoring devices.

Reasoning Behind Brand Name

The name of a product is key in communicating the product’s value and creating brand recognition in customers. The name we recommend for this device is “SmitTrak.” The “Smit” part of the name represents the Smitt Corporation’s overall superior healthcare brand that many healthcare professionals and consumers are already familiar with. The “Trak” part of the name represents the new technology as well as the modern feel of the SmitTrak and how it monitors and tracks one’s health. The two words combined correctly aligns with what we want consumers to think about when they hear “SmitTrak”: a high-end healthcare monitoring technology device. Our advice to management about the SmitTrak’s branding is to keep the marketing message clear across all channels. This will build the SmitTrak brand and will not confuse consumers about the product or whom it serves. In addition, the name is easy to pronounce and recognizable for consumers. Branding of the
SmitTrak is a critical part of its overall success because it is a higher-end product whose sales will vary depending on consumer perceived value of it more than other products.
Operations

Using operations management techniques, we have paved the way for the SmitTrak production by selecting the best chip supplier, weighing assembly system possibilities, and crashing the project schedule to finish in time for the trade show. Considering costs and productivity, operations adds value to Smitt Corporation beginning on the production floor and ending with the delivery of the product to the customer. To streamline the SmitTrak project, we have carefully selected the most economical system, chip supplier, and project schedule for Smitt Corporation.

Determining Production System

Assumptions Made Regarding Assembly Process

1. Both systems will yield the same level of quality, so it is sensible to choose the more inexpensive option.
2. Costs are based on yearly expected demand, calculated by the finance department.
3. Expected variable cost per unit is constant for the life of the project.
4. The variable cost per unit includes the cost of the chip, regardless of from which chip manufacturer we buy.
5. The expected productivity growth rate is constant for the life of the project.

Figure 12: Assembly Process Assumptions
To compare the costs of implementing a worker-paced production system with the costs of a machine-paced system, we created a decision tree that projects the expected costs across the 10-year life of the project. This horizon encompasses the initial setup costs necessary in year one, and then the remaining nine years of the project. After year one, the only costs incurred are variable costs per unit demanded and yearly maintenance costs attached to the machine-paced system. In calculating the expected costs per year, we used the following formula:

\[
\text{Setup Cost} + \left( \frac{\text{Demand}}{\text{Productivity}} \right) + \text{Annual Maintenance Cost}
\]

For a worker-paced system, there is an initial investment in year one, then no fixed costs for years two through ten, while for the machine-paced system, there is an...
initial investment in year one as well as maintenance costs for each remaining year.

To calculate each year’s expected variable costs, we divided the respective year’s demand, calculated by our finance team, by the year’s productivity per dollar of variable cost. We found each year’s productivity by dividing its demand by the expected variable cost, which is a weighted-average value of the two potential variable costs per unit and their respective probabilities. Finally, we included the annual maintenance costs that are only associated with the machine-paced system in our yearly calculation. Adding the expected costs for all ten years together, we calculated an expected cost over the 10-year span of the project for both decisions.

We chose to analyze these numbers over the entire length of the project to compare the long-term costs of each decision. Initially, the machine-paced system seems more expensive because its initial outlay in year one is nearly 150% of the worker-paced system’s up-front costs. However, the yearly costs of the machine-paced system are low enough that this decision becomes less expensive across the entire length of the project. Thus, we believe the 10-year decision tree is most accurate for decision making. The cumulative costs for both decisions across the duration of the project are illustrated in figure 14. Using the decision tree and the line graph, we recommend implementing the machine-paced system because it is less expensive across the 10-year duration of the SmitTrak project.
Comparing Chip Supplier Options

**Assumptions** Made Regarding Chip Supplier Decision

1. The chips from GCS are of comparable quality to those of MT.
2. Demand for Year 1 is 20,000 units.
3. Optimal order quantities were calculated using the formula $TASC = TAHC$.
4. Regardless of the supplier chosen, we assume instantaneous replenishment.
5. Holding costs per unit, per year are 15% of the price of the chip.
6. Reorder point is calculated assuming a standard 95% service level.

**Figure 15:** Chip Supplier Decision Assumptions
Smitt Corporation needs to choose between its current supplier, Global Chip Supply (GCS), and a potential new supplier, Microtronics (MT). To determine the best option for Smitt Corporation, we calculated when inventory should be reordered, the optimal amount per order, and the total annual costs of doing business with each supplier.

First, we determined the optimal order quantity for each supplier by finding the quantity that minimizes both annual holding costs as well as annual setup costs. Assuming a required service level of 95%, first year demand of 20,000 units, and that the chips from either supplier are of the same quality, we determined the optimal quantities to order from each supplier as 2,650 and 1,712 chips for GCS and MT respectively. Should we order from GCS, the reorder point given a 20-day lead time is 1,124 units while MT’s 7-day lead time requires a much smaller 400-unit reorder point. MT’s shorter lead time results in lower safety stock costs as well as lower holding costs.

Given this information, we determined the total annual costs depending on the selected chip supplier, illustrated in figure 16.
The total annual costs using GCS’ chips come out to just under $193,775, which is $9,438 more expensive than if Smitt were to purchase from MT. Thus, we recommend Smitt Corporation purchase chips from the new supplier, Microtronics, to reduce total costs and shorten lead time between orders.
**Assumptions** Made Regarding Project Schedule

1. Crash costs are by week and cannot be split into days.
2. There are no weekly administrative costs for the project.
3. Activity I will take the expected time.
4. The Gantt charts and network diagram reflect the normal time of the project, before any activities have been crashed.

**Figure 21:** Project Schedule Assumptions

**Figure 22:** Early Start Gantt Chart
if the current manufacturers’ process consistently yields satisfactory devices with fluctuations only due to unpredictable environmental conditions, or if Smitt Corporation should switch to a new supplier.

An X-Bar Chart identifies abnormal variations in measured data based on the average value from each observation. In the X-Bar Chart, we plotted each observations’ mean, as well as the center line which is the average of all 15 observations’ means, the upper control limit which is 11.4 millimeters, and the lower control limit which is 11.1 millimeters, decided by Andy O’Connor’s team. To rule the system in control, there must not be any values outside the control limits or abnormal patterns in the observation means. Based on the data collected from Smitt Corporation’s manufacturing process, GCS’ system is out of control and needs

Figure 18: X-Bar Chart
adjustment per the X-Bar Chart. The upward trend in between observations six through ten led us to this conclusion, because it is unlikely to see the same trend among five values in a row, unless the process is malfunctioning beyond the occasional, unpredictable error. However, before deciding to switch chip manufacturers, we further analyzed the data from manufacturing with another control chart to confirm that the process is indeed out of control, before ordering it to be modified.

![R-Chart](image)

**Figure 19: R-Chart**

The R-chart displays the range of the data from each observation against the average range, the highest range acceptable, and the lowest range acceptable. Again, if there are extreme values on the control chart or abnormal patterns in the ranges, the manufacturing process is out of control. According to the R-Chart, this
system is out of control and needs to be altered. Within this set of data, there are four ranges outside of the control limits, five ranges very close to the control limits, and erratic fluctuations between statistics. Coupled with our conclusion from the X-Bar Chart, we have evidence that our current chip supplier’s process is out of control, so we recommend Smitt Corporation switch to purchasing from Microtronics. Currently, GCS’ process is unreliable, which will lead to unnecessary shrinkage costs. For an additional control chart that shows the percent of chips defective in each observation against the total number defective in the entire set of data, see figure 20. This chart provides additional confirmation that GCS does not reliably produce microchips within the specifications necessary for the SmitTrak devices, so we recommend Smitt Corporation order from Microtronics (MT) instead.

Figure 20: P-Chart
Assumptions Made Regarding Project Schedule

1. Crash costs are by week and cannot be split into days.
2. There are no weekly administrative costs for the project.
3. Activity I will take the expected time.
4. The Gantt charts and network diagram reflect the normal time of the project, before any activities have been crashed.

Figure 21: Project Schedule Assumptions

Figure 22: Early Start Gantt Chart
Shown in figures 22 and 23, we have created Gantt charts that show the timeline for this project before crashing. Figure 22 shows the schedule should each activity begin at its earliest possible start time, and figure 23 shows the project’s late start schedule, should we begin each activity at its latest start time, both schedules completing the project at the same timepoint. The white portions of each activity’s timeframe represent slack, where the activity has the flexibility to start at multiple times, as long as it finishes within its normal time limits. With each activity at its normal duration, we currently expect the project to finish in 32.33 weeks. However, the project will fail if it does not finish in 27 weeks in time for the trade show, so we compiled a crashing schedule to shorten the duration of the SmitTrak project.
If the activities before Activity I are crashed, it will cost $147,000 to ensure the project is completed in time for the trade show. Alternatively, if activities after Activity I are crashed, the costs depend on how long Activity I lasts because of its variability. If Activity I finishes within 7.33 weeks it will cost up to $115,900 to crash the project to 27 weeks total, making this alternative much cheaper. Despite the lower costs of crashing after Activity I, there is only a 2.18% chance that Activity I will finish within 7.33 weeks. This information is summarized in figure 24.

Despite the lower costs associated with crashing after Activity I, the chance that it finishes within the needed time range is far too small at only 2.18%. We determined that finishing in time for the tradeshow is far more important than the cost savings from crashing after Activity I, and because of this we recommend crashing before activity I to ensure the project can be completed on time.
How Operations Adds Value to Smitt

Operations management is a vital division in an enterprise because it ensures a company’s production processes are as efficient and reliable as possible, and it streamlines continuous improvement. Because operations managers are solely responsible for overseeing production, identifying errors, and making improvements, they can assume an objective point of view relevant to the managers on the production floor or the other divisions that are busy with other aspects of the business. Thus, operations management will add value to Smitt Corporation by seeing what the other divisions cannot see, and ultimately saving the company money while producing the highest-quality goods and services possible.

Figure 24: Crashing Decision Tree
Smitt Corporation’s brand relies heavily on the goods it provides directly to the customer, so operations manages the critical behind-the-scenes processes necessary for Smitt Corporation to succeed. Beginning with the production process, operations makes sure the company is using its resources including raw materials, labor hours, and machine hours efficiently, to make the product or provide a service most economically. By measuring the inputs of production against the outputs, operations creates comprehensive data and tools to track productivity growth, considering fine details such as worker learning curves and external factors that could hinder productivity, so the company can monitor manufacturing performance. With this data, Smitt Corporation has reliable evidence to help make decisions on how much labor to use, which materials to buy, or which machines to invest in for the best-quality outputs. The operations division can then look at the finished goods or assess the services to see if the business is providing its goal level of quality.

Smitt Corporation receives a certain level of demand that it needs to meet in order to earn revenue. Operations sustains the company’s income by ensuring it consistently meets demand by anticipating demand and stocking accordingly. With the expected demand in mind, operations management makes an aggregate production plan complete with the inputs necessary to produce a certain level of output. As a result, human resources knows how many employees to hire or lay off,
accounting knows how much will be spent in wages, and managers know how much raw material to order. More specifically, to keep order setup costs and holding costs at a minimum, operations is crucial in deciding how many orders to place with suppliers each year, as well as how much to order at a time. In addition to raw materials and labor, time is a critical resource for any company, so operations helps allocate this resource as efficiently as possible. For example, if a division must make a certain deadline but anticipates a project is going to take too long, operations can analyze the individual project tasks and look for opportunities to crash the project into a shorter length of time, keeping additional costs in mind. When the money saved from the shorter project time are greater than the crash costs, Smitt Corporation gains value from crashing.

Operations is critical in assessing Smitt Corporation’s output to make sure it is delivering the proper value to customers and to see if there is room for improvements in the company’s operations. To accomplish this, operations uses data from production and creates statistics that measure the company’s performance for managers to analyze. Using performance measures over time, Smitt’s managers can identify bottlenecks, or shortages in resources that are preventing production from running at the optimal level. Additionally, control charts are useful for the company to detect problems with a production method by looking
for abnormal amounts or patterns in defective outputs. Operations management seeks to detect faulty production systems and fix them as quickly as possible, so the firm does not waste resources on unnecessary shrinkage costs. Without an operations division, bottlenecks and defective operations could go unnoticed for a hazardous length of time, leading to adverse effects on Smitt Corporation.

An operations management division is an investment, but with the time and money it saves coupled with the increased quality operations delivers to Smitt Corporation’s product, operations pays for itself. Arguably, Smitt Corporation cannot properly compete and keep up with rapidly-emerging innovations if it were not for the operations division constantly improving the company’s processes. For a manufacturing firm like Smitt Corporation, operations is constantly making improvements every step of the way, from the production floor to the interaction with the consumer, and any enterprise cannot survive without the added value from operations management.
Finance

Team 38
Finance

In this section, we assess the financial feasibility of the SmitTrak project and determine the optimal level of required return. We began our assessment of the SmitTrak’s financials by estimating the project beta and the cost of capital. Using this information, we projected the project’s incremental cash flows and determined what buy or lease package we should use for our fixed assets. Finally, we determined the maximum first year unit sales that would justify abandoning the project as well as the minimum first year unit sales that would warrant expanding the project.

Project Return Estimates

**Assumptions Made Regarding Financial Analysis**

1. We used a 3-Month Treasury Bill as the project risk-free rate.
2. We included a 2.2% liquidity premium in the Cost of Capital calculation to compensate for the relatively low liquidity compared to investing in a mutual fund.
3. We established the tax rate of 37.2% by averaging the historical tax rates of Smitt Corporation over the last five years.
4. We did not include the Mutual Fund as an opportunity cost because it is not comparable to the money invested in this project.
5. The ICF of expansion is the effective cost of depreciable assets.
6. A $1,375,000 expansion would increase cash flows by 30% in years two through ten.

*Figure 25: Financial Analysis Assumptions*
To estimate the beta for SmitTrak, we compared the past returns of Smitt Corporation to historical S&P 500 returns to find the levered beta of the whole company, which is 1.131. This means for every 1% gain or loss in the market, Smitt moves 1.13%. After calculating the levered beta of Smitt Corporation we divided it by the average return on equity from past years to determine the unlevered beta. This gives us the beta of the company without accounting for debt, allowing us to remove the effects of leverage and more accurately reflect how much systematic risk the firm’s equity is exposed to. From there, we found the weighted average of each of Smitt’s current projects’ past revenues. For each separate project, we calculated the regression coefficient by finding the slope between its yearly revenues and past returns of the S&P 500. This allowed us to find the relative sensitivity and ultimately the beta for each business segment. Smitt Corporation’s team of analysts estimate that the beta of the new project, the SmitTrak, will be most similar to project Q’s beta of 1.272 based on target customers, raw material inputs, and other factors.

To further our CAPM analysis, we calculated the cost of capital. For consistency, we used a 7.7% equity premium that Smitt traditionally used for the project valuation work. For the risk-free rate, we chose to utilize the 3-Month Treasury Bill’s 3.85% yield. We decided to use three months as our benchmark because the short duration has lower payment risk, so this bill has a low price and maturity risk.
Because of the 10-year horizon of project SmitTrak, we included an additional 2.2% liquidity premium, but to realize the expected annualized return, Smitt Corporation must see the project through the full 10 years. To finalize the required return, we took Project Q’s beta of 1.272 and multiplied it with the 7.7% equity premium, then added the risk-free rate of 3.85% and the 2.2% liquidity premium, producing 15.8% for the SmitTrak project’s cost of capital.

After we calculated the cost of capital, we estimated the project’s yearly cash flows. The initial cash outflow for the SmitTrak is over $2.6 million from both non-depreciable and depreciable expenses as well as the $120,000 opportunity cost after tax from not salvaging old equipment that will be used in the production of the SmitTrak. To calculate the operating cash flows from years one through ten we started with an expected unit sales of 20,000 during the first year, which grew to roughly 44,500 units by year ten. With a selling price of $120 per unit, the SmitTrak’s year one revenue’s are $2.4 million, increasing to roughly $5.3 million by the end of the project. We utilized a fixed expense amount of $1.26 million and a variable cost per unit of $21.75. We then calculated the impact commissioning the SmitTrak project would have on the company’s current projects. Our financial team determined that for every SmitTrak produced, Smitt Corporation loses $14.15 across its other five business segments. Lastly, we included a $200,000 opportunity cost during the first two years resulting from Smitt’s top researchers switching to work on
the SmitTrak and the loss in productivity from new hires filling their old roles. We decided against utilizing a comparable mutual fund’s profits as an opportunity cost because mutual funds’ returns are annualized while the SmitTrak’s IRR is a ten-year average, so we could not properly compare these values. By netting the projected revenues and expenses we were able to calculate the potential operating cash flows for the SmitTrak during its first ten years of production.

With these cash flows organized, we determined that the SmitTrak project has an internal rate of return of 17.9% and a net present value of $314,906. Because the projected IRR exceeds the cost of capital and the net present value is positive, we recommend Smitt move forward with the SmitTrak project.

Buy vs. Lease Decision

One of the most important financial decisions that Smitt Corporation will make regarding project is to lease or buy the manufacturing equipment. Our team determined that some form of maintenance is required regardless of the decision to lease or buy, immediately eliminating the cheapest option of buying the assets with no maintenance package. From there we determined that the ability to salvage the assets or terminate the lease contract is important in the event that the SmitTrak is unsuccessful and losses need to be cut. This leaves us with two options: buy with maintenance or lease with a termination contract. We determined that the optimal
strategy out of the remaining options is to lease with maintenance because of its lower net present value and top rate service and maintenance package provided by Langberg Leasing. Finally, we chose to pay the five percent match rate premium to lock in all dollar lease costs for our second round of leasing because of the uncertainty of the leasing rates over the next five years. This package of leasing with a termination and match rate premium has a total net present value of $2,486,749.

Abandonment and Expansion Thresholds
At the end of year one we are left with a decision to make based on year one sales: do we expand the project and make an additional investment of $1,375,000 or do we cut our losses and salvage the project’s assets for $1,000,000?

In order to determine if we should abandon the project, we calculated the first-year unit sales threshold that would make the present value of all remaining cash flows less than the NSV of our fixed assets at timepoint one. Using Excel’s goal seek function, we calculated that any first-year sales under 13,157 units would satisfy this requirement and justify abandoning the project’s potential future cash flows in favor of salvaging the remaining value of the depreciable assets.

The process to expand the project was similar; we began by increasing the operating cash flows by 30% and subtracting the cost of the expansion from the year
one cash flow. We then determined the threshold of units that would make the NPV of the expansion greater than or equal to that of the project without expansion.

Using the same process as abandonment we calculated the minimum threshold of first year sales was 22,901 units in order to justify a $1,375,000 investment to expand the project. To reiterate our findings, the IRR for this project exceeds the cost of capital, therefore we recommend that Smitt Corporation proceed with this project.

These results are consistent with our thorough analysis of the project.