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TOMORROW.



TEAM SIX

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Executive Summary

Liz, Keaton and Kerri,

“Our mission is to keep a high quality reputation as a pioneer of the local food restaurant industry. We bring special moments and memorable experiences to our customers through our roasted barbecue and authentic barbecue sauce with traditional taste and a modern touch.” In 1980, your parents and grandparents chose to open a new business. Over the next 25 years, Ralph, Earl, and Martha made strides to connect with the local community, expanded the restaurant, and helped make Red’s Bar-b-Cue a staple of Gatlinburg. In 2005, You, Liz, took on a new challenge by expanding the family business across the foothills and Smoky Mountains. Today, you sit at an impasse and a crucial moment in Red’s Bar-b-Cue history and future. We hope our team’s assessment enables you to make a decision towards the next step in continuing a wonderful restaurant, a family tradition, and a legacy.

After analyzing many variables, we feel confident in answering all of your concerns by addressing two major questions. First, how well will each plan fit within the culture of Red’s Bar-b-Cue? Second, is either or both plans feasible? We further broke down into three separate analysis questions: can the plans be completed without large financial stress, can the infrastructure be built to support this endeavor, and how will the market accept this product?

With each of these questions, we strove to consider both Kerri’s and Keaton’s plans. However, you will see some portions of the second piece are seldom discussed with regards to Kerri. Many decisions need to be made with conjunction of your team about her product before we feel comfortable providing the same in depth analysis. That being said, we hope our team can



work with your family to complete many of the steps Keaton has completed and provide a similar analysis when the time comes if you choose to pursue Kerri's product. While we were not able to give as much detail on many of the topics relating to operations and financial analysis for Kerri's product, we were able to cover distribution methods, pricing strategies, specific marketing tactics, how it will mesh with Red's culture, the type of employee management and more.

Our team wants to stress that we will not be recommending one project over another. We analyzed each vision independently in hopes to provide information that permits the three of you to decide the future for Red's.

The mission statement we shared at the beginning of the paper is there because our team feels that to pursue a new project you must know where Red's currently sits and create a single message all three of you can buy into.

A major factor of any new project is managing employees. This impacts everything from the financial projections to the operational efficiency. For Keaton's and Kerri's plans there will be a similar challenge and job description. The largest difference will come in the key job requirements and the type of people to hire. Keaton's team will be more heavily focused on getting the task done at hand. There will be a large emphasis on the internal control, reducing cost, and an emphasis on increasing efficiency. Kerri's team will look for opportunities for advancements and will need an atmosphere that allows employees to develop their skills. Creating a team environment that motivates employees to believe in the product will be vitally important in creating success for her vision.

The people you hire to work on your staff and make your products will impact the final goods delivered to the customers. Delivering a high quality product that meets the standards that were



set by your restaurant and family is imperative while expanding this brand. Focusing on delivering this product as easily as possible to the consumer will be an important decision to make if you decide to go forward with this project. You will find an evaluation of the distribution methods, pricing strategies, and general marketing strategies throughout this paper for both Keaton and Kerri's products. We evaluated two distribution options, wholesale distributors and brokers. We found wholesale distribution was the best option for the brand Keaton wants to grow. Due to the nature of the industry, having a highly specialized distributor focused on the condiment market will allow Red's to compete with the massive competitors in control of the current market. We foresee a higher fixed marketing cost from this option, but believe it will result in better shelf placement and a better overall experience for the customers. Our research has shown the distributors will have a higher product placement in supermarkets, the primary shopping location for Keaton's price sensitive target market in the Southeastern United States.

We see a different distribution method for Kerri's product. Her target market is the middle to upper class, young, working professionals that are looking for more socially responsibly and sustainable products. Kerri's product best aligns with a broker distributor. A broker offers a cheaper price, which is important as we project a smaller scale operation for Kerri. They have strong ties to the specialty stores, which we see being more successful in displaying her products than supermarkets. Kerri's pricing strategy will be different as well. Due to the target market, a higher priced good is suitable while offering a significantly higher quality product. This will allow the brand to maintain a strong image going forward.

The preliminary work put into Keaton's product allowed us to evaluate financial and operational specifics of the idea. When starting any new project, the financial feasibility, ranging from the debt needed for the project to the cash flows generated to provide returns, is a key factor. We evaluated three different scenarios: a base model, expanding the product after year 1, and scraping the product after year 1. With each of these scenarios, we used a handful of assump-



tions derived from market research. Marketing studies completed on Red's barbecue sauce led us to determine demand of just under 1.5 million in year 1. Along with this came the price, we believe that Keaton's vision of Red's barbecue sauce positions the product at a higher quality for the same price as competitors. Based off this positioning, we determined a price of \$2.90, an extremely competitive price in the barbecue sauce market. From these assumptions, marketing costs, interest paid on a bond needed to finance the project, and growth rates based of the industry outlook, we came to a less than reassuring return. The first projections resulted in an 8% return on the initial investment needed to make, which is less than the required return we calculated for your company. We want to stress that this does not mean the project needs to be shut down. The fixed marketing cost, the variable wages, and other expenses are all assumptions. There is more than enough room to generate a positive outcome of the project.

As decisions are made, based off our analysis in the marketing, management, and operations sections, you will can look at how the decision may impact your returns by using sensitivity tables in the Excel model provided. We also put together the other two scenarios and have included them in our Excel model. The expansion of the project after year 1 sales was extremely encouraging offering a 23% return, well above the cost of capital mentioned previously. We also have shown the expenses the project would incur if sales goals were not hit in the Scrap Project excel sheet. This gives a realistic view of what would happen if you did not like the year 1 sales numbers.

Many of the figures in these models are dependent on the decisions highlighted in the operations section. We cover production and packaging of the product, as well as an evaluation of the current process. We hope this will provide more insight into the costs you will incur on the variable cost factor as well as the startup costs. In regards to the packaging, we evaluated two different box manufactures and made a decision on one, Jack in the Box Corrugated. This was the lowest priced option at both year 1 and year 5 production levels.



Currently, as you know, you use a hand filling process for all of your bottles. We included an evaluation of this and found enough evidence for us to conclude that the process was out-of-control and needs to be fixed. Included in the operations appendix is a chart showing the success and failure rates of production runs for 5 different options: outsourcing the production to two different companies, producing in-house with the current setup, producing in-house with additional machinery with an additional investment, and producing in-house without an additional investment. We believe investing in the current process will bring the process back into control.

After running a model to determine the price per bottle at different order quantities for each of the options, we found with overwhelming support that producing in-house is the best decision. From there, we found that additional investments will help lower potential variable costs by eliminating the need for as many workers. This led us to the final suggestion of producing in-house with upgraded machinery and an additional investment to maximize efficiency. A major benefit from this is the success rate of each batch improving from 60% to 90%. This will aid in lowering costs, keeping the process in better control, and marketing a high quality consistent product.

Culture is not a quantifiable item that can be put on a scale of 1 to 10. Culture is built over generations and can be at risk with a project of this size. Liz, in our conversations you mentioned that over the last 10 years you opened new restaurants and spent a lot of time deciding who to put in charge and who to wash the dishes. This decision will only be amplified during a project of this size. We see it as one of the most important decisions that will need to be made when evaluating both ideas, and it is here that we display our concern for both ideas. The very first paragraph contains the mission statement where we believe you currently are positioned. We are not entirely certain that Keaton's plan continues on the path you have set, and while we do not question the financial gains you may see from this project we do believe Red's Bar-b-Cue will move on a different path if you pick this road. That being said, Kerri's product will also be a leap



of faith and has a lot of work to be completed. We do see a better cultural fit focusing on the Smoky Mountain origins of Red's Bar-b-Cue. However, it is now in the hands of the three people that know the most about this business and care about it as a piece of their family. Our team hopes our presentation can highlight the benefits and potential concerns of each option. We look forward to receiving feedback and have attached our names and emails to the ensuing paper so that we may continue this conversation beyond today. Good luck!

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MANAGEMENT



Mission Statement and Objectives of Red's Bar-b-Cue

Mission Statement of Red's Bar-b-Cue

The mission statement contains Red's Bar-b-Cue's ultimate objectives as a decision standard.

The mission statement is, "Our mission is to keep a high quality reputation as a pioneer of the local food restaurant industry. We bring special moments and memorable experiences to our customers through our roasted barbecue and authentic barbecue sauce with traditional taste and a modern touch."

SMART goal objectives on Red's sauce launching

The elements of Balanced Scorecard are Customer Experience, Learning and Growth, Internal Business Processes, and Financial Performance.

Customer Experience:

1. Exceed 2% of market share within two years by satisfying target segment's niche through long-term customer relationships, strong positioning, and enhanced Customer Lifetime Value (CLV)

Red's Bar-b-Cue's core objective is making profits as a business organization. Market share shows Red's Bar-b-Cue success in the market by comparing revenue or units sold to the whole competitors' in the same industry. By exceeding 2% of market share, Red's Bar-b-Cue will have favorable profit and ensure its probability for the success.

2. Partner with one barbecue festival and two local barbecue blogs in Southeastern United States within three years to achieve customer value

Red's Bar-b-Cue wants to succeed in the business. Partnership between a festival and blogs opens up a channel to communicate with the target segment. By interacting with core customers, Red's Bar-b-Cue can build a strong customer relationship and meet a customer value. Strong customer equity will lead to Red's Bar-b-Cue future success.

Learning and Growth:

1. Improve full-time employee turnover rate to below 5% and part-time employee turnover rate to below 20% within five years by providing effective feedback, growth opportunity, employee benefits, and enhanced working conditions

Turnover rate indirectly shows the company's success. High turnover rate increases hiring cost and hurts company's reputation. Low turnover rate means a high percentage of remaining workers who are more experienced, productive, and probably loyal. By reaching lower turnover rate, Red's Bar-b-Cue will accomplish higher productivity and employee engagement which leads to success.

2. Achieve greater than a "B" in performance management grade within three years by applying valid and reliable performance evaluation standards

On average, only two percent of organizations receive a grade "A" in performance management. Red's Bar-b-Cue can take advantage by achieving more than a "B". Effective performance management enables the company's strategic congruence, employees' chance to learn and grow, and clear administrative decision. If Red's Bar-b-Cue receives more than a "B" in the performance management grade, Red's Bar-b-Cue's employee satisfaction increases. This generates loyal and contributive employees that will drive Red's Bar-b-Cue to success.

Internal Business Processes:

1. Complete barbecue sauce launching project schedule within 315 days

Red's Bar-b-Cue needs to build a network diagram and pull out information to finish the project within 315 days. Breaking down the production process and building a network diagram will allow Red's Bar-b-Cue to make rational decisions. Effective operation systems reduces cost and increases productivity. Red's Bar-b-Cue will success through the effective operations system.

2. Utilize control charts to achieve 90% of control process success rate within a year by eliminating special causes

Red's Bar-b-Cue requires low quality variances to avoid product problems and defects. By achieving 90% of control process success, Red's Bar-b-Cue will enhance consistent quality of the barbecue sauce. Consistent quality is important to meet customer's expectations. Satisfied customers tends to repurchase Red's Bar-b-Cue's barbecue sauce. By achieving this goal, Red's Bar-b-Cue will get increased sales revenue.

Financial Performance:

1. Estimate risk and return of the potential project by calculating unlevered beta to confirm internal rate of return is greater than cost of capital

Red's Bar-b-Cue must make a sensible decision to invest limited capital into a profitable project. Internal rate of return and estimated risk and return will be a standard of investment decision. By comparing internal rate of return and cost of capital, Red's Bar-b-Cue clearly identifies a promising project to invest. Promising projects bring profit to Red's Bar-b-Cue.

2. Ensure units sold is greater than minimum threshold to make an expansion decision of the company

Units sold is directly related to the sales revenue and profit. Red's Bar-b-Cue needs units sold which is greater than the minimum threshold to assure profitability of the barbecue sauce business. If units sold are beyond expectation, Red's Bar-b-Cue can expand the business and take a great opportunity.

Production Manager Job Description and 5 Key KSAOS

Production Manager's Job Description – Management Appendix 01

Red's Bar-b-Cue will not expand its current restaurant business, it will position, package and market Red's special family recipe barbecue sauce. The Production Manager plays a central role to realize the firm's vision and strategy. Thus, **both Keaton and Kerri require a detailed job description** to identify Production Manager's job qualifications, core tasks and duties.

Job Description Format Adjustment

Red's Bar-b-Cue already has a well-structured job description format they previously used for restaurant manager. Keaton and Kerri like the current job description format, so our consulting team decided to use the original format for the Production Manager position with the addition of a few adjustments. Our team decided to add a "Job purpose" section, and we divided "Job qualification" section into "Education and experience qualifications" section and "Knowledge/ Skills/Abilities" section.

The "Job purpose" section provides a concise summary for Production Manager's position and responsibilities. Production Manager's qualifications and responsibilities are numerous and complicated. Therefore, this section can illustrate a specific and clear image of the Production Manager.

The "Education and experience qualifications" section and "Knowledge/Skills/Abilities" section split "Job qualification" conditions into two categories, "Education and experience qualifications" section and "Knowledge/Skills/Abilities" section. The purpose of the job qualification section was to show eligibility conditions for the Production Manager. However, formal education qualifications and experience qualifications are more concrete than knowledge, skills and abilities. By splitting job qualifications into two categories, we can

concentrate on them independently. This allows our team to more easily establish knowledge, skills, and abilities qualification to identify “5 Key KSAOs” and decide a standard performance management selection system.

Red's 5 Key KSAOs and Explanation

The Production Manager's job description is the same, but Keaton and Kerri emphasize different core Knowledge/Skills/Abilities/Others (KSAOs) due to their different expansion strategies. Keaton and Kerri will have different organization culture, different communication channels between employees, and different expectation on job performances. Thus, **Keaton and Kerri highlight different “5 Key KSAOs.”**

Keaton's “5 Key KSAOs”:

Keaton desires cost-effective production, employees who have high job effectiveness, and job efficiency. Thus, **Keaton's “5 Key KSAOs”** are:

- Knowledge of barbecue sauce production processes
- Knowledge of production technologies and tools
- Planning and organizing skills
- Time management skills
- Monitoring and supervising skills

Knowledge of barbecue sauce production processes – Keaton focuses on effective and efficient barbecue sauce production. Thus, Production Manager should optimize sauce manufacturing process by ordering raw materials and fresh ingredients at a right time, building effective production process, estimating and managing production cost. Also, Production Manager should stay up to date with new and advanced technologies and tools to improve product's quality by

having better packaging, using less preservatives, and meeting government regulations on food manufacturing.

Knowledge of production technologies and tools – Keaton will expand his sauce business step by step, but he still wants to mass produce Red's popular sauce. Thus, Production Manager is expected to skillfully operate tools and technology devices in daily work.

Planning and organizing skills – Production Manager should produce the right amount of barbecue sauce within a deadline and send them to the distributors and wholesalers. Also, barbecue sauces' quality should be standardized as possible to meet customer expectations. Therefore, Production Manager must develop feasible production plans and time schedules to achieve production goal within time and budget constraints.

Time management skills – Keaton's strategy requires impressive time management skills along with planning skills. Production Manager should have an ability to allocate one's time and staff's time to production processes by considering priority of each production step.

Monitoring and supervising skills – Keaton's strategy does not ask for creativity new products, but requires a friendly atmosphere and employee engagement. Production Manager should observe employees' job performances and provide fair evaluation with timely feedback.

Kerri's “5 Key KSAOs”:

Kerri wishes to produce unique and high quality products by sharing creative idea and creating a synergy effect. Thus, **Kerri's “5 Key KSAOs”** are;

- Knowledge of production quality control
- Knowledge of human resources management
- Interpersonal skills

- Critical thinking skills
- Analytical and decision making skills

Knowledge of production quality control – Kerri wants to produce high quality special sauces which can satisfy target customers' niche. Identifying customers' expectation and setting quality standards is important to position and market her sauces, because Kerri does not want her barbecue sauce to be a mere commodity. Thus, Production Manager should meet customers' needs by structuring systematic quality control systems.

Knowledge of human resources management – Kerri understands Red's popular barbecue sauce has great potential, but she wants to offer sauces with different color with different magical realism stories. She does not want her employees to be mechanical parts, instead she needs creative ideas from her employees to improve her products. Production Manager should manage staff with extra care by having an insight of staffs' skills and personality, selecting the right person, providing training opportunities, and fairly rewarding employees.

Interpersonal skills – Sharing information and creating ideas are important to fulfill Kerri's strategy. Thus, Production Manager should have outstanding interaction skills to build strong relationship and harmonious work atmosphere with smooth communication and listening skills.

Critical thinking skills – Kerri's strategy asks the Production Manager to use logical and critical thinking skills to assess effects of current production processes and evaluate potential opportunities. Production Manager must identify strengths and weaknesses of the current manufacturing process and resolve problems by systematically evaluating alternative solutions.

Analytical and decision making skills – Production Manager is expected to use critical thinking skills with analytical and decision making skills. Production Manager must evaluate the company's opportunity by analyzing and identifying potential risks and returns. Lastly,

Production Manager should make a timely decision by considering costs and benefits under a certain pressure and stress.

Production Manager Selection System

Four Categories of Selection Decision Criteria

Performance manager's job description contains qualifications, tasks, duties and responsibilities of the occupation. The elements in the job description can be classified as four categories for selection decision criteria. The categories are experience and past performance criteria, personal characteristics and personality criteria, formal education criteria, and physical characteristics criteria. By considering Keaton's and Kerri's business strategy and the job description, we can evaluate importance of each criteria category.

Physical characteristics are less important criteria for selection decision. Using physical characteristics as a selection criteria will discriminate potential applicants and against the Federal law, because we cannot define specific physical characteristics directly related to the job. Thus, we should not screen out candidates based on height, weight, appearance and other requirements.

Formal education is important, but not as important as experiences and past performances. Educational achievement signals cognitive, physical and interpersonal abilities and attitudes for successful performance. This is why formal education requirements are commonly used to screen out applicants. Using educational requirements is legal for Production Manager, because a certain level of expert knowledge, skills, reading and writing skills, and arithmetic abilities are required to successfully perform the job.

However, formal education requirements may take away opportunities from applicants who have strong past achievements and experiences while lacking educational success.

Furthermore, the primary requisite of potential candidate is successful job performance. Which



makes experiences and past achievement records a more valid criteria than formal education requirements. By concerning Red's limited budget, we should push formal education requirements back on the priority list.

Personal characteristics and personality types should be used carefully. Personal characteristics includes marital status, sex and age. Using personal characteristics can be considered discrimination, especially personal characteristics that are not related to the employee's job performance.

Personality tests such as "Big five personality factors" can explain up to 75 percent of an individual's personality and can be a useful tool to predict job performance. However, it is difficult to clarify relationship between a certain personality and a high job performance, and using personality test may infringe an individual privacy. Personality types should be used wisely, when clear evidence between personality and job performance exists.

In Red's Bar-b-Cue's situation, conscientiousness and emotional stability can be standards to select Production Manager, because these two factors can predict performance for most occupations. However, it is hard to find precise connection between personality type and high job performance.

Experiences and past performances are important and crucial to Red's future success. Past achievements and experiences in a similar job can indicate potential candidate's work-related skills, abilities, and attitudes. Past successes and goal accomplishments do not guarantee applicant's successful future job performance, but can be used as standards in strongly predicting future task performance and an applicant's ability to have future success.

The Strongest Selection Decision Criteria

Among four categories of selection decisions criteria, **experiences and past performances** are the strongest indicator of high job performance and success. Formal education and personality types have both advantages and disadvantages, so they should be used cautiously. Formal

education requirements would enable Red's to screen out unqualified candidates based on education accomplishment level. However, Keaton and Kerri have already asked around and have a reasonable number good potential candidates for the job, so they do not need to screen out their candidate by using education requirements. When looking at personality tests, the currently allowed personality test is only for the conscientiousness factor, and the company has no definite evidence of relationship between a certain personality factor and a job achievement.

Selection System for Red's Production Manager

Keaton and Kerri want to build a standard employee selection system by using current selection activities within a \$500 budget per employee hired. As mentioned earlier, Red's already has some potential candidates and may not need physical characteristic and personality type requirements. Thus, we can focus on experiences and past performances as the strongest indicator of job performance.

Standard Selection System: “**Structured interview**” and “**Job sample**” will enable Keaton and Kerri to predict potential applicant’s future job performance, instead of following costly and unnecessary typical selection decision processes.

(+) Structured Interview: “**Structured interview**” is recommended as an employment interview, because employer can obtain plenty of information and signal for future job performance from applicants with relatively low cost. A structured interview tends to bring high reliability and validity. Structured interviews prepare insightful questions through a specific format that is applied to all applicants, which makes questions consistent and builds an accurate prediction of future performance. Interviewers go through training to reduce possibility of intentional and unintentional biases, and using several interviewers together will prevent subjective errors.

Structured interviews can successfully measure **Keaton’s 5 Key KSAOs** which are core elements for Keaton’s strategy. Although structured interviews require time and effort to build

discreet and insightful questions, it is a great tool to get information from potential candidates. Structured interview questions can cover wide topics such as: candidates' knowledge over raw material and fresh ingredients, food production processes, and manufacturing technologies. Structured interview questions can ask how the applicant interprets and accepts the company's mission and vision to check strategic congruence. Employers can receive deep information about applicants' past experiences, skills and certificates, and even clues for their personality types.

Structured interview is also an outstanding tool to measure **Kerri's 5 Key KSAOs**, which are important elements to fulfill Kerri's strategy. Employers can ask applicants' knowledge about food quality standards, structuring quality control system, identify customer niches, and motivating staff. From candidates' past experiences and answers to hypothetical questions, employers can discover candidates' interpersonal skills, logical and critical thinking skills, and decision making abilities.

(+) Job Sample Test: **"Job sample"** is recommended as an employment test. Although job sample test is time consuming and expensive, job sample test has high reliability and the highest validity with low adverse impact. Job sample test has high content validity since candidates carry out actual tasks and duties of the job, and applicants cannot falsify their job proficiency. Job sample test is more favorable to employers since strong relationship exists between job sample test scores and actual job performance. Furthermore, employers can examine applicants' ability to operate technology devices, tools and equipment.

A job sample tests can measure **Keaton's 5 Key KSAOs** in more depth, which are core elements for Keaton's strategy. Keaton's 5 Key KSAOs are an essence of Keaton's Production Manager job description. Job sample test will be an outstanding tool to see employees' know-hows and practical business skills. In a similar working condition, applicants may need to estimate production and raw material costs, calculate staff productivity and efficiency, and build production plans and timelines through planning and organizing skills. By using information

about new technology and tools, applicants must show their ability to generate ideas and plans to improve production and product quality. Also, Keaton can use a job sample test to examine applicants' ability to fairly supervise, provide regular and consistent feedback, and motivate employees.

A Job sample test is an insightful method to show **Kerri's 5 Key KSAOs** as well. Kerri's 5 Key KSAOs are core job requirements expected from her Production Manager. Kerri needs to know the potential candidates' actual abilities to perform tasks and duties as a Production Manager. Each candidate should perform and manage the job in a similar working environment. Applicants must show how they control products quality to meet customer expectation and Red's mission and goals. Potential candidates will show how they can make sensible and reasonable decisions which align with organization's objectives. Kerri can see how her candidates observe and motivate staffs with well-structured employee training plans.

Selection Systems that WILL NOT be used:

(-) Preliminary screening is not required, because Red's does not mention time constraints of the selection system to take extra care of its hiring process. Keaton and Kerri do not need to drop most of their applicants to save time. By considering cost and validity, application form is cheap but has low criterion-related validity. Thus, within a limited budget, Red's must use an employment interview and an employment test to forecast applicant's future task performance.

(-) An unstructured interview will not be an option. Unstructured interview is low in reliability and validity by asking unplanned and different questions. Employers cannot compare applicants' potential and future success, because unplanned questions cannot provide same standards for every candidates.

(-) Mental ability test (Wonderlic) is strong method to measure intelligence by asking questions about vocabulary, sentence rearrangement, number series, arithmetic problem, and logic. There are a large number of Wonderlic forms available, enabling employers to easily test applicants' cognitive ability. However, mental ability test (Wonderlic) is a general intelligence test.

Wonderlic score may signal candidate's ability and skills for successful job performance, but it cannot measure specific elements related to a certain occupation. Wonderlic scores cannot show actual work performance level. Thus, mental ability test (Wonderlic) has relatively lower validity than Job sample test.

Production Manager's Performance Evaluation System

Recommended Performance Evaluation System

Our team suggest “**Behaviorally Anchored Rating Scales (BARS)**” and “**Results approach**” to evaluate Production Manager’s job performance.

BARS has high validity and high acceptability. BARS defines traits, attitudes, and characteristics required to fulfill outstanding job performance as an absolute assessment. Unlike Graphic Rating Scale, BARS describes a performance level of each quantitative scale, so employers can use both qualitative and quantitative data to appraise employees. Employer can evaluate Production Manager’s job performance by using a rating scale with behavior descriptions as a clear guideline. Thus, an evaluator can escape from subjective errors and provide a reliable and valid assessment. BARS has high acceptability, since BARS has detailed behavioral exposition of each rating scale and pre-defined standards to evaluate employees. Although BARS is difficult to develop, BARS will be a fair and convenient method to evaluate Production Manager’s job performance.

Results approach should be used with BARS because great behaviors do not always correlate with great results, according to the results-behavior matrix. Results approach has high validity and acceptability. Results approach requires SMART goals as a prerequisite. Specific, measurable and achievable goals are relevant to the company’s strategy which is an objective behind the goals. SMART goals and attainment of the goals will be an accurate and valid method to evaluate employee’s job performance. Results approach has high acceptability,

because the goal is specific and measurable and employers can use measurement standards to easily determine Production Manager's goal achievement level. For example, productivity rate or production deadline can be standards to measure results.

Impact on Performance Management Purposes

Performance management system by using BARS and Results approach contributes to achieve the company's goals of **personnel administration, personal development, and strategic congruence.**

Valid and accurate performance evaluation is essential to **personnel administration**.

Performance evaluation identifies star employees and poor employees. The employer can make decisions about salary payment and pay raises, promotions, demotions, department transfers and firing based on performance evaluation. Performance evaluation results can even provide data and documentation to defend against accusation and legal disputes.

Performance evaluation contributes to the company's **personal development**. Performance evaluation results generate information about employee's knowledge, skills and abilities. Thus, performance evaluation provides consistent and regular feedback that helps employees develop and grow. Employers can develop training plans to enhance employees' job performance. Also, performance evaluation can improve communication between employees and managers.

Performance evaluation is also crucial to the company's **strategic congruence**. Employees align individual goals to the organization strategy by using a performance management system and performance evaluation. The performance management system equips employees with guidelines to monitor and adjust behaviors to meet the company's goals and strategies.

Sample **BARS** Evaluation Forms - Appendix 02 03

Work Forecast and Design for Red's Bar-b-Cue

Basic Forecasting Assumptions

- With the current operational configuration, employee's productivity rate is 30,000 bottles of sauce in a year per one FTE
- With the new automated approach, employee's productivity rate increases to 43,500 bottles of sauce in a year per one FTE
- In the upcoming year, one FTE remains as a full time production staff and other three FTEs will go back as full time restaurant staffs.
- In upcoming year, demands and sales revenue will be 1.45 M and price inflow per unit is \$2.90
- Red's barbecue sauce production business will continuously increase for the next 10 years
- According to Red's decision, Red's Bar-b-Cue will use the same selection system that they used to hire Production Manager and \$500 budget to select new full-time production personnel

Upcoming Year: Required FTEs

Year	Sales Revenue	Units Produced	Required FTEs	Available FTEs	FTEs to Hire
1 (Normal)	\$ 1,450,000.00	500000	16.67	1	15.67
1(Automated)	\$ 1,450,000.00	500000	11.49	1	10.49

Without the automated approach, worker productivity for 1 FTE is 30000 bottles of sauce per

year. According to estimated sales revenue and unit price of Red's barbecue sauce, required FTEs for the upcoming year is 16.67. Available FTE is only one, because three out of four current production FTEs want to go back to their normal restaurant work in the upcoming year. Only one of the current production staff members will remain for barbecue sauce production. Thus, Red's needs to **hire 15.67 FTEs** to meet upcoming year production and demand.

The automated approach dramatically increases productivity; worker productivity for 1 FTE will become 43,500 bottles of sauce per year. The required FTEs for upcoming year decreases to 11.49 as productivity increases. Red's needs to **hire 10.49 FTEs** to meet the production line configuration changes.

Additional Assumption and Impact of Hiring Part-time Workers

Our team has incomplete information, so we **added some assumptions** to make our forecasting clear and simple. The core issue is the number of full-time and part-time workers. Red's Bar-b-Cue can hire all full-time workers or all part-time workers. Red's may want to keep a certain percentage of part-time workers for the flexible labor force. Thus, we made additional assumptions based on the case and given information. We found hiring more full-time workers may benefit the company; it reduces overall turnover rate, guarantees high level of commitment and employee engagement, requires less hiring budget, and keeps Red's good reputation as an employer.

- Full-time workers have a 5% turnover rate and part-time workers have a 25% turnover rate, which, according to the case, are significantly lower than other restaurants in the area
- Given worker productivity for 1 FTE does not identify the difference between full-time and part-time workers, we assume both full-time and part-time workers have same productivity

- Full-time and part-time workers cost same in employee benefits to the company
- Frequent hiring and firing of part-time workers requires more of a hiring budget and may hurt Red's Bar-b-Cue's reputation as a good employer
- Red's Bar-b-Cue expects continuous sales growth for next 10 years, so except for natural turnover Red's does not want to fire full-time or part-time workers

Our team calculated sales revenue and number of products to produce for years 2-10. We divided the number of units need to be produced by product price \$2.90, and calculate required FTEs for years 2-10. We found out, **hiring part-time workers increases Red's Bar-b-Cue's hiring cost**. According to **appendix 04 and 05**, total hiring cost of having only part-time workers is about \$47,000. Total hiring cost of having only full-time workers is just about \$23,000. Total hiring cost of having only part-time workers is twice more than total hiring cost of having only full-time workers due to part-time worker's higher turnover rate.

Years 2 – 10: Limitation of an Ideal Employee Hiring Solution

Red's ideal solution will be hiring as many full-time workers as possible and hiring one part-time worker who has flexible working hours. For example, when Red's needs 16.67 FTEs, Red's can hire 16 Full-time to meet 16 FTEs and hire one part-time employee who can manage working hours to meet 0.67 FTEs.

By using **appendix 07**, we calculated FTE of part-time workers based on their working hour per week. For example, FTE of the part-time worker who works 33 hours per week is 0.83. FTE of the part-time worker who works 8.7 hours per week is 0.22.

Through part-time worker's FTE, we built an ideal employee hiring solution to have maximum full-time workers with one part-time worker who manages the remaining required working hours, greater than zero and less than 40 hours per week. An ideal employee hiring solution is in **appendix 06**.

However, the ideal employee hiring solution is hard to use. Part-time workers do not work 40 hours per week, but they typically do not work 8.7 or 20.8 hours per week. The company will face additional trouble when calculating available FTEs of part-time worker after turnover. One part-time worker in a workplace will be demotivated and put less effort due to the frequent firing and hiring. Red's Bar-b-Cue needs a simple and realistic solution to implement.

Years 2 – 10 Forecast: Numbers of FTEs to Hire

Although Red's needs a simple and realistic solution, hiring only full-time workers contradicts with the number of required FTEs. As we can see in appendix 05, it is difficult to hire when the gap between required FTEs and available FTEs is not a natural number. The easiest way to simplify the gap between required FTEs and available FTEs is round up the number, because one full-time worker should be considered as one FTE. We can see the number of FTEs to hire in both before-simplified and after-simplified from the table below.

Year	Required FTEs	Number of FTEs to Hire (Before-simplified)	Number of FTEs to Hire (After-simplified; full-time)
1	16.67	15.67	16
2	20.00	4.17	5
3	23.00	4.00	4
4	25.30	3.45	4
5	27.83	3.80	4
6	29.22	2.78	3
7	30.68	2.92	3
8	32.22	3.07	4
9	33.83	3.22	4
10	35.52	3.38	4

Job Structure on the Production Line

	Specialization	Formalization	Centralization
Keaton's Job Structure	High	High	High
Kerri's Job Structure	Moderate or Low	Moderate or Low	Moderate or Low

Keaton's Job Structure:

Barbecue sauce production in Keaton's strategy is divided into small stages. Tasks and work goals for each stage are narrowly defined. Thus, Keaton's strategy desires efficient production.

Production workers' jobs are meticulously structured to achieve cost-leadership. In Keaton's strategy, production workers should follow exact work roles directed by job description.

- **High Specialization** – Keaton's job structure divides and simplifies whole work into small job components. Keaton's production employees are expected to become experts on their narrowly defined tasks. Production staffs will become efficient through repetition, and this will enable higher productivity, low quality variance, and low cost. Since every staff is expertise of each detailed task, strong collaboration and teamwork are important and highly required.
- **High Formalization** – While Keaton's production workers have structured and narrowly defined work roles, Keaton can use formal rules to direct tasks to staff and govern every activity on the staff's work performance. Strict and formalized rules will control employees' actions and performance. Like McDonald's, who has around 400 pages of written rules about the way to build its hamburgers, Keaton's strategy needs rules to control production processes and to keep production and quality consistency.
- **High Centralization** – Keaton's production staff is a small part of a bigger machine. They should work systematically and rely on others. Each staff has limited decision power and less autonomy, and Keaton the owner of the business is responsible for running the business and making decisions. Thus, Keaton's job structure on the production line should be centralized.

Kerri's Job Structure:

Kerri's strategy does not focus on mass-production. Instead, she wants creativity and high quality products. Employees should know about the barbecue sauce production from beginning to end to generate ideas and notice opportunities for improvement. Production staff are expected to put extra care in producing each barbecue sauce, instead of focusing on cost-efficiency.

- Moderate or Low Specialization – Specialization can reduce product defects and increase productivity, but repeating the same job is boring. Kerri does not want her employees to be demotivated by repeating the same job. Specialized job structure increases production and cost efficiency, but it may hurt company's culture by interfering with socialization between staff. Low interaction and sharing of information may hurt creativity and innovation. Thus, Kerri's job structure will be relatively moderate or less specialized than Keaton's.
- Moderate Formalization – Kerri focuses more on quality and creativity. Formalization is not favorable for Kerri's strategy, because strict rules may bind employees' creativity. Employees follow core rules, but are not dictated by these rules. They have more freedom to perform their tasks. Employees have relatively more flexibility than Keaton's strategy. However, quality control and consistency is the core issue to meet customer expectation, Kerri's job structure will be moderately formalized.
- Moderate or Low High Centralization – Kerri values creativity and high quality, so she wants equal and free culture in the workplace. Job structure will be more de-centralized, so every staff will get relatively more decision power and autonomy than Keaton's organization. De-centralized organizations utilize multiple individuals to generate a synergy effect by sharing knowledge and skills.

Job Motivational Potential; According to Job Characteristic Model

Job Motivational Potential for Specialization, Formalization and Centralization:

- **Specialization – Specialization has moderate to low motivational potential.**

Specialization culture divides a whole task into small components. Thus, each staff member does not need a variety of skills to perform one's task. Since employees take a small portion of the whole production system, task identity and task significance tends to be low. As an expert, employees can have moderate levels of autonomy, but they do not have any right beyond their defined task. Workers can receive feedback regularly and consistently, but the feedback may come from employee evaluation or ranking about their goal achievement instead of an advice to improve their performance.

- **Formalization – Formalization has low motivational potential.**

Formalization culture dictates employees' work performance through strict rules and work roles. Staff does not need and are not required to have a variety of skills beyond their role. Workers are just following the roles, so they cannot identify the degree of their contribution to the whole project or production. It is also hard for workers to see a direct impact of their work because written rules and work roles bind and control workers activities. Thus, Formalization culture has low skill variety, low task identity, and low task significance. Since workers are following the rules instead of making their own decision, autonomy is not high in formalized culture. Feedback sources are usually formalized, so interactive feedback is uncommon.

- **Centralization – Centralization has moderate motivational potential.**

Business owners have the most decision making power in the centralized culture. Centralized cultures can make quick and timely decisions, but employees' opinions are not reflected to major decisions. Thus, employee's autonomy is trivial when compared to the owner. Task identity and task significance is not high. Worker's contribution takes only a small fraction of the company outcome and workers barely see a direct impact of one's job. Unlike the owner, workers follow and obey instead of control and command. Skill variety can be different from organizational strategy and goals, but in food manufacturing or product assembly workers have low skill variety. Feedback can be different based on the owner's strategy. Centralized culture has low autonomy, task identity, and task significance, resulting in the psychological state of many centralized cultures to be negative. Motivational potential is likely to be low in the centralized culture because the centralized culture has low meaningfulness and low work responsibility.

Motivational Potential of Keaton's Strategy- Keaton's strategy focuses more on job enlargement than job enrichment. Keaton is interested in mass-production with specialization, formalization and centralization, so he wants to direct work roles and activities effectively. As discussed above, specialization, formalization and centralization negatively influence motivational potential by having low five core job dimensions. Low five core job dimensions make Keaton's job structure have low meaningfulness of work, low responsibility of work outcomes and insufficient knowledge of their work results. Keaton's job structure on production line possibly has low motivational potential.

Motivational Potential of Kerri's Strategy- Kerri's strategy highly relies on job enrichment because she is interested in high quality products with strong market position. She cares about a variety of special skills and employee engagement with relatively low specialization, low formalization and low centralization. These traits positively influence motivational potential with high five core job dimensions. High five core job dimensions increases meaningfulness of work, enhances responsibility of work outcomes, and provides sufficient knowledge of their work results. Kerri's job structure on production line likely to have great motivational potential.

Organizational Culture and Values of Red's Bar-b-Cue

Organizational culture has become even more significant in the 21st century. Culture is what makes you different from others and what identifies you from others. Great company culture will attract and motivate employees, enhance employee engagement, and improve employee satisfaction rate.

Although many theoretical culture models exist, our team focused on the competing values model of culture. The competing values model of culture uses two axes. The y-axis is company's culture on flexibility and discretion versus stability and control, and the x-axis is company's culture on external focus and differentiation versus internal focus and integration. Keaton and Kerri certainly need proper organizational culture to realize their strategies.

Organizational Culture for Keaton's Strategy

Keaton's strategy suits well in a Hierarchy culture. Hierarchy culture values stability and control with internal focus, integration and cost-leadership. Keaton wants mass-production of traditional barbecue sauce. Therefore, a traditional form of leadership is required to make quick decisions. A highly formalized culture, structured inner rules, and written work roles will be used. Following the rules is crucial for efficient and effective production processes to control quality and cost.

Core Values for Keaton's Strategy:

Consistency – Keaton's strategy tends to avoid innovation and change. A consistent daily operation and production is desired while controlling employees' task performance and product quality constantly.

- **Formalization:** Employees are expected to follow standardized work roles to attain constant daily operations and production. Written documents that describe company rules and employees' work roles is an effective method achieve consistency.

- Quality control system: Keaton's strategy focuses on producing the right amount of quality products within a deadline. Consistent product quality is especially important to meet customers' expectation. Quality control is particularly complicated and critical in food manufacturing, because raw materials and ingredients vary in quality. A well-structured quality control system will ensure consistent quality products.

Dependability – Cooperation and trust between employees and managers is required to unite and achieve organization goals. Employees need to rely on each other, and the company needs to take corrective action on shirking staffs.

- Organizational events and activities: Employees are expected to share common goals and collaborate to achieve their goals for the organization's success. Employees spending time together builds strong personal relationships, build a better understanding of their interdependence, and promotes sharing of common values. Organizational parties, events, gatherings and activities help employees to get close to each other and enhance teamwork and unity.
- Corrective action on bad employees: Bad employees with habitual unfavorable behaviors, several absences, late arrivals, and missing deadlines demotivates other staff and decreases employee engagement. In addition, company's production schedule will get out of control. Thus, fair employee evaluation with corrective action on unfavorable behavior is highly required to increase dependability.

Efficiency – producing high quality products within time and budget constraints is important. Using narrowly defined tasks, highly trained employees, expertise, and teamwork is needed to enhance production efficiency.

- Employee training: Employees should be highly experienced and well trained to improve productivity and efficiency. Thus, Keaton should build employee training systems and offer his employees a chance to learn and grow their skills and abilities.

- New technology and tools: Companies can increase production effectiveness and efficiency by training its staff or by using advanced technology and tools. New technology and tools may reduce production processes and time, enhance product quality, and reduce production costs.

Organizational Culture for Kerri's Strategy

Kerri's strategy fits an Adhocracy culture. An Adhocracy culture values flexibility and dynamism with external focus, differentiation, and innovation. Kerri wants to market her barbecue sauce as a special high quality product that brings values and experiences. Thus, Kerri tends to be sensitive to customers' niche and takes risks to obtain innovation and creativity. Kerri's willingness to take risks and experimental steps to differentiate her product and bring an experience into the sauce requires innovators, entrepreneurs, and visionaries. The organization should be less centralized and less formalized, and company should build free and equal relationships between employees to achieve creativity through intensive interactions and information sharing.

Core Values for Kerri's Strategy:

Creativity and innovation – Kerri's strategy encourages risk taking and innovative ideas.

Kerri's employees need creativity and innovation to differentiate Red's barbecue sauce and strongly position its brand in the market.

- Deep customer understanding: Creative and innovative ideas lose their value if customers are not fond of their ideas. Thus, the company should build close relationships with their target segments by using their website, email, and social media and understand customers' needs first. The company can get unexpected ideas to improve its products and services by collecting ideas from their customers and by listening to customers' opinions.

- Listen to the employees: Employees are a great source of new ideas. Employees who are close to actual work and manufacturing processes can notice opportunities to improve products and production processes. The company can build a website and forum that employees can present their ideas and share opinions. Giving incentive to innovative ideas can also be an option. The employee may have the idea in their head, but does not have a reason to share it without compensations or motivations.

Transparency – Kerri's strategy needs a flexible and creative organization culture.

Transparency and information sharing between employees accelerates company's innovation. Thus, Kerri wants her employees to understand each other's work role and interact freely to generate unique ideas.

- Transparency of company's goals and priorities: Identifying clear organization goals with company's vision and mission let employees gain better insight and deeper understanding in work performance. By knowing the bigger picture, employees are more likely to generate ideas relevant to company's mission and ultimate goals.
- Enable wide information access: The Company should allow employees to access wide information bases. Viewing new information with a new perspective allow staffs to find overlooked opportunities and ideas for further improvements.

Management Appendix

Management Appendix 01

JOB DESCRIPTION OF RED'S PRODUCTION MANAGER

JOB TITLE: Production Manager

JOB PURPOSE: Manage overall production processes by planning production schedules, coordinating work activities and resources, ensuring smooth and cost-effective production, motivating employees to increase productivity, and delivering quality products on time

JOB SCOPE:

- Plan and control production schedule by considering inventory requirements, number of staff needed, time and budget constraints and unit production goals
- Revise and adjust production schedule through production processes
- Determine amount of raw materials and number of employees required, and manage material and human resources to achieve production target
- Define quality standards and develop quality control system to satisfy customers' expectation
- Detect product defects and production problems by overseeing operations and analyzing production, and resolving problems

- Coordinate and direct production, processing, and distribution activities with resources to clarify staffs' duties and responsibilities
- Recommend and implement initiatives such as new technology, new techniques, and new machinery to improve quality and efficiency
- Monitor daily production and operation, and ensure products and operating procedures meet health and safety standards
- Ensure efficient collaboration between relevant departments including maintenance, technology, and procurement
- Train, monitor, evaluate, give feedback, and compensate employees to enhance productivity and employee engagement
- Prepare and maintain production reports and performance records as a basis for administrative decisions such as promotion and succession planning
- Full-time Production Managers work 40 hours per week, and they are expected to be able to adjust their working hour when work overloads

POSITIONS SUPERVISED:

Production staffs, production supervisor, material planner or inventory control manager

EDUCATION & EXPERIENCE QUALIFICATIONS:

- Bachelor's degree is preferred, although associate's degrees, technical schools, or highly experienced candidates may be possible
- Career experiences in production process such as a production supervisor, material planner or inventory controller are preferred

- May be required to learn work-based qualification through a training to learn quality management, production management, operations management, and business improvement techniques as a trainee Production Manager

KNOWLEDGE/SKILLS/ABILITIES QUALIFICATIONS:

- Barbeque sauce production - Knowledge of raw materials and ingredients, production process, production cost, raw material cost, and technologies to optimize effective manufacturing
- Production quality control - Knowledge of customers' needs, customers' expectation on quality, setting quality standards and quality control system, and government's requirements on health, hygiene, and production safety
- Human resources management - Knowledge of employees' skills and personalities and how to select, train, direct activities and duties, compensate, and motivate staffs properly and fairly
- Technologies and tools - Knowledge of tools and technologies that Production Managers use, such as personal digital assistants and organizers, scanners, human resources software, industrial control software, and document management software
- Interpersonal skills - Interact with employees by using communication and listening abilities and build professional and personal relationships with staff
- Team working skills - Collaborate and cooperate with employees by using each staff's individual skills and providing constructive feedback in order to achieve company goals
- Critical thinking skills - Understand logical connections between ideas and rigorously question potential solutions to identify and evaluate strengths and weaknesses of alternative solutions and conclusions

- Problem-solving skills - Systematically and mathematically work through details of a problem to reach optimal solutions
- Conflict management skills - Recognize and resolve disputes in a rational and effective way by using communication and negotiating skills
- Time management skills - Allocate and distribute time wisely to competing demands by structuring tasks and processes based on priority
- Planning and organizing skills – Develop plans and schedules systematically and manage prioritized processes and resources to accomplish business goals within a limited timetable
- Monitoring and supervising skills – Access and supervise yourself and employees' job performance and fairly evaluate them for further improvement and correction
- Analytical and decision making skills – Analyze and make appropriate decisions by clarifying opportunities and risks of a potential solution and considering costs and benefits
- Oral and written communication skills – Express opinion and convey information effectively and efficiently to others by using proficient verbal and nonverbal communication skills
- Deductive reasoning abilities – Ability to apply general rules to solve problems and find logical answers
- Inductive reasoning ability – Ability to combine pieces of information and research outcomes to find relationships and general rules needed to make a conclusion and solve a problem

- Mathematical reasoning ability – Ability to choose and use proper mathematical methods or formulas to solve a problem
- Problem sensitivity ability – Ability to figure out a problem or possibility of a potential problem
- Information ordering ability – Ability to set priorities and arrange activities and actions in a certain order or pattern by using specific rules

CORE JOB RESPONSIBILITIES:

- Manage daily operations and production by scheduling and distributing work and activities to each staff, ordering fresh ingredients and ensuring raw material quality
- Control and adjust production timeline and keep deadlines to build dependability with suppliers and distributors
- Build production plans and prepare improvement to fulfill Red's mission and vision
- Prepare for the future business expansion based on the expected sales revenue growth rate
- Follow government regulations about food manufacturing standards and hygiene standards
- Ensure barbecue sauce's quality and keep the quality consistently to satisfy customers and increase customer loyalty
- Monitor 20-40 production employees and offer rewards and compensation to motivate staff and enhance productivity

- Identify key competencies and develop an employee training program to provide a chance to grow skills and abilities
- Check software and systems and ensure maintenance of machinery, production equipment, and facilities for smooth barbecue sauce production
- Understand advantages and disadvantages of current technology and tools, and examine new technology development to grab a chance to improve productivity
- Avoid discrimination and ensure to keep the Age Discrimination in Employment Act (ADED) and the Americans with Disabilities Act (ADA) in the work place
- Follow the Occupational Safety and Health Administration (OSHA) and health and safety legislation and policy to assure a safe and healthful workplace with safety facilities and training

Management Appendix 02

Sample BARS for Keaton's 3 Core Components

	5 Outstanding	4 Exceeds Expectation	3 Meets Expectation	2 Needs improvement	1 Unacceptable
Knowledge of Red's barbecue sauce production process	Demonstrate excellent knowledge on barbecue sauce production process	Exhibit good knowledge on barbecue sauce production process	Show reasonable knowledge on barbecue sauce production process	Present poor and insufficient knowledge on barbecue sauce production process	Show unprofessional knowledge of production process
	Estimate accurate production cost and amount of raw material to use with statistical evidence	Estimate accurate production cost and amount of raw material to use	Estimate appropriate production cost and amount of raw material to use	Estimate appropriate production cost and amount of raw material to use	Fail to estimate production cost and amount of raw material to use
	Optimize product quality through exceptional quality control system	Improve product quality through strong quality control system	Realize required product quality through quality control system	Realize required product quality through quality control system	Fail to answer questions related to barbecue sauce production process
Maximize employee productivity	Enhance production effectiveness and efficiency	Achieve desired productivity rate	Achieve desired productivity rate	Achieve desired productivity rate	

	5 Outstanding	4 Exceeds Expectation	3 Meets Expectation	2 Needs improvement	1 Unacceptable
Planning and Organizing skills	Prioritize project process and activities based on evidence and rationality	Effectively prioritize tasks, project processes and activities	Coordinate project process and activities based on priority	Demonstrate minimal effort to prioritize project processes and activities	Neglect prioritization step and fail to build production planning strategy
	Anticipate the change in production planning	Build production time schedule with daily, weekly and monthly objectives	Utilize planning and organizing skills to build production plan	Establish unclear and general production plan	Ignore production planning and time scheduling
	Identify time and budget constraint, recognize unexpected change, be prepared to adjust the budget	Implement production time schedule to keep deadlines	Create basic level time schedule to meet deadlines	Provide poor time schedule without short term goal	Miss deadlines and exceed cost budget

	5	4	3	2	1
Outstanding	Exceeds Expectation	Meets Expectation	Needs improvement	Unacceptable	
Monitor and Supervise skills	Daily access and supervise employees' work performance and attitude Periodically access and monitor employees' work performance and attitude Present fair treatment and supports among employees and avoid discrimination	Occasionally access and supervise employees' work performance and attitude Rarely access and supervise employees' work performance and attitude Demonstrate appropriate manner during work performance supervising	Occasionally access and supervise employees' work performance and attitude Rarely access and supervise employees' work performance and attitude Show ignorance and improper manner during supervising	Never access and supervise employees' work performance and attitude Express personal bias or discrimination during supervising	Never access and supervise employees' work performance and attitude Express personal bias or discrimination during supervising
	Build valid and acceptable performance evaluation standards Apply performance evaluation standards with high usability	Follow the company's performance evaluation standards Use inconsistent performance evaluation standards	Use inconsistent performance evaluation standards No performance evaluation standards exist	Infrequently give feedback to employees Unfair feedbacks are given to employees	Infrequently give feedback to employees Unfair feedbacks are given to employees
	Provide constructive and consistent feedbacks to employees	Give feedback to employees' after performance evaluation			

Management Appendix 03

Sample BARS for Kerri's 3 Core Components

	5 Outstanding	4 Exceeds Expectation	3 Meets Expectation	2 Needs improvement	1 Unacceptable
Knowledge of Production Quality Control	React sensitively to customer's value and expectation through strong customer relationship	Maintain customer relationship to understand customer values and expectations	Identify customer's values and expectations	Misunderstand customer's values and expectations	Fail to identify customer's values and expectations
	Prepare alternative quality standard strategy and quality control system	Construct effective quality standard strategy	Create quality standard strategy	Build poor quality standard strategy and ignore quality control system	Ignore quality standard strategy and quality control system
	Build product testing stages and identify causes of product defects	Structure effective quality control system	Follow general quality control system	Evaluate actual product's quality without product quality standards	Neglect product quality evaluation and test stage
	Repair quality control system or production process to prevent product defects	Apply quality standards to actual products	Apply quality standards to actual products and evaluate actual product's quality	Miss product defects and problems	Increase warranty cost and lawsuit expenses
		Recognize the product defects and adjust quality control system	Recognize product defects and problems		

	5 Outstanding	4 Exceeds Expectation	3 Meets Expectation	2 Needs improvement	1 Unacceptable
Offer an employee orientation and build excellent training systems	Select the right person and assign tasks based on employee's skills and abilities	Hire required number of employees	Fail to assign tasks based on employee's skills and abilities	Fail to identify tasks and duties of each employees	
Access and monitor employees' work performance daily	Structure an official excellent training system	Follow a general employee training system	Neglect and fail to build employee training system	Ignore employee training systems	
Create measurable and fair job performance evaluation system	Access and supervise employees' work performance frequently	Supervise employees' work performance in regular basis	Occasionally observe employees' work performance	Never observe employees' work performance	
Construct and support effective feedback channels and sources	Apply fair job performance evaluation system	Use job performance evaluation system	Create unfair and poor job performance evaluation system	Omit performance evaluation system	
Successively motivate employees and improve employee engagement	Use diverse feedback channels and sources	Use a few but effective feedback channels and sources	Provide feedback without an advice for improvement	Provide pointless and inconsistent feedbacks	
	Highly motivate employees	Meet motivation standards	Demonstrate passive efforts to motivate production employees	Put no efforts to motivate production employees	

	5	4	3	2	1
Outstanding	Exceeds Expectation	Meets Expectation	Needs improvement	Unacceptable	
Analytical and Decision Making Skills					
Access current production strategy and conduct insightful analysis	Access current production strategy and conduct insightful analysis	Access current production strategy and conduct general analysis	Access current production strategy and conduct erroneous analysis	Fail to access current production strategy	
Identify strengths and weaknesses of current production strategy and write a full report	Identify strengths and weaknesses of current production strategy	Recognize alternative production strategy	Recognize alternative production strategy	Recognize alternative production strategy	
Recognize alternative production strategy	Recognize alternative production strategy	Specify opportunities and threats of alternative strategy	Poorly specify opportunities and threats of alternative strategy	Ignore opportunities and threats of alternative strategy	
Specify opportunities and threats of alternative strategy and write a full report	Specify opportunities and threats of alternative strategy	Make a timely decision	Make a poor decision	Make no decision	
	Make a rationale decision				

Management Appendix 04 - When hiring part-time workers only

Year	Units produced	Required FTEs	Available FTEs	Gap (New hiring)	Hiring cost
1	500000.00	16.67	1.00	15.67	\$7,833
2	600000.00	20.00	12.50	7.50	\$3,750
3	690000.00	23.00	15.00	8.00	\$4,000
4	759000.00	25.30	17.25	8.05	\$4,025
5	834900.00	27.83	18.98	8.86	\$4,428
6	876645.00	29.22	20.87	8.35	\$4,175
7	920477.25	30.68	21.92	8.77	\$4,383
8	966501.11	32.22	23.01	9.20	\$4,602
9	1014826.17	33.83	24.16	9.67	\$4,833
10	1065567.48	35.52	25.37	10.15	\$5,074
Total	8227917.01	274.26	180.06	94.21	\$47,103

Management Appendix 05 - When hiring full-time workers only

Year	Units produced	Required FTEs	Available FTEs	Gap (New hiring)	Hiring cost
1	500000.00	16.67	1.00	15.67	\$7,833
2	600000.00	20.00	15.83	4.17	\$2,083
3	690000.00	23.00	19.00	4.00	\$2,000
4	759000.00	25.30	21.85	3.45	\$1,725
5	834900.00	27.83	24.04	3.80	\$1,898
6	876645.00	29.22	26.44	2.78	\$1,392
7	920477.25	30.68	27.76	2.92	\$1,461
8	966501.11	32.22	29.15	3.07	\$1,534
9	1014826.17	33.83	30.61	3.22	\$1,611
10	1065567.48	35.52	32.14	3.38	\$1,691
Total	8227917.01	274.26	227.81	46.46	\$23,228

Management Appendix 06

Year	Demand & Sales	Units produced	Required FTEs	Ideal Staff Hiring Solution
1	\$ 1,450,000.00	500000.00	16.67	16 Full-time and 1 Part-time (27 hours/week)
2	\$ 1,740,000.00	600000.00	20.00	20 Full-time employees
3	\$ 2,001,000.00	690000.00	23.00	23 Full-time employees
4	\$ 2,201,100.00	759000.00	25.30	25 Full-time and 1 Part-time (12 hours/week)
5	\$ 2,421,210.00	834900.00	27.83	27 Full-time and 1 Part-time (33 hours/week)
6	\$ 2,542,270.50	876645.00	29.22	29 Full-time and 1 Part-time (8.7 hours/week)
7	\$ 2,669,384.03	920477.25	30.68	30 Full-time and 1 Part-time (27.3 hours/week)
8	\$ 2,802,853.23	966501.11	32.22	32 Full-time and 1 Part-time (8.7 hours/week)
9	\$ 2,942,995.89	1014826.17	33.83	33 Full-time and 1 Part-time (33 hours/week)
10	\$ 3,090,145.68	1065567.48	35.52	35 Full-time and 1 Part-time (20.8 hours/week)
Total	\$ 23,860,959.32	8227917.01	274.26	

Management Appendix 07

Hours Worked in a week	FTE
40.0	1.00
37.5	0.94
35.0	0.88
32.5	0.81
30.0	0.75
27.5	0.69
25.0	0.63
22.5	0.56
20.0	0.50
17.5	0.44
15.0	0.38
12.5	0.31
10.0	0.25
8.7	0.22



MARKETING



Two Visions, Two Strategies

Keaton's and Kerri's visions have the common goal to expand Red's Bar-b-Cue sauce, yet they vary in execution. When evaluating Keaton's and Kerri's products, it is essential we do not assume the consumers will be the same for both products. An effective target market for Keaton's product may fail drastically for Kerri's, and vice versa. Therefore, we must strategically assess the marketing for them both independently.

Target Market

Keaton's primary target market is the culinary curious, price-sensitive middle class individual in the Southeastern United States. Culturally, they have grown up in a world of classic barbecue sauces, but are not afraid to venture away from the heavily dominant big name



brands. A curious mindset compacted with a likeness for spicy flavor will be ideal target consumers. In the kitchen, these individuals are interested in using distinctive flavors to give off the perception that they have tried harder without actually doing so. These consumers will primarily use the product on a frequent basis, and due to the spicy nature of the sauce it is not limited to only the barbecue setting.

Kerri's primary target market is middle to upper class, young working professionals in the Southeastern United States. Similar to Keaton's segment, these consumers are adventurous and passionate in their culinary practices and unafraid to try a new brand. Since

they are working professionals, the customers are time starved. While they want to be hip and trendy, they have little time to cook. This time starved segment is socially responsible: the products they primarily consume are natural or organic, sustainable, and have an interesting story that the customer will want to tell. They are seeking higher quality goods and do not mind paying a higher price to get it.

Value Proposition

“Spicier flavor, greater quality, for the same low cost.”, **Keaton’s value proposition is more for the same**. According to case research, Keaton thought that a high quality, but standard priced barbecue sauce was the way to go. The spicy barbecue is greater quality than the competitors, yet is priced similarly. This will allow Keaton’s product to compete in the price sensitive target market. The customer will look at Red’s and Sweet Baby Ray’s side by side and make the decision to buy Red’s due to the higher quality for the same price.

“A story worth tasting.” **Kerri’s value proposition is more for more**. Kerri envisions Red’s Bar-b-Cue sauce as a specialty item. By placing the product at a higher price, she can maintain the highest quality barbecue sauce in the market. This priority allows Kerri to maintain the rich flavor and the rich history of Red’s through her mission of pairing “tradition and tomorrow.” Kerri sees Red’s Bar-b-Cue sauce as an experience that customers will buy into and be blown away. Customers will forget about the price as soon as the sauce touches their tongue.

Positioning Statement

“To the everyday cook looking for not so everyday flavor at a normal cost, Red’s Bar-b-Cue sauce is spicy in flavor and rich in tradition and quality.” This is **Keaton’s positioning statement**



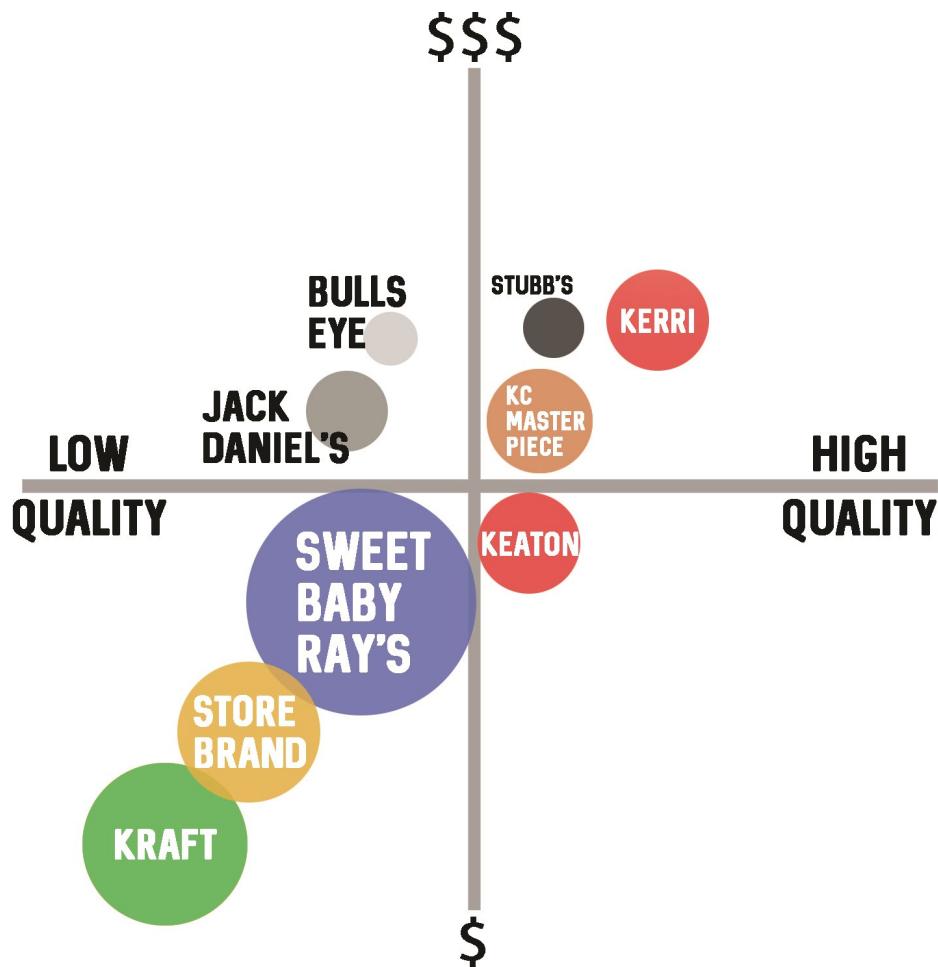
for his vision of Red's Bar-b-Cue sauce. His target segment and need is the price sensitive cook that looks to add distinct flavors to simple dishes. The point of difference for Keaton is the kick to the tongue and the tradition of Red's Bar-b-Cue sauce. This point of differentiation is a factor that will make Red's Bar-b-Cue sauce stand out from the competitors when marketed effectively.

Kerri's positioning statement is "To the young, energetic, working professional who wants a sauce as daring as they are, Red's Bar-b-Cue is a variety of sauces that tell the four stories of The Smoky Mountains through high quality flavors in an effort to be sustainable." The major difference between Keaton and Kerri is the target market and the point of differentiation. Kerri's primary market is the high-price point culinary adventurer. Her major point of differentiation is the high quality ingredients, variety of colorful tasty flavors, and the efforts to be sustainable while making barbecue sauce an experience good.

The young working professionals in the Southeastern United States are a diverse group of people. We see an opportunity for Kerri to further segment her sauces in the Southeastern region. In the case, Kerri talks about multiple sauces and multiple colors. Kerri could possibly showcase four different demographic segments through four different flavors, stories, and possibly character hooks. Each recipe could be catered to traditional cultural flavor. Each magical realism story could be aimed specifically at a certain demographic. This may be a sauce aimed towards personally interacting with Native Americans, African Americans, Caucasians, or even a traveling immigrant. In the case, Kerri says that she "sees barbecue sauce more for the potential personal experience they can create." Kerri can use magical realism to make the sauce a fun and memorable personal experience that reaches the diverse Southeastern region.



Product Positioning Map



The **product-positioning map** shown above is based off of price and quality; the brands are scaled to represent their market share. As you can see looking at the product-positioning map above, Kerri and Keaton are positioned differently. **Keaton is priced similar to competitors with the quality remaining high.** This is the only product in this position compared to competitors. This may be a sign that Keaton has found a niche that will lead to a successful product launch by having a higher quality product at the same price. Yet, this is a trend that many other giants have noticed as well. According to Clark Wolf of Forbes, Kraft, another barbecue giant, has begun switching out clever chemicals for natural ingredients. This may serve as a threat to Keaton in “finding green grass underneath the giants.”

Kerri is positioned in the high price and high quality quadrant. This is because Kerri envisions Red's Bar-b-Cue Sauce as a specialty item. Kerri's up-scale health-conscious customers are willing and able to purchase the product for the extra value they receive.

Selecting Distribution Channels:

After having found our place in the consumers mind, it is important to discover how we are going to get Red's physically in their hands. Based on the given information, the major distribution decision is between hiring either a wholesale distributor or a broker- both strategies that would place us in different areas of the market.

In making this decision, we are going to analyze the overall benefits of each avenue, compare that to the goals of both Keaton and Kerri, and match that with possible retail partnerships and their brands. This will allow us to make the most appropriate decision for Red's Bar-b-Cue, and to create as much brand equity for the companies that Red's Bar-b-Cue partners with.

Wholesale Distributor

Wholesaling is the process of hiring a third party company to purchase Red's barbecue sauce that will use specialized marketing and an expertise in the distribution industry to sell to retailers in the Southeastern United States. Essentially, wholesalers are well versed in the food retail industry and would be able to take the inventory from Red's Bar-b-Cue, add a margin to it, and sell directly to grocery stores. With this business decision, there are a large multitude of factors that play into wholesaling as a possible choice for Keaton and Kerri.

(+) Highly Specified: When working with wholesale distributors, one of the major benefits is that they can be specialized within a specific aspect of an industry. At the bare minimum, Red's Bar-

b-Cue would be able to partner with a distributor that works within food service, but there are also distributors that specialize in the sauce industry as well. Companies like Hot Shots Distributing (hotshotshotsauce.com) are able to provide market and industry knowledge in distributing specific sauces that will provide leverage when selling to retailers.

(+) Leads to a Large Market: Wholesaler distributors are known for their ability to cover a larger market quicker than you could with alternative options. Being able to scale quickly and efficiently can provide a swift capture of the market and enable a manufacturer to get brand exposure to their customer segment.

(+) Less Liability: An additional differentiator of wholesale distributors is that they actually purchase the product from the manufacturer, and will then sell that product to retailers. By purchasing the product, they effectively take the liability of the good from the manufacturer, and will have more investment in the product. From the manufacturer's perspective, it can provide a peace of mind knowing that their distributor will be more motivated to sell the product if it has been purchased.

(-) Higher Cost: When working with wholesale distributors, traditionally they are more expensive. Within the scope of this situation, we see in the terms of training costs. Distributors are handling a wide product line, and learning the processes and shipping to their retailers can be a complex process. Another major cost to consider is the cost of mark ups. This mark-up cost effects the overall retail price, and has lasting impressions on the Red's Bar-b-Cue sauce brand. Such pricing concerns may also affect the way that retailers view Red's, and their own retail brand when facing consumers.

(-) Can be “Eaten” in the Market: Wholesale distributors carry large amounts of products within a specified industry, which can result in distribution for major competitors in the same industry. By being a smaller brand, it is natural to assume that retailers will purchase less of the product, and

by bundling yourself with major brands, the product has the possibility to be forgotten on the product line.

(-) Weaker control of Marketing: As with many distribution tactics, by using a third party Red's will have significantly less control of the way that the product marketed and sold to consumers.

Wholesale Broker

Wholesale brokers, unlike distributors are a more local approach to distribution channels and act as middle men between retailers and manufacturers. They will begin by selling and promoting a product from the manufacturer to retailers, and aid in the relationship building of these two anchors. This more personalized approach has many benefits as well:

(+) Personal Relationships: Brokers act as both personal sellers to retailers and confidants in manufacturers. While working with the manufacturers, they are entrusted to effectively sell to retailers, and the personal relationship and promise can grow through time. For some companies, it makes sense to have one major point of contact that they can trust to help run their distribution.

(+) Covers Local Area: Unlike wholesale distributors, brokers are more likely to cover a smaller area. By covering a small region, brokers are able to have a stronger understanding of their geography and develop relationships locally as we discussed earlier. This "Local" touch can provide expertise for a new business.

(-) More Liability: A major caution for hiring a broker is that they are not purchasing or holding the product at any time. Any inventory management falls on the shoulders of the manufacturer and the retailer once the transaction is complete. The manufacturer needs to be worried about expiration dates, moving inventory, and storage costs.

(-) No Full Market Knowledge: Similar to warehouse distributors, because the company is giving up its ability to personally sell directly to retailers, they are losing a slight edge in their ability to market their product. On top of an educational fee, brokers usually carry a vast array of products, and getting them to sell the extensive information on your specific product can be difficult and costly.

Distribution for Red's Bar-b-Cue Sauce

With one of Keaton's next major strategies being finding a strategic distributor, we first must look at what factors seemed most attractive to him as far as vision of the product within retail. After having received information from Keaton, we found that two of his biggest goals are as follows:

1. To create a "high-quality but standard barbecue sauce"
2. That "it was more profitable to give many people a bit more of the taste quality...than to treat to a much smaller market."

Based off of these two direct quotes we can deduct a great deal of information. Keaton is looking to create a commodity sauce, and also seeks to market that brand larger than just a secluded market segment. With that being said, Keaton has also made reference to the fact that he wants to keep distribution local for the time being, so he does not currently have any desire to go national.

From our research and cross-referencing with Keaton's interests in the sauce, we believe that the **better decision for Keaton is to go with a wholesale distributor**. Due to the fact that Keaton is selling a commodity good, he is going to need a distributor that is well versed in the sauce industry and can effectively market his product along similar products. While the fear of being "eaten" up is one to consider, we believe that we can make up for this by utilizing price



promotions within retailers to generate a sizable demand for the product and establish itself on a distributor's product line. Additionally, by choosing to work with distributors, Keaton is opening an opportunity for scalability, should the project see success. Distributors have ample resources to expand their efforts, and should Red's want to take more of the market in the Southeastern United States, they can do so.

For Kerri, we believe that the better choice would be to choose the broker approach.

Kerri's vision is more focused on creating an experience for local customers, and to avoid by all means being "one more brick in the wall of hot sauce on the shelf of a Wal-Mart." With an emphasis on local consumers and differentiation, we have found that a broker would be able to provide stronger relationships to Red's and their retailers, and to cover almost entirely the desired market segment. While there may be less of an emphasis on market knowledge, Kerri's product will have a natural tendency to sell itself based on its unique factors: color, flavor, and the stories behind it.

Finding the Right Retailer

For Keaton, who is selling Red's Bar-b-Cue Sauce as a commodity item, we saw it fit to implement his product primarily within supermarkets. Supermarkets are larger stores, selling low margins with high volumes of goods. This aligns with many of the ideals that Keaton outlined. We would be able to reach a large market due to the large flux of consumers at this sort of retailer. Low margins also benefit commodity goods like Keaton's because we can keep prices low, and continue our value proposition of offering more quality for the same price. Finally, supermarkets also provide a vast array of options for promotion, such as price promotion and in-store advertising that would allow Keaton to differentiate his product.

With Kerri's product being focused on a consumer experience, we've found her line of barbecue sauce would best be placed in specialty stores. Specialty stores provide a smaller selection of products, but have a vast array of options within that product line. By leveraging a smaller product line, Kerri would be able to target her customer segment that is looking for high quality products. It is also important to note that specialty stores are rapidly becoming more successful as people are searching for more quality in their purchases. This retail choice would be able to effectively reach Kerri's target market, and develop strong partnerships with a growing retail strategy.

Pricing

Pricing is a key tool for creating and capturing customer value. When considering the pricing of Red's Bar-b-Cue sauce, Keaton and Kerri have two different strategies. Keaton wants to be able to compete with the huge competitors in his target market while giving more quality for same price. Therefore, **Keaton's strategy is good-value customer value-based pricing**. Keaton is offering the right combination of quality and service for a fair price. This pricing strategy will allow Keaton to redesign traditional approaches of barbecue sauce products. Keaton's barbecue sauce will have customer-perceived value greater than competitors for the same price.

Kerri's pricing strategy is value-added customer value-based pricing. Kerri's target market is the customer that is willing to pay more money for more value. Kerri's target market values locally grown, organic, natural, and sustainable products with a personalized experience. Kerri's plan to make a high quality barbecue sauce with a story differentiates her product and supports the higher prices. The buyer's perception of the product is the key component driving



the higher price. Price signals quality to new customers, which will drive an increase in the target customer base interested in higher quality for a higher price.

A product must be able to adjust to changes in the market. Two separate pricing strategies create different risks associated with price and demand. Understanding the risk of **price elasticity** is important factor in ensuring long-term success of product launches. **Keaton's product is likely to be more elastic in comparison to Kerri's**, and so a small change in price will lead to a greater change in demand. Keaton's product is a commodity item that has many competitors. His target market is specifically price sensitive and will buy the cheaper alternatives when given the choice. In Kerri's case, her product is a specialty item that has fewer competitors. Kerri's target market is less price sensitive, a small change in price will result in a smaller change in demand in comparison to Keaton's. Due to this, it is important to look at different price promotional strategies for each product.

When looking at Keaton and Kerri's products, **price promotion is more important for Keaton's products**. Keaton's target market is extremely price-sensitive. While Keaton differentiates in the flavor of his product, he still has many competitors with major brand recognition. By adding a price promotion, the price sensitive customer that normally buys Sweet Baby Ray's, may try Red's Bar-b-Cue Sauce for the first time. This is the idea of price elasticity that was discussed above. This price promotion serves as a foot in the door for Red's Bar-b-Cue sauce. After the promotion ends and prices are matched across the board, Red's Bar-b-Cue Sauce will have created a number of new and loyal customers.

In comparison, Kerri's price promotion will not work like this due to her less elastic target market that is willing to pay a higher price for higher quality. By adding a price promotion, this may

increase short-term sales. Yet, Kerri will likely hurt the brand equity and long-term profit of the product. The customer may perceive the product as lesser quality and will only buy the product when it is on sale. Price promotion will likely work for Keaton, but this strategy will not work for Kerri.

An interesting pricing strategy for Kerri is **price bundling**. We see an opportunity for Kerri to sell four different sauces with four different colors, and four different stories packaged in one final product. This product would be an exciting way for customers to receive the entire experience of The Smokey Mountains and Red's Bar-b-Cue Sauce. They would be able to try four different flavors for one final price. Price bundling would meet her target market that is interested in culinary adventures, is not price-sensitive, and enjoys a storied brand. This is a chance for Kerri to be creative in her packaging of the products; she can have the story of Red's Bar-b-Cue sauce on the outer package and an individual story for each flavorful sauce. We believe this is the type of experience that Kerri talks about in the case. It will allow her to keep the different colors of the barbecue sauces, use magical realism, and spread the tradition of Red's Bar-b-Cue Sauce as an experience good.

Finding the Best Promotion

Promoting Kerri's and Keaton's products is an essential segment in reaching their target market, creating brand equity, and developing long term profits for Red's Bar-b-Cue. In today's world of constant media and promotion, we are going to analyze the best way for Red's Bar-b-Cue to reach those goals while developing relationships with their customers through an integrated marketing communications strategy. We will begin by analyzing possible promotion avenues to



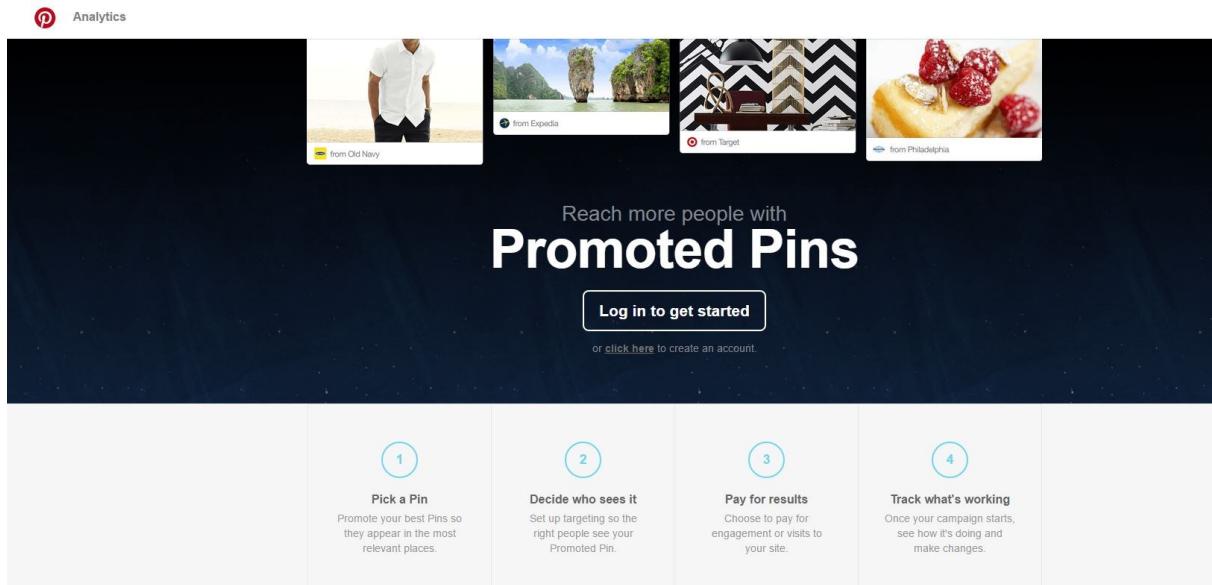
pursue, and then cater those methods to Red's strengths in a way to best promote the company.

Five Major Strategies for Success

Within promotion, there are five major strategies that can be pursued in order to develop product awareness. Each of them has their own set of strengths and weaknesses that can help give off a specific brand to target segments. By strategically choosing from these five, we can promote Red's Bar-b-Cue to the Southeastern United States.

Advertising: Advertising is a form of paid promotion that is sponsored by a company, allowing them to deliver their value proposition and persuade a target market to engage with their brand. Advertising is one of the most classic ways to reach a large market quickly. As cited by the Harvard Business School, advertising develops long term profitability for products. Today, advertising can happen in many more ways than just a print or TV advertisement. With the creation of social media and digital platforms, there is a vast array of ways to advertise a product. However, advertising can be costly, and it is difficult to see immediate jumps in sales for many companies.

We recommend that Kerri implement lower cost, digital advertisements on Pinterest and other social medias to best reach time starved “foodies”. By starting with advertising on social media, Kerri can deliver her message to her exact target market: the working professional with a limited amount of time and a passion for cooking. Kerri can post recipes that partner with her sauces, and direct these ads at a specific geographic and demographic segment. This strategy is non-invasive, personal, and positions Kerri's sauces away from many of the branded competitors.



Starting with Pinterest, Kerri is able to spend less than she would with TV and print advertising, and she is able to better target her market directly. Additionally, a consumer can be redirected back to Red's website from Pinterest, increasing click through rates and continuing the consumer life cycle with the brand.

Sales Promotion: Sales promotion is centered on creating short term incentives to purchase from a company. This is where we see discounts, pricing promotion, and coupons. For a brand that is trying to penetrate a commodity market, this can be an effective way to differentiate yourself by price point.

For Kerri, we do *not* recommend utilizing sales promotion. With her value proposition fitting in the more for more position, using sales promotion can “cheapen” a brand in the customers mind and fail to promote long term profits. With her magical realism and customer experience being her product differentiator, sales promotion can confuse the price for a lack of quality.

Personal Selling: Personal selling uses a company's sales division to directly promote a product or service. This can be very effective when building customer relationships and understanding more of what your market wants out of a product.

Due to sheer costs from hiring and maintaining a sales department, we do *not* think this avenue of promotion is worth pursuing. While this is one of the most personal methods of promotion, it can be very costly. Hiring and training a salesforce is expensive, and it must be considered before proceeding with this option.

Public Relations: Public Relations involves the *indirect* promotion of a brand. This can many times be seen as either press releases, news stories, or sponsorships for events. Public Relations is unique in the fact that it comes across as more natural than advertising. Public Relations has a very strong potential in the digital world with news and articles continually at our fingertips.

Kerri has enormous potential to give back to the community and be a brand that cares. By applying much of her promotional efforts in public relations, Red's barbecue sauce will give a personal appeal that will help Kerri build the brand as one of being sustainable, friendly, and local. While advertising will be the first impression, public relations will allow us to build the actual personality of the company.

We see this being done through strategic sponsorship with local barbecue festivals and blogs in the Southeastern United States. One example of a local festival to partner with is the Memphis in May festival located in Memphis, Tennessee. Their mission is "a 501-C(3) not-for-profit,

community-based organization that contributes to the economic growth of the community, fosters civic pride, promotes awareness of Memphis heritage and builds international relationships." With roots in sustainability and local story telling, this sponsorship is a great opportunity for Kerri to promote her brand within a market that is likeminded. Additionally, blogs like Grill Girl's "Barbecue Master" (<http://barbequemaster.blogspot.com>) have potential to create brand ambassadors for Kerri's product with little cost incurred.

Direct Marketing: Direct marketing is the most personalized digital strategy to reach a customer segment. Today, we see trend in personalized digital marketing by utilizing data from consumers and an individual's personal preferences in the form of social interaction.

With Kerri's target segment being the time-starved working professional, we can save Kerri's market time and avoid disrupting their day through direct marketing. A major way that this can be done is by educating the consumer. Kerri has a great opportunity in the fact that building an experience with food has opportunities in not only the product, but recipes as well. One way this could be done is by offering recipes that fit the respective sauce bought by the individual, and teaching them about other great ways to use Red's barbecue sauce in their busy day. Our recommendation is to do this through an email marketing and utilizing Pinterest and social media once again. Platforms like Mail Chimp and Salesforce Marketing Cloud provide options for small businesses to use purchasing data to create highly personalized emails. This strategy creates a personal experience with the user, and makes Red's seem more human as a company.

Comparing that to Keaton, we shift from the buying experience to more of a commodity focused IMC. Keaton is less concerned with making people experience the brand in a personal



way. Therefore, avenues like direct marketing can be costly and ineffective. Advertising would also prove to be ineffective, as they would be competing with the budgets of major sauce brands with much larger budgets devoted to marketing. Avenues like sales promotion might prove to be more effective, as it would tie in with Keaton's pricing strategy, and allow him to undercut the price-sensitive market. The one unifying strategy between Kerri and Keaton is public relations. Public relations still would prove to aid Keaton, as it is unpaid promotion, and he could find ways to generate a buzz around his brand as a competitor to the big name barbecue giants. Also, push marketing and in-store advertising are an avenue that will keep the brand equity up over the long term.

Developing the Face of Red's Barbecue Sauce: Painting the Picture

The Customer Lifecycle: Choose your story

Red's emphasis on creating value for their customer is no different when communicating through promotion. We recommend that Red's stays true to their nature and uses communication tools that make the consumer feel like they are sitting in the restaurant, hearing the stories of each sauce directly from Red.

To achieve this voice in communication, we recommend a consistent layout, word hook, and a character hook. By utilizing all three of these strategies, we can create an in-depth personality behind Red's and allow the consumer to build a relationship with the brand.

A consistent layout will give brand cohesiveness across the promotion platforms of the IMC and allow the consumer to recognize the product when they are interacting with it. Though Kerri is introducing a line of new products, we can still keep several design consistencies across the

flavors so that we can recognize it as one cohesive brand. Things like heavy imagery of The Smoky Mountains, a base color palette (we have chosen greys and blacks), two basic fonts, and similar diction allow the consumer to recognize each product as a part of something greater. This will play true to the promotion as well- they will focus on showcasing the products and barbecue recipes using the same design. Each product will be differentiated with the specific design details such as each individual story. This will be done through the physical story, color of the label/sauce, and the character hook image.

For a word hook, we recommend this option in order to deliver a quick value proposition and allow the consumer to understand the personality behind Red's Bar-b-cue Sauce. The hook could be as simple as the value proposition, "A story worth tasting". Most competitors in the industry will have a word hook, but where Red's Bar-b-cue can differentiate with Kerri's product is by tying the stories in the product with their word hook stated above. By creating these brand ties, the consumer will be able to comprehend the product message and the promotion as one unified image.

The recommended character hook provides a vehicle for Kerri's Magical Realism strategy. By creating a character for each of her products, Kerri has the opportunity to develop the different cultures surrounding The Smoky Mountains. With family history at the epicenter of Red's Bar-b-cue values, her interest in the Native American Community, and her newly developed smoky flavor, we developed four characters to identify with: Red, Mama, Chief, and Wanderer. Consumers can identify with each story- whether it be with the sweet honey barbecue from mama and her family, or with the smoky mystery behind Wanderer. This allows the Magical Realism to shine through the consumer and further develop the customer experience.



Connecting the IMC to consumer experience

With all of the strategies laid out, we want to provide you with a visual representation of the customer experience within the Red's Bar-B-Cue brand. The core of the IMC is the website, which will unite all of the different promotion strategies, as well as provide avenues for Kerri's target segment to engage with the brand via social media, e-mail subscriptions, and product stories.

The website will be centered on the idea of Magical Realism, product variety, and color as they are amongst the most valued characteristics by Kerri. When the user first visits the page, they will immediately see the logo, work hook, and each of the four flavor options. This allows the consumer to quickly understand the company. Additionally, at the tool bar there will be a tab called "Contact" (Social Media and Inquiry), an "About" tab (More on the company's story), and a "What's Next" button, which we will explain further in a moment.

Following the first impression, they are next instructed to interact with the brand by clicking one of the four major sauces. Here, we are able to engage with our consumer. They will dive deeper into the Magical Realism of Kerri's characters and their respective story. While on this page, the user will also be able to click onto a Pinterest page that has recipes to complement each flavor.

At the bottom of each of these pages, there will be a button titled "What's Next?"

What is "What's Next?"

"What's Next" is going to be an avenue for Kerri to promote her value of sustainability, as well as engage heavily with consumers. "What's Next" seeks to answer the question:



What happens to your bottle of Red's Bar-b-Cue after you're done using it?

This project will ask customers to share their ideas of how to best use their bottles of Red's for the purpose of recycling the bottle. For some, that may be creating a pot for their new herbs and spices, or maybe it is used as a jar again for homemade jams. Here, the consumer is able to tell their own story, and show the things that they care about. It opens a direct line to passions that align with Red's Bar-b-Cue: family, cooking, and quality. Red's is seeking to give their family secrets and stories to the customer, and "What's Next" is a way for the consumer to welcome us back to their homes and share their stories.

We recommend a high quality bottle to fit the brand of the product, so something like a mason jar would be fitting for an effort like this. Using a high quality package for the product makes consumers less likely to throw it out. By making this idea public, Red's is provoking creativity and engagement from their customers, all while promoting themselves as a brand that cares about the lifecycle of their product.

Potential to go viral with this campaign is plausible, due to the fact that it promotes sustainability of the sauces, which is a topic that is expected to be amongst the top 10 food trends in the United States according to restaurants.org. Even the working, time limited professional acknowledges that sustainability is important. This viral campaign, partnered with the promotion strategies and customer experience will be able to paint a full picture of Red's as being caring, delicious, and sustainable.





CHOOSE YOUR PATH

ABOUT CONNECT WHAT'S NEXT?



RED'S ORIGINAL

the one
and only

FOLLOW RED

SMOKIN' SAUCE

finding the
Smokys

FOLLOW LONESTAR

GREEN CHILE

*a different
sort of heat*

FOLLOW CHIEF

TENNESSE HONEY

straight from
mama's heart

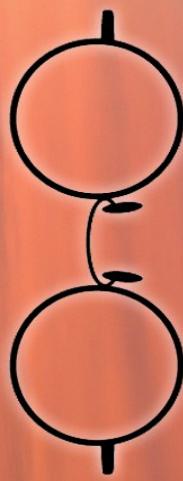
FOLLOW MAMA

A STORY WORTH TASTING.



ABOUT CONNECT WHAT'S NEXT?

THE STORY OF RALPH EARL "RED"



**RED'S
ORIGINAL**
the one
and only



NEED IDEAS FOR DINNER?
WE HAVE YOU GLAZED.

Check out the "Red's Original" Pins
for recipes that go great with Red's.

WHAT'S NEXT?

FOLLOW RED



Telling the Red's Story at Home

We see this viral marketing style as a cycle. First, the customer goes to the website and decides to read the magical realism story behind one of the sauces that interests them. While reading this story, the customer sees an idea for a spicy pulled pork barbecue and slaw combo in the suggested recipes. The customer loves slaw on their pork barbecue and decides to order the product from the website or pick it up in store. They cook the recipe using Red's barbecue sauce and take it to a super bowl party. At the party, people are blown away by the flavorful pork barbecue and want to know about the sauce. Luckily, the customer cleaned out the empty jars and replaced them with the slaw recipe from the website. The people at the party can read the magical realism story on the product and learn more about Red's barbecue sauce. Our customer posts a picture on his or her Facebook, Twitter, Instagram, and Pinterest and they tag Red's barbecue sauce in their post and we are notified. Red's marketing team can reply to this creative use of our product creating a one to one interaction with the customer. This whole experience will lead current customers to be creative in their sustainability practices, will maintain Red's barbecue sauce positive brand image, and will develop future customers through this viral marketing experience. This is a cheap, fun, sustainable way to market to customers that embodies Kerri's values.



OPERATIONS



Production Methods

Production management has proven to be one of the biggest factors in deciding the fate of new products. As one of the first quantifiable steps taken once you have settled on the soft attributes of the product through marketing it is vitally important that production is met with thought and reason. As we approached these decisions and spoke with all three of you about Keaton's idea we came to the conclusion that there were two main goals to assure that the product quality and product cost are kept within check. Red's Bar-b-Cue has become a staple of the BARBECUE landscape in Tennessee, and through the management of the production methods our team sees the potential for Red's Bar-b-Cue to become a BARBECUE staple throughout the South-eastern United States.

Decision Tree Evaluation

We started this evaluation by creating three **decision trees**, each of which can be found in the appendix listed as appendix 01-03. The first decision tree represents the entire decision process walking through whether or not you should take on the task of producing the sauce in a Red's factory or outsourcing to one of two companies. The two companies, Sierra and Dragon Foods, have a more detailed decision tree that contains the probability of each outcome as well as the cost of goods sold (cogs) of each decision.

Sierra has a very complex model with 4 separate ending cost of goods sold. **The average price for this product will be \$1.19**, however the process to get to that value is complicated. If you choose to go with Sierra the process will go as follows, you will receive a sample of a large batch from Sierra and will need to evaluate whether it meets the famous Red's Bar-b-Cue standards. From our estimates, 80% of samples will be to the standard, while 20% will not. If

you accept the sample, you are obligated to accept the batch and will be shipped in for final evaluation. Even though the sample may have passed inspection, there is a 10% chance that the batch does not meet your standards and will need to be reworked in-house for a cogs of \$1.21. However, 90% of the good samples will come with a good batch and will give you a cogs of \$1.15. There is still a 20% chance that Sierra would be sending your team of a bad sample, and if you were to determine the sample was bad you are faced with two options. You are able to rework it in-house at your facilities for a cogs of \$1.40, or you can ship the sample back for further evaluation. If shipped back, Sierra would either rework the entire batch for a cogs of \$1.35 if they found the batch to be bad, which would happen 80% of the time, or they would find the sample was an outlier, 20% of the time, and your cogs would be at \$1.15 similar to the value on the good sample with the good batch.

Dragon foods has a very simplistic model, also found on the second appendix diagram there is a flat fee of **\$1.42 for each bottle**. With Dragon Foods they are willing to take back any poor quality batches with more than a 5% defect rate and return it for the same \$1.42 you already paid. This option, while being much simpler, will result in a much higher price.

There are three other options that all stem from the decision to produce the sauce in-house, all of which can be found in appendix 3. The simplest option is to move forward with the current setup of your production facility. Although we would need to increase the workers, we are confident that while the machinery may not be of the highest quality, but it can support the demand levels we expect as long as the staff is expanded. We have worked the wage expenses into the cogs for the following numbers produced in-house. If you continue with the current machinery you will have a 60% success rate leading to a \$1.22 cogs, however the remaining 40% failure rate will result in a \$1.35 cogs. The **average cogs per unit based off these prices and percentages is \$1.27**.

The other two options stem from a decision to invest in new machinery that will help automate your filling and bottling process. Currently our team has found some areas of concern that we will expand on later in this report detailing the state of the control of your processes. With this investment in newer, and updated, machinery we are confident your processes will see less variation and result in more success on keeping the high standards of Red's barbecue sauce. **The machinery will cost \$850,000** and will also result in a second decision to be made of whether or not to make a secondary investment that will help utilize the machinery with better training and processes to **maximize the machine's value for \$200,000**. If you decide to make the machinery investment, but not the additional \$200,000, the success rate will be 65% and a cogs of .77 cents, as well as a failure rate of 35% and a cogs of .895 cents, this decision will result in an **average cogs of .81 cents**. If you make both investments your success rate jumps to 90% with a cogs of .78 cents, and a failure rate of 10% with a cogs in that scenario of .79 cents. **The average cost per unit with both investments will be .79 cents.**

To summarize there are 5 options to choose from outlined below. We have also put in the appendix the positives and negatives for each option for you to look through and evaluate.

Information

- Option A:** Produce In house with current machinery
- Option B:** Produce in house with new machinery
- Option C:** Produce in house with new machinery and additional investment
- Option D:** Sierra
- Option D1:** Sierra Good Sample
- Option D2:** Sierra Bad Sample Rework at Reds
- Option D3:** Sierra Bad Sample Ship back
- Option E:** Draggon Foods

Analysis of Cost

The second piece of our analysis worked to project out the actual costs at different order quantities. We worked through each of the options and built a dynamic model pictured in the appendix. The first step was to estimate the cost per unit mentioned in the previous paragraphs, and then multiply that against the units produced. We started with the base line of 1,450,000 units which we projected from our financial reports for year 1 demand. From here came additional costs we felt should be considered which fell into three categories: Sales lost to necessary machinery setup and training, money spent on additional machinery, internal quality assurance. The money spent on additional machinery was the most straight forward estimate because we know the machine costs \$850,000 dollars, as well as an additional \$200,000 for the enhanced efficiency. However, it was the other costs that we felt made a bigger impact on our eventual recommendation. If you do purchase the machines, there will be 115 days of lost productivity to account for. It takes 90 days to get the financing for the machine as well as an additional 25 to go through set up, training & test runs. We came to the conclusion that if you pursue options B or C you will have an **opportunity cost of \$1,324,863** which is reflected above.

Revenue lost due to new machinery	
Year 1 Quantity	1450000
Days/year	365
Days Delayed	115
Product price	\$2.90
Revenue Lost	\$1,324,863.01

The final cost we considered was the loss of brand equity through the outsourcing of the sauce manufacturing. Internal quality assurance represents the loss we feel Red's will see if they outsource to either Sierra or Dragon Foods. We took the year 1 demand and divided it by the number of purchases per year each consumer, from a study done on your

Internal Quality Assurance	
Year 1 Demand	1450000
Customer Purchases/year	10
Customer Base lost	2%
Average years a customer	3
Price per bottle	\$2.90
Customer Lifetime value lost	\$252,300.00

product, buys. We then came to the conclusion that 2% of consumers will leave because of a bad experience that may have been avoided if you had made the sauce in-house. We then took that lost consumer base, which was 2,900 people, and multiplied it by the number of purchases per year they make, as well as the average length of a retail consumers loyalty, 3 years. This gave us the total number of purchases each consumer makes and from that we were able to determine that if out sourced you would be **losing \$252,300**.

After factoring in all of these different costs our team built a data table to show you the different prices per option, per bottle, based upon different cumulative order quantities. The next page displays this graph containing 17 different order quantities. In bold are a handful of meaningful quantities that we used to make our final recommendation.

Cumulative Units Ordered	Cost Per Bottle for each option					
	Option A: \$ 1.27	Option B: \$ 2.31	Option C: \$ 2.43	Option D: \$ 1.36	Option E: \$ 1.59	
500,000	\$ 1.27	\$ 5.16	\$ 5.54	\$ 1.69	\$ 1.92	
750,000	\$ 1.27	\$ 3.71	\$ 3.95	\$ 1.52	\$ 1.76	
1,000,000	\$ 1.27	\$ 2.99	\$ 3.16	\$ 1.44	\$ 1.67	
1,250,000	\$ 1.27	\$ 2.55	\$ 2.69	\$ 1.39	\$ 1.62	
1,450,000	\$ 1.27	\$ 2.31	\$ 2.43	\$ 1.36	\$ 1.59	
1,700,000	\$ 1.27	\$ 2.09	\$ 2.18	\$ 1.34	\$ 1.57	
1,950,000	\$ 1.27	\$ 1.93	\$ 2.01	\$ 1.32	\$ 1.55	
2,200,000	\$ 1.27	\$ 1.80	\$ 1.87	\$ 1.30	\$ 1.53	
2,450,000	\$ 1.27	\$ 1.70	\$ 1.76	\$ 1.29	\$ 1.52	
2,700,000	\$ 1.27	\$ 1.62	\$ 1.67	\$ 1.28	\$ 1.51	
2,950,000	\$ 1.27	\$ 1.55	\$ 1.59	\$ 1.27	\$ 1.51	
3,200,000	\$ 1.27	\$ 1.49	\$ 1.53	\$ 1.27	\$ 1.50	
3,450,000	\$ 1.27	\$ 1.44	\$ 1.48	\$ 1.26	\$ 1.49	
5,500,000	\$ 1.27	\$ 1.21	\$ 1.22	\$ 1.23	\$ 1.47	
7,500,000	\$ 1.27	\$ 1.10	\$ 1.10	\$ 1.22	\$ 1.45	
10,000,000	\$ 1.27	\$ 1.03	\$ 1.03	\$ 1.21	\$ 1.45	
12,000,000	\$ 1.27	\$ 0.99	\$ 0.99	\$ 1.21	\$ 1.44	
48,000,000	\$ 1.27	\$ 0.86	\$ 0.84	\$ 1.19	\$ 1.43	

The first meaningful quantity is 1,450,000, this is the projected year one demand rate, and at that point Option A would be best. The following chart goes over each bolded quantity, the best option at that point, and the cost per bottle at that point.

Cumulative Order Quantity	Cost per bottle	Option number	Significance of the value
1,450,000	\$ 1.27	Option 1	Year 1 demand
3,200,000	\$ 1.27	Option 1	Year 1-2 demand with expansion
5,500,000	\$ 1.21	Option 2	Year 1-3 demand with expansion
12,000,000	\$ 0.99	Option 2 & 3	Year 1-5 demand with expansion
48,000,000	\$ 0.84	Option 3	Year 1-10 demand with expansion

As the quantity gets larger throughout the years the best option moves from 1, to 2, to option 3 once you hit the total quantity produced during the 10-year period that we are evaluating. We feel confident from these results that it was clear we should produce in-house, and our decision first was between option 1 or option 2 & 3. We believe in the product and its staying power in the market, and it was because of this that we felt option 1 was not a good investment because if the product does well you risk losing over .30 cents per bottle by year 10. From there, we evaluated options 2 & 3 and used appendix diagrams 06 which show the total cost and a calculation we did taking the total cost at 48 million units for the two options. From there we discounted this value back to present value and found that the \$1 million in total cost savings becomes roughly **\$480,000 in savings** which we felt was enough to fund the \$200,000 outflow while you work to grow this product.

That is why, after careful consideration, we felt very confident in recommending that you move forward with **producing in-house and purchasing the new equipment as well as making the additional investment.**

Production Schedule

Network Diagram Evaluation

Our team created a **network diagram** to identify the different paths that Red's Bar-b-Cue can choose to finish the project. Based on the network diagram, the time needed for Red's to com-

plete the project is 306 days. On appendix 07, you can see the network diagram. By analyzing the route of activities from the beginning to the end of the network diagram, our team was able to determine the critical path of the project. It is important to understand the critical path because any delay in this path would cause a delay in the overall project. Since time is crucial in project scheduling, the manager must focus on the activities that are on the critical path and devote the necessary resources to these activities to ensure that the project is completed on time. Based on the information from the network diagram, the **critical path would be activity 1, 3, 5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, and 21**. Each of these activities are highlighted in red on the diagrams on appendix 07. Any other activity besides these would contain slack which is shown as the middle number in any of the black rectangles. The slack allows the manager to delay certain activities without delaying the overall project. Slack also helps the manager fix the schedule when unexpected events occur that affect the project. According to the network diagram, there are six activities that have slack. **With activity 7 having the largest slack among all activities with of 90 days**. This slack comes from the lack of dependence on this activity, and gives your team ample time to either expand this activity and take a deeper market study, or postpone the activity to the late start dates to focus on other activities. Slack will give your team the opportunity to have some say in which activities you want to focus to make sure you are not having to balance 3 or 4 very important activities at the same time. Using the late start dates found in the bottom of each rectangle tells you the latest date you are able to start the activity on and still complete it on time.

In the appendix 08 you will find a second network diagram with updated estimates based on optimistic, most likely & pessimistic time estimates. **As you see the expected project time grows to 313 days**, which cuts it much closer to the 315 days, that you, Keaton, would like to finish the project. The critical path does stay the same for this new diagram, however there are some small shifts that our team feels more confident about putting our name behind.

Gantt Chart

A Gantt chart is another graphic our team utilized with the purpose of allowing a better understanding of the project as a whole. It provides a clear visual in the order of the activities, as well as when the activities take place. Having a Gantt chart is important because it avoids confusion regarding the order of the activities, and it allows Red's to keep track of the activity until the project is complete. It can also clarify how the activities are related to each other since there are some activities that can only be done after certain activities are completed. The activities are visually shown by order based on how they are positioned. There are arrows pointing from the activity that needs to be completed before the other activity can begin. For example, forecasting consumer sales in activity 8 can only be done after the activity of conducting market test, in activity 6, or evaluating market data is complete. As shown by the Gantt chart, there are activities critical to the project. The red lines are the activities that need to be completed on time or the project will be delayed. The dark blue bars in the middle of the bars shows the progress of the activity. If the dark blue bar fills up the bar, then the activity has been completed. But, in the case of activity 10, the dark blue bar only fills up half of the bar, meaning that the activity is 50% complete. The Gantt chart also informs the manager about the time when the resources need to be allocated or anticipated. For example, factory stock would be produced on activity 18. The manager must prepare the materials beforehand, so when the time comes, there would not be a delay in the activity due to the materials not being available. The use of these charts, albeit simple, can make an enormous difference and work to emphasize the importance of planning and staying on schedule.

Estimated Time

With the updates given regarding the optimistic, most likely and pessimistic times for the project, we derived the expected time for the whole project to be **313 days**. The critical path of 1, 3, 5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 21 is the same as the critical path derived from the table in exhibit 6, and using this critical path we were able to use the expected time formula to find the expected time value for each of the activities. Using the pessimistic and optimistic times we were able to derive the standard deviation for each of the expected values, and using the standard deviation were able to derive the variance of each activity using the table on appendix 10. Summing up all of the variances in the critical path, we found the total variance within the critical path and taking the square root of the critical path we were able to derive the **standard deviation of 12.164** for the critical path. Using Keaton's target project length of 315 days, the expected time of 312.833 days and standard deviation of 12.164 the probability that the project will be **completed by the target date is 57.07%** when automating the process.

Estimated Time without Automation

Keaton has to make the decision of whether he would like to automate the process, or keep the process the way it is. Automating the process adds on activities 16 and 17, which are the acquisition of the machines and proper steps to ensure the machines are ready to be used for production. Removing these steps from the project schedule removes these steps from the critical path. If activities 16 and 17 are included in the schedule they are the predecessors of activities 18, 19, and 20 so the removal of activities 16 and 17 would link activity 15 and activity 18 together. Using the new critical path of 1, 3, 5, 6, 8, 9, 12, 13, 14, 15, 18, 19, 21, the ex-

pected time of this new critical path was dropped down to 191.833 days, and the **standard deviation dropped down to 2.804**. The table with the numbers used to derive these values is in appendix 11. Through the reduction of the expected time by 121 days, the probability that the project is **completed in the target number of 315 days is 100%**. Activity 16 was the main source of variation and time within the critical path, thus removing that activity brought down the expected time and project standard deviation drastically. However, as stated earlier, even with the lost productivity of 115 days that we took into consideration, in the long run not only will you have a much higher success rate on the production process going from 60% to 90%, you will also have a much lower cost per bottle as you move into the 4th and 5th year of production if machines are purchased.

Kerri Analysis

The production schedule for Kerri's project would be similar to Keaton's project when the process was automated. Because her processes and product are completely separate from Keaton's plan she will need to start completely from scratch. There is the decision on whether or not Kerri wants to automate the process, if she chooses to automate it she will have to adjust the schedule to account for the purchase and setup of equipment.

Process Control

Statistical Process Control Evaluation

Statistical process control is a graphical tool that is used to determine if the variation involved in the process is due to common cause, conditions that cause everyday variation within a product, or if there is something else causing the variation during the production, special cause. When looking at the reason for the variation within a product, it is important to look at the charts to de-

termine if the cause is common or special. Depending on what the cause is considered, different actions will need to be taken in order to create a beneficial result from the findings. If the wrong step is taken, company resources would be wasted and could set back the company in the long run.

Using the randomly chosen sample from the test production run by Keaton, we were given the weight of 5 bottles from 10 different samples. Using the averages of the means from each of the samples, as well as the average range from the 10 samples we were able to determine limits that were able to help us determine whether the processes were in control or not. Through the analysis of the charts that were created, it was determined that the **process was not in control**. For the x-bar chart, available in appendix 12, there was a clear pattern occurring regarding the average weight of each sample. Along with this, from sample 3 to 4, there was a big drop in the weight and from 4 to 5 there was a big gain in weight of the product. These leaps and drops were of about 3 standard deviations. This change shows that the process was out-of-control and needs to be changed before a higher production level begins.

Also, looking at the range chart, available in appendix 13, we have reached the conclusion that this chart shows that the process system is **out-of-control as well**. To start out, the first four samples were all a negative value, consistently near the range of the sample taken right before. The later samples also showed that the process was out-of-control, the final two samples showed an upward trend and were both near the control limit. While they did not exceed the upper control limit, there is a cause for concern that may be determined by the proximity of the final two points to the upper control limit. Another reason that there is concern about if the graph is in-control or not is the trend of the line over the last 4 points. If there was fluctuation around the line drawn between the points there would be no problem, but because all the points were under the line this showed us that the process was not in control. Because there were two caus-

es for concern within the range chart, this process needs to be looked at to ensure that variation is reduced and consistency is increased.

Special Causes

Because the process is out-of-control, the system needs to be evaluated to find the cause of the problem. One of the main sources of variation within this process is that the bottles are being controlled by human who is operating a machine. The human error could result in fatigue, ability of operating the machine, or lack of attention to detail. Because the system was determined to be out-of-control, there has to be **special cause**. There are steps that can be taken by Keaton to eliminate this problem. One is looking for differences between individual points and take actions based on this. Because there were major differences in some of the means of the samples looking at the individual points is more beneficial than looking at all of the data in general. Especially at point 4, observing the change in the points before and after will provide valuable insight for Keaton. After the differences are looked at, Keaton can take steps in order to make sure that this variation is limited in scale. There are steps that could be taken to reduce the pattern and cause for concern that results from the interpretation of the control charts. Ways to reduce the variation among this process, especially with a human component in the operation of the machine, is to provide more training for the employees operating the machines.

Process Control with Additional Investment

Through our recommendation to purchase the new equipment and do the additional investment of \$200,000, the production of the barbecue sauce there will be an **30% increase in the efficiency** of the process, going from 60% success rate to 90% success rate. While there needs to be work done to ensure that all of the variation that stems from the production is common

cause, this 30% increase in efficiency is a significant reduction in the variation that stems from the production of the barbecue sauce. The purchase of new equipment would cost the company capital up-front, but the return on this invested capital would be made back through the lower cost of producing the product, as well as the increased probability of a successful batch. While the new machinery would not reduce variation all the way to zero, any step that is taken to reduce the variation within a project without dedicating too many resources is worth the effort. After the new machinery is introduced to the process, samples are needed to check if the system is in-control and make sure that there is not special cause variation within the production.

Once Kerri starts production of her line of sauces the processes for those products need to be checked for process control. The same process needs to be used to determine if her production system is in-control or out-of-control, ensuring the system is in-control is one of the major beginning steps of making sure the product is ready for distribution. But, since Red's Bar-b-Cue will have experience in creating a reliable production system, once Kerri's sauces are ready to be started for production the company will be able to react better to the system if it is determined to be out-of-control. After Keaton's new equipment is tested and put into full use, Red's will better know how well the new process works. If the additional machinery proves beneficial for the overall processes of Keaton, then similar machinery can be used in the production of Kerri's sauces once her production starts.

Packaging Evaluation

Choosing corrugated boxes for packaging cannot be taken lightly. When the customer receives the product, the first thing they will see is the packaging which will play a large part in the consumer decision process. Having a good first impression will increase the value the customer perceives on the product. Thus, it will increase the possibility of the customer buying the product again. It is true that the quality of the boxes is important in order to achieve this objective. How-

ever, it is also important to consider the cost, especially when the quality of the boxes from both suppliers is similar. Our team decided to calculate the total cost of the boxes for each supplier, at two different price points, and compare the results. There are two possible suppliers that Red's Bar-b-Cue can choose: Jack in the Box Corrugated or Conner Container.

Jack in the Box

Jack in the Box Corrugated gives an offer where each case has a cost of \$1.25. However, if the order goes beyond 4,000 cases, they will cut the price into \$1.00 for each case. There is a \$150 additional cost for the process and shipment and it will take three working days until the goods are received. The holding cost is estimated to be 25% of the box cost. Since each box can contain 12 bottles, the projected demand of 1.45 million bottles divided by 12, which is 125,666 boxes. Based on these information, our team decided to find the fixed order quantity, which is the amount of inventory to be ordered when inventory in hand falls to the reorder point. On an annual basis, **the amount of inventory that should be ordered each time is 12,280 units**. Since the order exceeds 4,000 units, the price for each case decreases to \$1.00. By knowing the fixed order quantity, our team was able to find the total annual cost. The total annual cost is made up of the total annual holding cost, the total annual setup cost, and the total annual purchasing cost. The total annual holding cost can be found by dividing the fixed order quantity by two and multiplying it with the holding cost per case. Based on our calculation, the total annual holding cost is \$1,535.01. By dividing the demand by the fixed order quantity and multiplying with it the order cost and, our team found the total annual setup cost, which is \$1,535.01. Finally, the last thing we have to calculate is the total annual purchase cost, which is the demand times the cost per case. The total annual purchase cost has the highest cost compared to others, which is \$125,666.67. The total annual cost is the sum of all of these costs. However, since Red's Bar-b-Cue capacity is 10,000 cases, Red's will need to add storage with a cost of \$10,000. The cost

for accepting **Jack in the Box Corrugated's offer would be \$148,736.68**. All of these numbers can be found in the appendix 14.

Connor Container

As for Conner Container, they offer the case for \$1.15. There is \$150 processing fee and they have a capacity of 15,000 cases per day in producing the cases. However, the cases can be delivered on the same day. Since there is a production rate in Conner Container, our team used the formula with usage, which means that we consider the production rate and the demand, while calculating fixed order quantity and each cost. Our team found the **fixed order quantity to be 9,504 cases**. The total annual holding cost and the total annual setup cost would be \$1,322.21 and \$1,322.21 respectively. It has a lower cost compared to Jack in the Box Corrugated. However, the total annual purchasing cost for Conner Container is a lot higher than Jack in the Box Corrugated. Conner Container costs \$144,516.67, which is 15% higher. This cause the **total annual cost to be \$157,161.09**. By comparing the total annual cost of the two suppliers, our team would recommend Red's Bar-b-Cue to accept Jack in the Box Corrugated's offer because it has a lower total annual cost.

Reorder Point

In addition, our team has also calculated reorder point, which is the minimum number of cases in hand that determine the time to reorder the cases again. Reorder point can be calculated by adding the safety stock to the expected lead time demand. The **reorder point for Jack in the Box Corrugated would be 1,773 units and 700 units for Conner Container**. Jack in the Box Corrugated has a higher reorder point because it requires three working days until the cases arrive at Red's.

Costs

Our team also calculated the total annual cost and the reorder point in case Red's decide to expand their business in year five. During this year, the demand is expected to be grow larger because there is a growth in the demand for sauce in bottles. Our team estimated that the demand for cases would be 295,003 units. For Jack in the Box Corrugated, this will cause the fixed order quantity goes up to 18,815 units, Since the fixed order quantity change, this will affect all of the costs. The total annual holding cost and total annual setup cost would be \$2,351.87, while the total annual purchasing cost would be \$295,003.25. Finally, the total annual cost would be \$309,707.00. Since the fixed order quantity is over 10,000 cases, \$10,000 fee was added to the total annual cost, resulted in \$319,707.00, which is 2.15 times higher than in the first year. The reorder point for Jack in the Box Corrugated would be 3,727 units. Conner Container would also have a higher cost. The fixed order quantity would be 14,900 units. Thus, the total annual holding cost and the total annual setup cost would be \$1,979.87. The total annual purchasing cost will increase to \$339,253.74. The total of these three costs would be \$353,213.48, which is the total annual cost. Since the order is 14,900 cases, \$10,000 storage cost was added to the final cost, resulted in \$363,213.48. When our team compared the two results, we still find the total annual cost for Conner Container to be higher than Jack in the Box Corrugated, so accepting Jack in the Box Corrugated's offer is still recommended since it has the lowest cost.

Potential Problems

The potential problem that can happen to either supplier is a delay the shipment. It is possible that the supplier's manufacturing process encounters a problem and causes shipments of cases to be delayed. If the problem happens because of the supplier's fault, Red's barbecue might be able to ask for compensation. However, if the problem is caused by natural disaster, there is nothing Red's barbecue can do about the delay. It is possible that the supplier recalls their product because of the quality problem. This would delay the entire process and affect Red's activi-

ties as well. This is the reason why keeping a safety stock is important. Safety stock can help fix the problem when unexpected events happen. Another problem Red's Bar-b-Cue must be prepared to encounter is about the problems that may arise due to communication issues. Even if Red's gives complete information about the order of the cases, there is still a possibility that the supplier's side makes a mistake. Sometimes this misunderstanding can happen, in order to prevent this problem, it is important to keep track with the supplier and confirm the order to avoid any mistake. It is also possible that the supplier will increase the price per case after a while. When that happens, one of the options Red's can take is asking for the supplier's cost breakdowns. If the reason they want to increase the price is due to the increase in the price of materials, then it might be hard for Red's to refuse their proposal. However, if the cause for the increase in price is to obtain a higher profit, then Red's might be able to turn down their offer by selling them an idea that can help them reduce their cost instead of increasing their price. Lastly, Red's Bar-b-Cue should be prepared anytime when the supplier announces bankruptcy. It is important to have a back-up plan in case the supplier cannot produce goods anymore. What Red's Bar-b-Cue can do is having an idea about who would be the alternative supplier in the case where the main supplier goes bankrupt.

Value from Operations

Every company needs operations in order to achieve its objective. Whether the end product is in the form of good or service, operations plays a significant role in the process. It allows inputs to be transformed into outputs, however its purpose goes beyond that. Operations takes into consideration the efficiency and the effectiveness of the process, the level of efficiency is a key part of value generated from the process. Operations makes sure that the demand and the need of the customers are met and the resources are used in the right amount and in the right way. If the management of the process does not go well, it will lead to an increase in the production cost, which will lead to a decrease in the bottom line. Operations management exists to prevent

this scenario from happening. In the company, operations management, affects the quality, the cost, and the availability of the product, which will indicate whether or not the company can achieve a stronger position in the market.

Finance, marketing, and management revolve around operations. Without operations, these departments would not be able to function completely. The finance department considers all costs, including the one that came from operations, with the information the finance department has they will evaluate the current financial condition and also forecast the future financials of the company. The marketing department promotes the product of the company by understanding what the product can do for the customers and how it will be delivered. The marketing department is able to find to which market segment they should target and how they should approach them. As for the management department, operations helps them by giving the information about the number of workers must be hired or fired, and which skills are required in order to make the operations function effectively and efficiently. All of this information indicates that without operations, the management of finance, marketing, and management would not be able work properly.

A product would not exist without the presence of operations. It is important to create an operations strategy so the production can be maximized, which lead to an increase in the company's profits. Operations starts to add value from the beginning of the process, and it will continue to keep adding value on each step until the process is complete. It begins with choosing the resources for the production process, which includes raw materials, labor, market trend, equipment, and facilities. These resources will be transformed into useful goods as the final outputs, the transformation is where the design, the production, and the quality control come to play. It can be achieved through five P's: people, plants, parts, processes, and planning and control.

The 5 P's

The production depends on the people since the objective of operations is to produce goods efficiently and effectively. It is then important for operation managers to properly train and motivate the workers so they can reduce the time, as well as the cost, to produce the product. Plant is where the facilities of the production come into consideration and the operations manager decides the best design or layout of the building where the manufacturing process will take place. They also make sure the equipment used for the production is functioning properly, and they must anticipate the time when the equipment must be repaired or replaced. Finally, they also make sure that the safety of the operations is guaranteed.

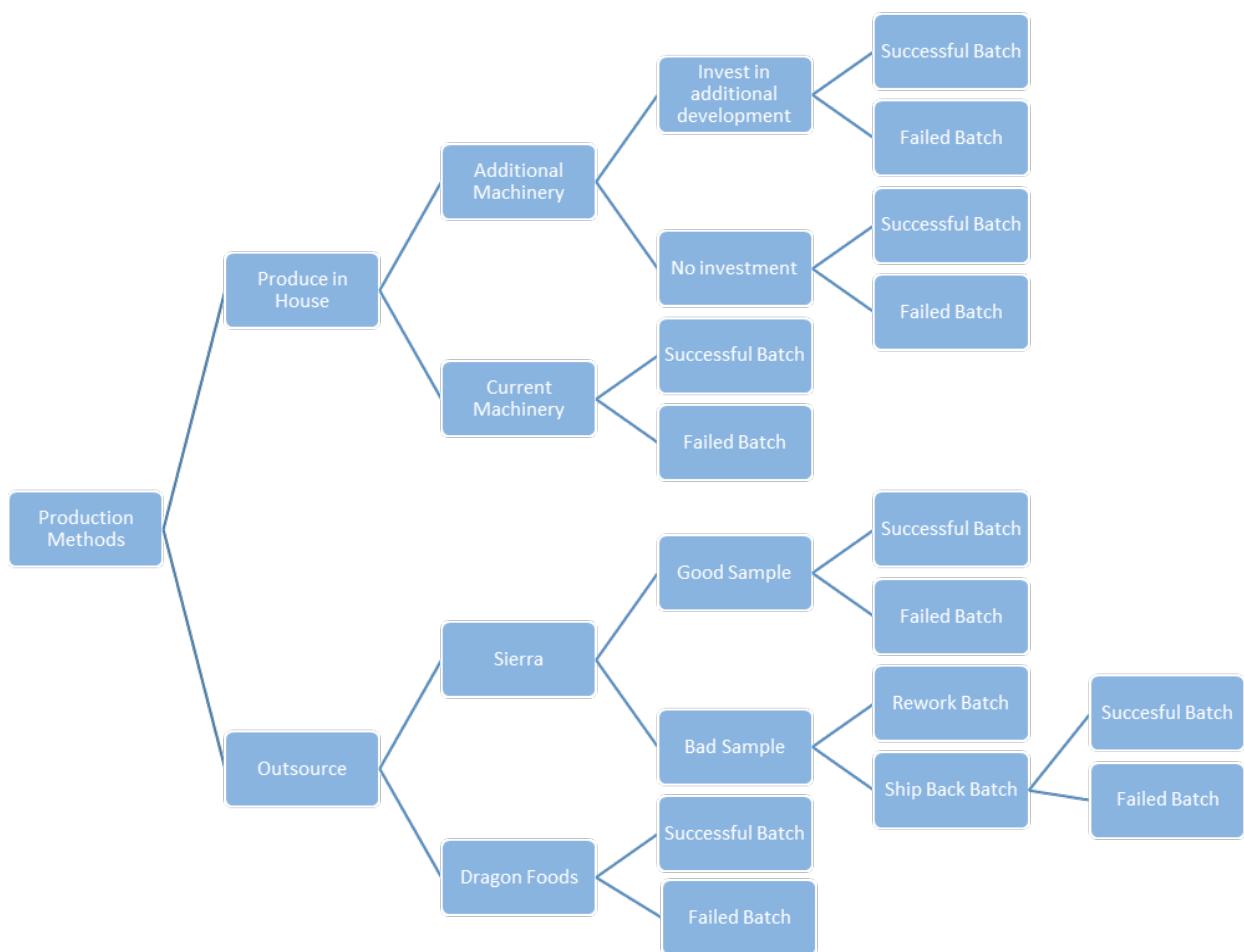
Parts is where the company will decide the supplier for the manufacturing process. For example, Red's Bar-b-Cue is considering which supplier they should use for packaging. By calculating the total cost from both suppliers, they will be able to know which supplier they should use. The processes portion is when the multiple inputs change into outputs, there are many ways to produce outputs depending on the nature of the business. The operations manager must put in considerations about the worker's skills, capacity of production, cost, plant design, and many more. In this part, the goal is to maximize production and minimize cost as well as improving the quality so the desired output can be produced. The last one would be planning and control, this is about how the production should operate to meet the demand. They consider the capacity of the production, the total demand, the delivery schedule, available resources and analyze these factors, so the demand of the product can be met and allow the product to reach the customers. As explained, the transformation process is not a simple thing to do, there are many factor they must put into consideration so the operations can function effectively and efficiently. Each process is planned thoughtfully in order to reach the desired output. The closer the result of the production to the desired output, the higher profitability the company will experience.

Analysis of Suppliers

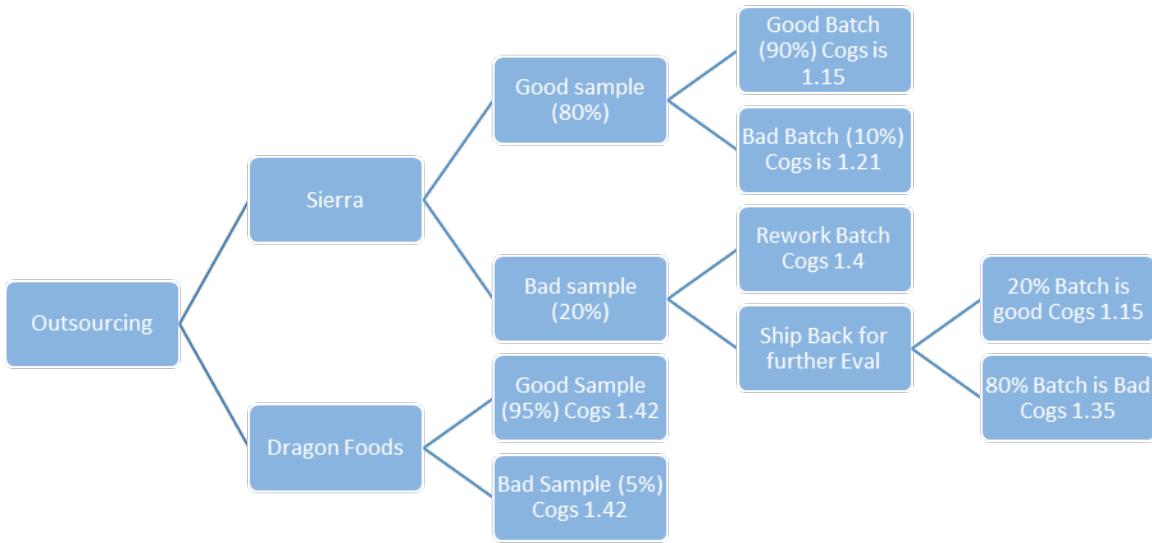
In operations, there are some methods that can be used to support the process. In analyzing the suppliers for Red's barbecue packaging, our team used a method called fixed order quantity. By calculating the fixed order quantity, we were able to know how much stock should be ordered when the stock in-hand falls to reorder point. Knowing the fixed order quantity allows us to calculate the total annual holding cost and the total annual setup cost. With these two costs, and the total cost, we are able to calculate the total annual cost which allows us to choose the best supplier. Our team also used reorder point method to find the minimal number of stock in-hand that trigger the action to reorder the stock. Using the reorder point method prevents stock-out from happening. Network diagrams and Gantt charts are also useful in organizing the activity. Network diagrams allow our team to analyze the schedule of the activity and find the critical path. Any delay in the critical path will cause delay in the overall project, so the manager should prioritize the activities in the critical path. Beyond these methods that we have used, there are models that can be built out to simulate profit lost if there has to be a delay in a process, a complete stop to fix a machine. Even metrics such as the ISO 9000 or the Baldrige award, which test internal and external quality control, can tell a company how they are doing compared to other companies in their industry, and across the world. All of these methods can be used as a way to determine just how much value operations adds to a company.

Operations Appendix

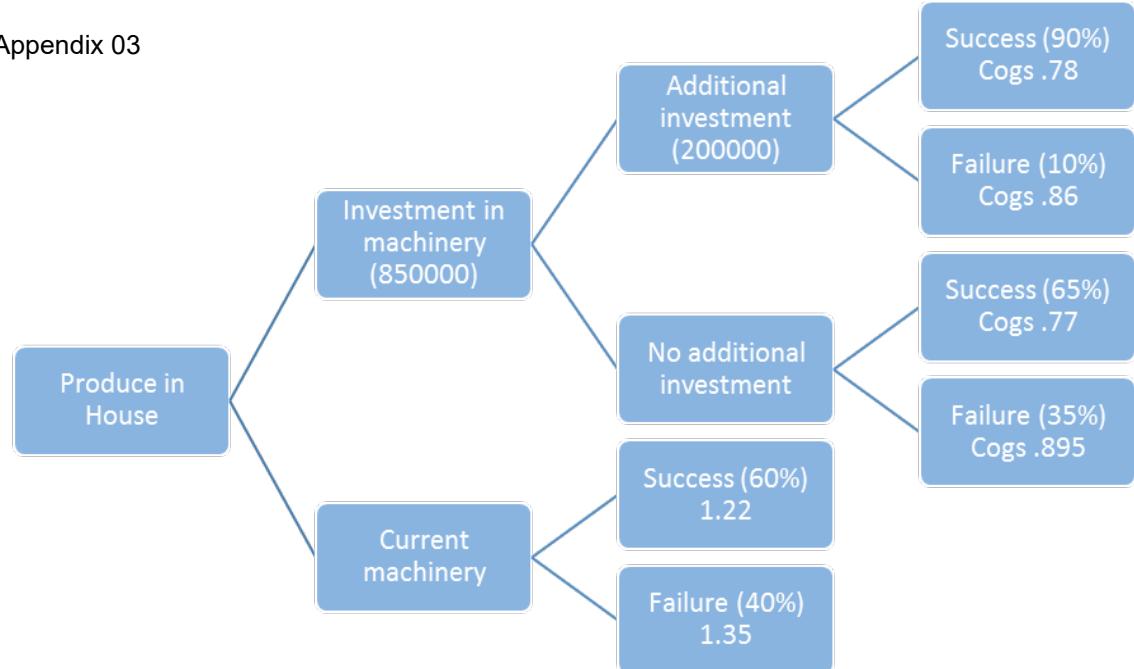
Appendix 01



Appendix 02



Appendix 03



Appendix 04

Information	Success Rate	Failure Rate	Success Cost	Failure Cost	Units Ordered	Additional \$ Spent/(internal quality assurance)	Sales lost due to production Delay	Total COGS	Price per unit with no additional unit considerations	
									Cost Per Unit	Price per unit with no additional unit considerations
Option A: Produce in house with current machinery	0.6	0.4	1.22	1.35	1,450,000			\$ 1,844,400.00	\$ 1.27	\$ 1.27
Option B: Produce in house with new machinery	0.65	0.35	0.77	0.895	1,450,000	\$ 850,000.00	\$ 1,324,863.01	\$ 3,354,800.51	\$ 2.31	\$ 0.81
Option C: Produce in house with new machinery and additional investment	0.9	0.1	0.78	0.86	1,450,000	\$ 1,050,000.00	\$ 1,324,863.01	\$ 3,517,463.01	\$ 2.43	\$ 0.79
Option D: Sierra					1,450,000	\$ 252,300.00		\$ 1,973,160.00	\$ 1.36	\$ 1.19
Option D1: Sierra Good Sample	0.9	0.1	1.15	1.21	1,450,000			\$ 1,340,960.00	\$ 0.92	\$ 1.16
Option D2: Sierra Bad Sample Rework at Reds	1	0	1.4	0	1,450,000			\$ 406,000.00	\$ 0.28	\$ 1.40
Option D3: Sierra Bad Sample Ship back	0.2	0.8	1.15	1.35	1,450,000			\$ 379,900.00	\$ 0.26	\$ 1.31
Option E: Dragon Foods	0.95	0.05	1.42	1,450,000	\$ 252,300.00			\$ 2,311,300.00	\$ 1.59	\$ 1.42

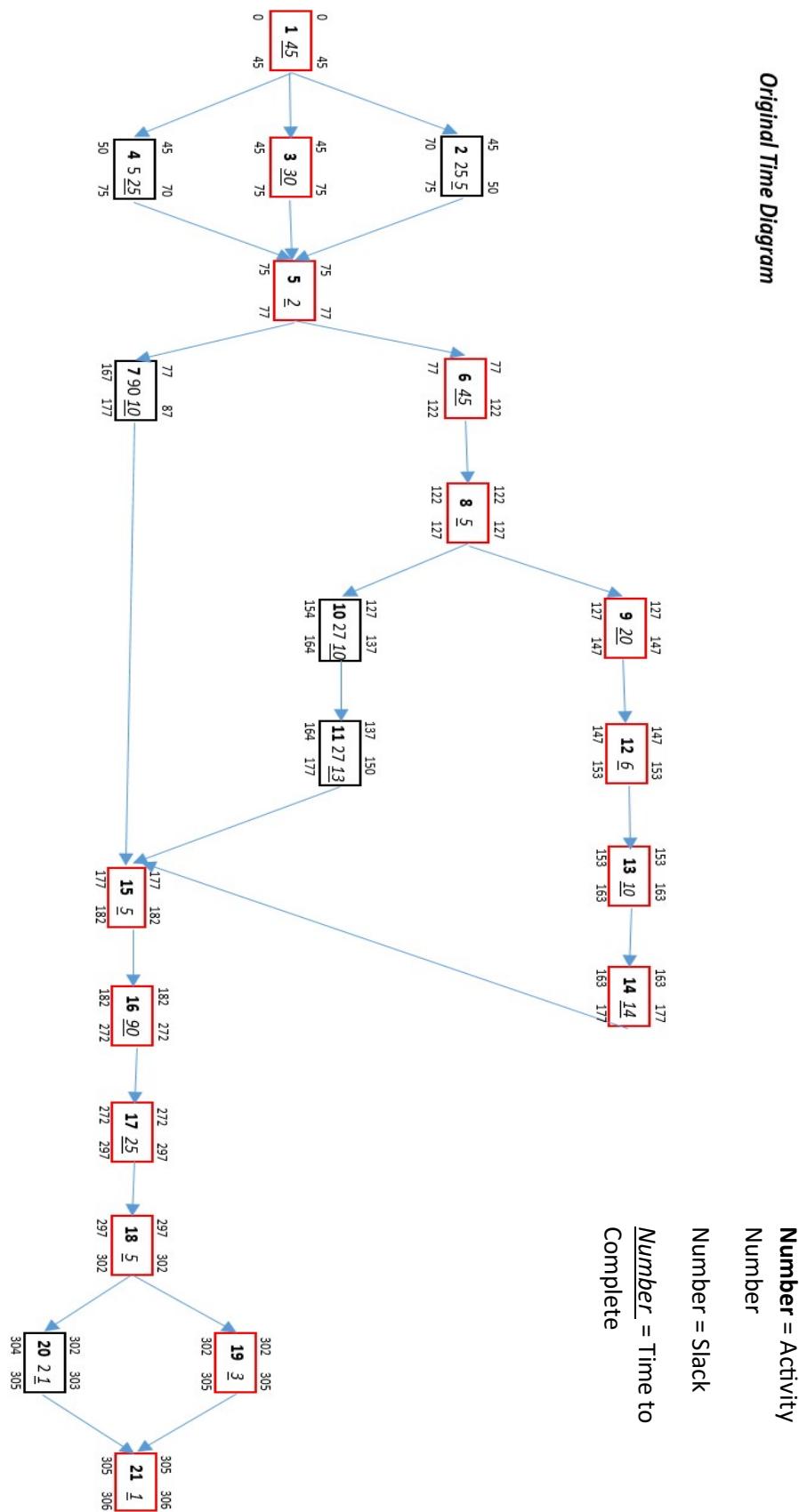
Appendix 05

Information	Pros	Cons
Produce in house with current machinery	<ul style="list-style-type: none"> No need to additional training and lost productivity Knowledge of situation and processes Keep process in house to minimize lost consistency 	<ul style="list-style-type: none"> Lowest success rate at 60% Process may need updating in the future if project goes forward
Option A:		
Produce in house with new machinery	<ul style="list-style-type: none"> Raise success rate by 5% Keep production in house to minimize lost consistency 	<ul style="list-style-type: none"> 850,000 expense that will not be able to be taken back if project is pulled Lost productivity of 115 days
Option B:		
Produce in house with new machinery and additional investment	<ul style="list-style-type: none"> Highest success rate of 90% Keep production in house to minimize lost consistency Very efficient process 	<ul style="list-style-type: none"> 1,050,000 expense that will not be able to be taken back if project is pulled Lost productivity of 115 days
Option C:		
Sierra	<ul style="list-style-type: none"> Ability to focus on marketing & not production 	<ul style="list-style-type: none"> Only the lowest price option between 3,200,000 units and 4,500,000 units
Option D:		
Option D1: Option D2: Option D3:	Sierra Good Sample Sierra Bad Sample Rework at Reds Sierra Bad Sample Ship back	
Dragon Foods	<ul style="list-style-type: none"> Set price point no matter what Highest price of any option at any quantities beyond year 3 Never the lowest cost option Potential for lost control of quality 	
Option E:		

Cumulative Units Ordered

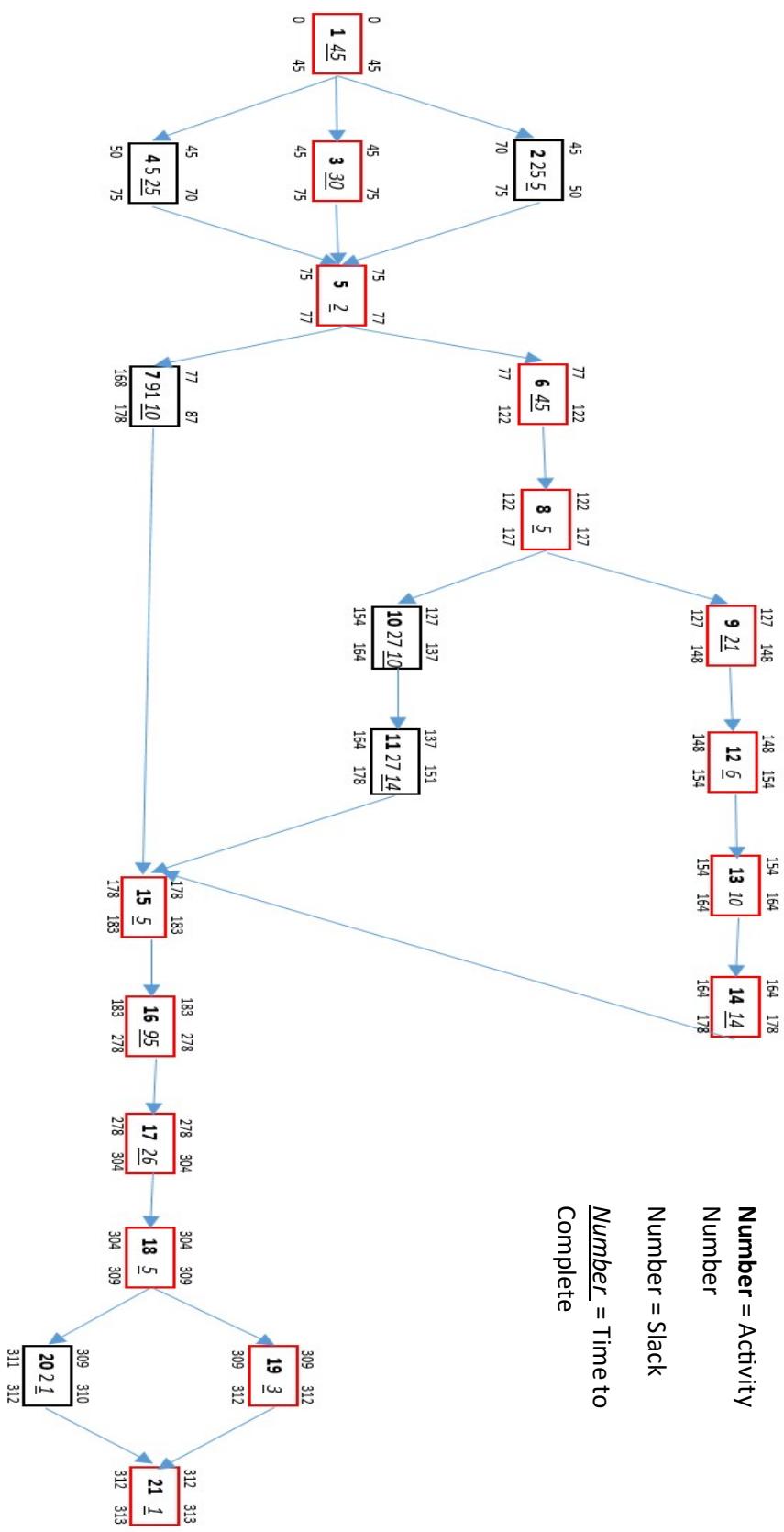
					Total Cost	
	Option A:	Option B:	Option C:	Option D:	Option E:	
50,000	\$ 636,000.00	\$ 2,581,738.01	\$ 2,768,863.01	\$ 845,700.00	\$ 962,300.00	
750,000	\$ 954,000.00	\$ 2,785,175.51	\$ 2,965,863.01	\$ 1,142,400.00	\$ 1,317,300.00	
1,000,000	\$ 1,272,000.00	\$ 2,988,613.01	\$ 3,162,863.01	\$ 1,439,100.00	\$ 1,672,300.00	
1,250,000	\$ 1,590,000.00	\$ 3,192,050.51	\$ 3,359,863.01	\$ 1,735,800.00	\$ 2,027,300.00	
1,450,000	\$ 1,844,400.00	\$ 3,354,800.51	\$ 3,517,463.01	\$ 1,973,160.00	\$ 2,311,300.00	
1,700,000	\$ 2,162,400.00	\$ 3,558,238.01	\$ 3,714,463.01	\$ 2,269,860.00	\$ 2,666,300.00	
1,950,000	\$ 2,480,400.00	\$ 3,761,675.51	\$ 3,911,463.01	\$ 2,566,560.00	\$ 3,021,300.00	
2,200,000	\$ 2,798,400.00	\$ 3,965,113.01	\$ 4,108,463.01	\$ 2,863,260.00	\$ 3,376,300.00	
2,450,000	\$ 3,116,400.00	\$ 4,168,550.51	\$ 4,305,463.01	\$ 3,159,960.00	\$ 3,731,300.00	
2,700,000	\$ 3,434,400.00	\$ 4,371,988.01	\$ 4,502,463.01	\$ 3,456,660.00	\$ 4,086,300.00	
2,950,000	\$ 3,752,400.00	\$ 4,575,425.51	\$ 4,699,463.01	\$ 3,753,360.00	\$ 4,441,300.00	
3,200,000	\$ 4,070,400.00	\$ 4,778,863.01	\$ 4,896,463.01	\$ 4,050,060.00	\$ 4,796,300.00	
3,450,000	\$ 4,388,400.00	\$ 4,982,300.51	\$ 5,093,463.01	\$ 4,346,760.00	\$ 5,151,300.00	
5,500,000	\$ 6,996,000.00	\$ 6,650,488.01	\$ 6,708,863.01	\$ 6,779,700.00	\$ 8,062,300.00	
7,500,000	\$ 9,540,000.00	\$ 8,277,988.01	\$ 8,284,863.01	\$ 9,153,300.00	\$ 10,902,300.00	
10,000,000	\$ 12,720,000.00	\$ 10,312,363.01	\$ 10,254,863.01	\$ 12,120,300.00	\$ 14,452,300.00	
12,000,000	\$ 15,264,000.00	\$ 11,939,863.01	\$ 11,830,863.01	\$ 14,493,900.00	\$ 17,292,300.00	
48,000,000	\$ 61,056,000.00	\$ 41,234,863.01	\$ 40,198,863.01	\$ 57,218,700.00	\$ 68,412,300.00	

Original Time Diagram



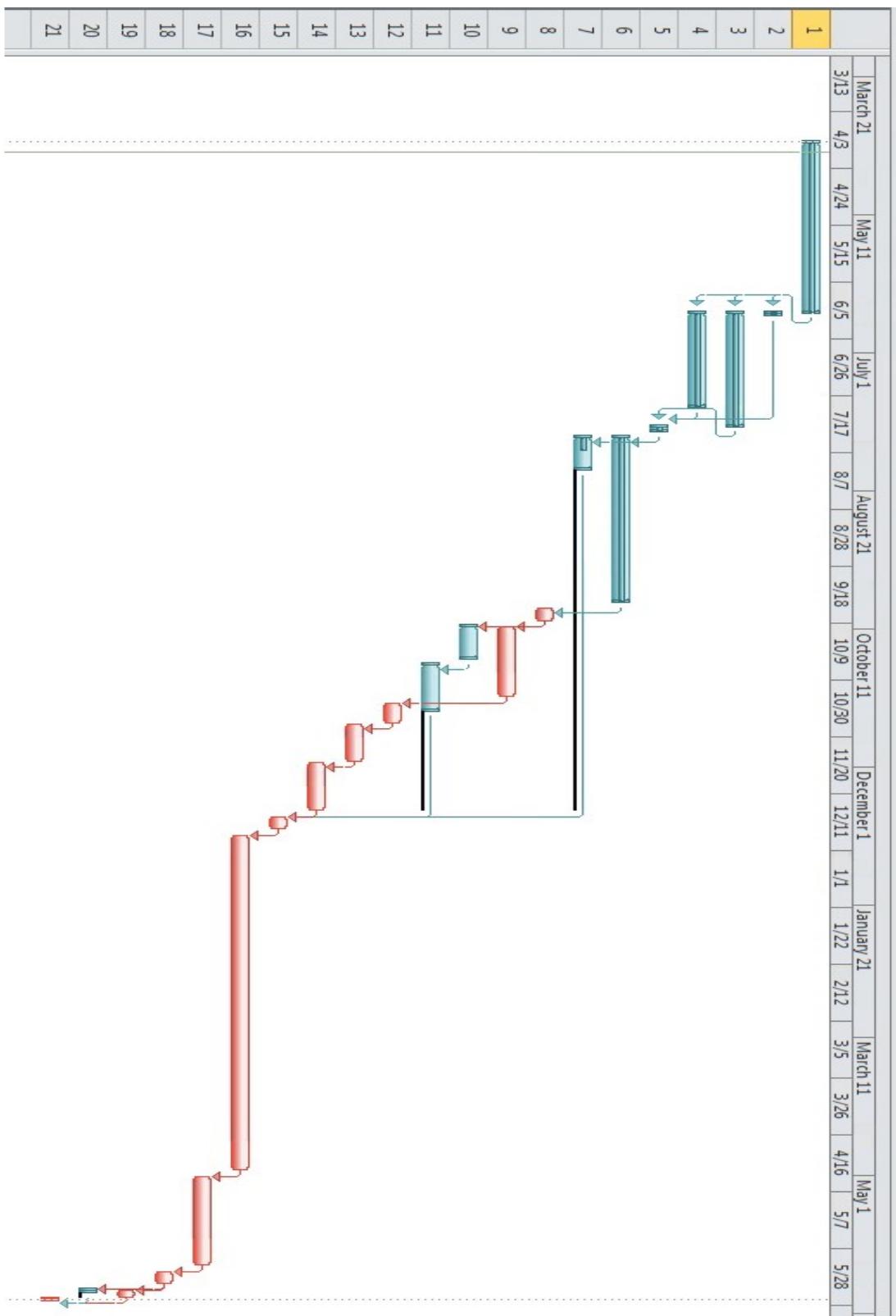
Appendix 08

Updated Time Estimates



Critical Path: 1, 3, 5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 21

Appendix 09



Appendix 10

Activity	Expected Time (Days)	Standard Dev	Variance
1	44.500	1.167	1.361
3	30.000	0.000	0.000
5	2.000	0.000	0.000
6	45.000	0.000	0.000
8	5.000	0.667	0.444
9	21.000	1.667	2.778
12	5.667	0.667	0.444
13	10.000	1.000	1.000
14	14.333	1.000	1.000
15	5.000	0.333	0.111
16	95.000	11.667	136.111
17	26.000	2.000	4.000
18	5.000	0.667	0.444
19	3.167	0.500	0.250
21	1.167	0.167	0.028

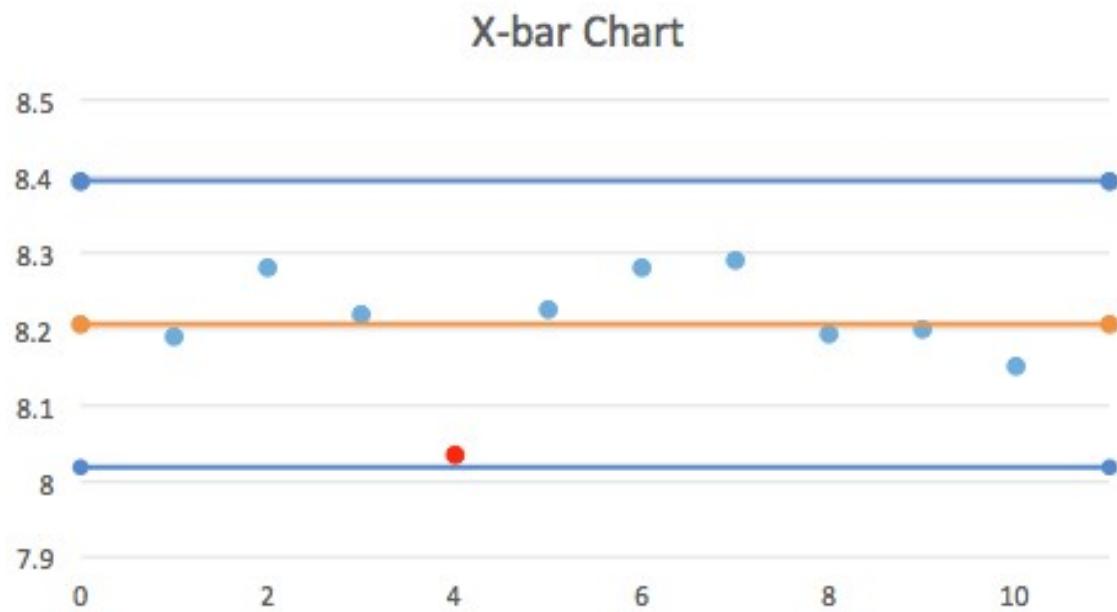
Expected Time	312.833
Target Date	315.000
Project Variance	147.972
Project Standard Deviation	12.164
Z Score	0.178
Percentage of Completion	57.07%

Appendix 11

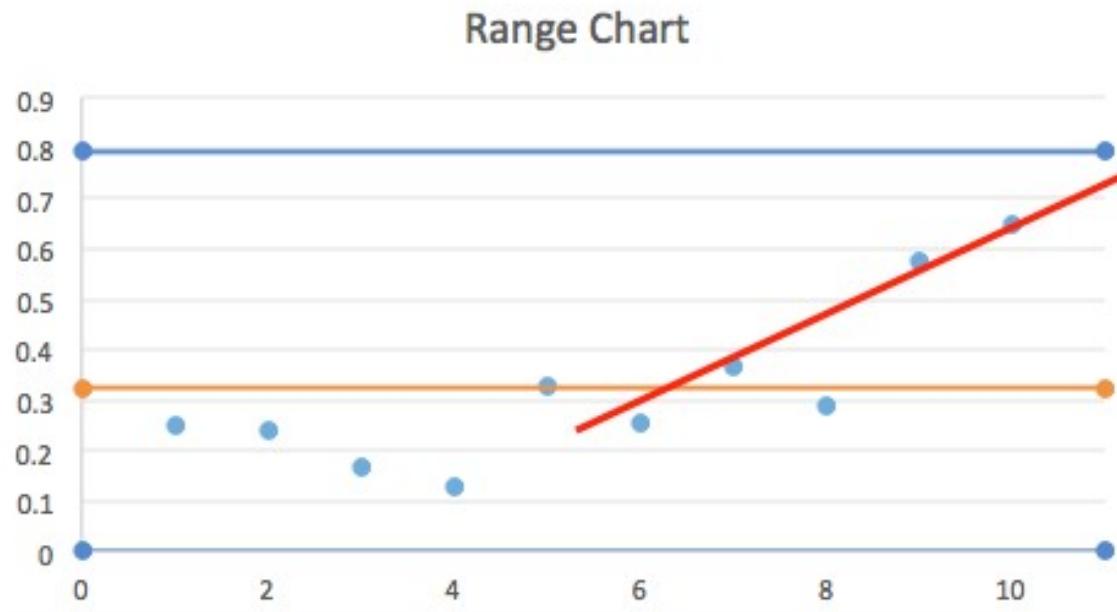
Activity	Expected Time (Days)	Standard Dev	Variance
1	44.500	1.167	1.361
3	30.000	0.000	0.000
5	2.000	0.000	0.000
6	45.000	0.000	0.000
8	5.000	0.667	0.444
9	21.000	1.667	2.778
12	5.667	0.667	0.444
13	10.000	1.000	1.000
14	14.333	1.000	1.000
15	5.000	0.333	0.111
18	5.000	0.667	0.444
19	3.167	0.500	0.250
21	1.167	0.167	0.028

Expected Time	191.833
Target Date	315.000
Project Variance	7.861
Project Standard Deviation	2.804
Z Score	43.929
Percentage of Completion	100.00%

Appendix 12



Appendix 13



Appendix 14

Year 1			
Jack in the box Conner Cotainer			
S	150	100	
Q	12280.1	9504.3	
P	N/a	3900000	
D	125666.7	125666.7	
H	\$ 0.25	\$ 0.29	
C	\$ 1.00	\$ 1.15	
LT	3	0.5	
Dlt	1450.0	241.7	
Zsl	2.33	2.33	
SIGlt	138.6	80	
TAHC	\$ 1,535.01	\$ 1,322.21	
TASC	\$ 1,535.01	\$ 1,322.21	
Unit Cost	\$ 125,666.67	\$ 144,516.67	
Total Annual	\$ 138,736.68	\$ 147,161.09	
ROP	1772.9	428.1	

Appendix 15

Year 5 with Expansion			
Jack in the box Conner Cotainer			
S	150	100	
Q	18815.0	14900.1	
P	N/a	3900000	
D	295003.3	295003.3	
H	\$ 0.25	\$ 0.29	
C	\$ 1.00	\$ 1.15	
LT	3	0.5	
Dlt	3403.9	567.3	
Zsl	2.33	2.33	
SIGlt	138.6	80	
TAHC	\$ 2,351.87	\$ 1,979.87	
TASC	\$ 2,351.87	\$ 1,979.87	
Unit Cost	\$ 295,003.25	\$ 339,253.74	
Total Annual	\$ 309,707.00	\$ 353,213.48	
ROP	3726.7	753.7	



FINANCE



The Five Outputs

We focused our financial analysis on finding five outputs: the project cost of capital, the expected costs of the assets, the Internal Rate of Return and Net Present Value scrapping the project, pursuing the project, and pursuing the project with expansion.

Cost of Capital

Our financial analysis team started by finding a good comparison for your Cost of Capital and Beta. We found that Sierra, a public company that provides a comparable product to Red's Barbeque Sauce, was a solid comparison. We pulled their stock information and compared it to the S&P 500 to find their unlevered beta by taking their debt to equity ratio, otherwise called a capital structure, into consideration.

By taking out their capital structure, we can apply their unlevered beta to your company and use it to find the value of each dollar you have. From there, we calculated **risk free rate of 2.88%** by using the 3-month Treasury note. With the risk free rate, we took the 7.9% Equity Premium to find the projects required return as 10.28%. We used the 3 month, or 78 days Treasury note, to calculate the risk free rate because the 3 month note represents what we consider the least risk and is the best proxy for it.

The last piece of information to consider was the liquidity premium. Due to the nature of this project, Red's Bar-b-Cue needs to invest significant capital and will not have the option to pull the money out at any point. We added in a liquidity premium of 1.2% to factor in this risk. This took our **cost of capital to the final point of 11.48%**. We have included a sensitivity table on our

“Project Cash Flow & Metrics tab”. When looking at it, your team can see how the net present value will change based on the different cost of capital.

Effective Costs

In each of the three scenarios, there are a handful of assumptions that were held constant across. There will be a non-depreciable asset purchase of roughly \$1.5 million, as well as four depreciable assets that can be found under the “Effective Cost” tab. If you look on the “Effective Cost” tab, you will see how we determined the effective costs for the four assets and the amount we listed under year 4/22/16.

However, on the base model, the expansion model, and the pursue model, you will see a larger value due to repurchasing these assets before year 6. Next, we discounted these recently purchased assets accordingly, bringing up the total cost to just under \$3 million. There is another row on each model about the cash flow side effects. If this project is pursued, there is a \$110,000 expense due to Keaton not being able to continue to help run the restaurant. There is also a .04 cent extra revenue for every dollar of sales revenue attributed to bringing additional sales to the restaurants.

Net Present Value

The first of the three scenarios was completing the project as scheduled with 1.45 million units sold in the first year at a \$2.90 price per bottle price point. This project had 20% growth after year 1 and slowly lowered until it flattened out at 5% by year 5. This option was modeled out in the excel document on the tab called “Project Cash Flow & Metrics”. You can find the list of assumptions we used on the top left. From these assumption, we modeled out everything from the revenue, variable costs, fixed costs, the taxes, and the cost of the assets Red’s will need to purchase to produce the sauce. In rows 28-30 you can find both the **IRR of 8.86%**, as well as



the **NPV of just over a \$550,000 loss**. We have also built four sensitivity tables found on rows 28 -37 and columns E through P. Our team evaluated what we considered to be the four largest factors in determining NPV and want to show you how they impact your returns. We think the most important piece is the variable expense factor.

In the Operations section of this document, we laid out ways to minimize the variable expenses through automation or different outsourcing options. As you can see a .04 cent cut to the factor will result in an **\$800,000 difference from the current NPV**. We believe the use of these sensitivity analyses can help management and operations make decisions, while understanding the effects it would have on returns.

After finding a base, we built a more complex model to take into consideration a threshold analysis and a different NPV at different unit quantities. On the following three tabs, you can find a longer list of assumptions as well as a center drop down menu that allows you to toggle on or off for different scenarios. The sheet titled 'Pursue' will allow you to see the NPV of completely dropping the project on 4/22/16 or continuing with the same assumptions from the base model.

Secondary Scenarios

The other two scenarios, scraping the project after year 1 or expanding the project after year 1, are modeled on sheets titled "Expansion" and "Scrap Program". Similar with the "Pursue" sheet, "Expansion" and 'Scrap Program' contain the longer list of assumptions, a more detailed income statement as well as a drop down list to expand the program or scrap the program respectively. For the **expansion**, we found if year 1 sales are larger than just over \$1 million, you will see a positive NPV, and our projected 1.45 million unit sales will see a **22.94% IRR** with a **\$5.4 million NPV**.

Our team feels very confident that Red's can greatly benefit from this project if they decide to expand it based off year 1 sales numbers. We do share our concerns that the base plan does not produce a NPV. If the revenue ends up being much lower than what we projected, then this could cause a significant loss for your company. If the company chooses to go the expansion route, there is a lot of potential for Red's Bar-b-Cue to grow into one of the major barbecue sauces in the Southeastern United States.

Letter to Mr. Perkins

Mr. Perkins, our team completely understands your concerns and hopes to reduce the level of criticism and walk you through our thoughts. We can assure you that an in-depth financial analysis has been taken for this product and we can stand by any of the numbers we have.

To address your first point, the total cost to implement being \$12 million, we would like to walk you through our cost calculation and where we believe we have taken into account a more detailed cost structure. There are a handful of costs to implement this project which include: the non-depreciable assets totaling \$1.479 million, the four depreciable machines totaling just under \$4 million that you must buy twice, and the previous spending on research, development, production equipment, and advertising efforts which totals \$1.6 million. However, even with all of these costs, which total \$11.1 million, Red's will not be spending that entire amount of money. Our calculations show the **actual cost to be closer to \$4.5 million** due to a few factors. The previous spending amount of \$1.6 million is a sunk cost. The money has already been spent and, regardless of this project, will not be coming back. This is why it should not be included in this calculation.



With respect to the non-depreciable and depreciable assets, there is a reasoning behind referring to and treating them differently. With any depreciable assets, the cost you pay is not truly the cost you incur in the long run due to the depreciation. Depreciation, while not a cash expense, will lower your taxable income and give you a tax benefit. In the “Effective Cost” tab of our model, which we have attached as an appendix below, we will walk through the calculations used to get the **effective costs**. Outside of the tax benefit the machine gives you each year found in column E, you also have the ability to re-sell the machine for the amount listed in column H under NSV, or net salvage value. As you can see, we calculated an effective cost for each asset and used that to combine into one value that represents the amount purchased for the 5 years’ worth of assets. To take into consideration the second purchase of the assets after the 5th year, we used a formula to find the **present value of the \$1.7 million cost**.

The present value, mentioned before, is a very important concept that may have caused a mistake in some of your calculations. Present value is a concept that looks at discounting values of cash that are made or spent in the future ,and bring them back to present value based on a set discount rate that is distinct to each company. The discount rate looks at how expensive it is to get a dollar from a bank, or another person. This rate determines what type of return you should require with any new investment. Next, we used that rate to shrink any values because a dollar today is not worth the same as a dollar tomorrow. In theory you can get a dollar today, then invest it, and have more than a dollar tomorrow. It is because of this that the expected cost is \$1.7 million for the first 5 years, and the expected costs for the purchase at the beginning of year 6 with the original purchase will be discounted. The total results in just under \$3 million. Taking this all into consideration, the real costs associated with this project come out to roughly the \$4.5 million mentioned earlier.

Looking at our revenue projects, we based our expected revenues off of a \$2.90 price point with 1.45 million units demanded in year 1. We expect roughly \$1.70 of that to go to variable costs, as well as \$1.9 million of fixed costs each year this product is running. All of these numbers are taxable, and the only revenue that we believe should be accounted for is a \$110,000 loss due to Keaton not being able to work at the restaurant any longer. Another opportunity cost is .04 cents of revenue for each dollar from the sales, as the product will help bring store recognition. In year one, we do expect a cash loss; however, by year two, we expect a \$215,000 cash gain, and by **year 10, expect to net \$1.4 million.** We are confident that the values we found using a year 1 growth rate of 20% that shrinks until it is 5% for years 5-10 are correct and are a conservative estimate for Red's Barbeque Sauce as it moves forward to becoming a household name.