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Ripe & Ready KitchenAid Appliance

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Abstract

Time and time again, people have expressed their frustrations regarding spoiled produce. Most claimed that they did not realize the food had passed its ripest stage or that it would expire before they had the chance to consume it. From there, I identified an opportunity to solve the lack of knowledge consumers have regarding the ripeness of their fruits and vegetables. The target market is identified as health-conscious young professionals living in the US, between the ages of 25 and 34. There are over 41 million men and women in this age group (US Census Bureau). Most are single purchasers in such a way that a lot of what they spend goes to their own food consumption. Those with at least a bachelor's degree have an average salary of $51,000 and will have more discretionary income than other possible market segments [1]. I developed a countertop kitchen appliance and formed a brand alliance with KitchenAid to solve the need for food waste reduction. Appliances seamlessly fit in with consumers' usage of produce, which predominantly occurs in the kitchen. Using ethylene detecting sensors in a device with similar dimensions as a blender, consumers will be able to figure out the stage of ripeness of their fruits and vegetables. Not only will our product tell consumers when produce is ripe or not, but it also includes a feature that indicates how many days are left until something is ready to eat. The product only works for fruits and vegetables that release ethylene gas because that is what the sensors detect and use to inform the consumer. Forecast sales within the first-year total 806,907 units at a retail price of $249.99. My net income in the first year will be $15,445,454.87. With an initial investment of $24,350,000 due to fixed costs and a large advertising budget, the forecasted payback period is 1.57 years. After a year and a half, it will contribute to KitchenAid's net income, increasing the appeal of the product.

Keywords

KitchenAid, Appliance

1. Stage 0←Discovery, Identify Opportunities and Ideas

An opportunity in the food industry emerges when consumers store and consume fruits and vegetables in their home. I have decided to look into solving buyers' need for knowing when their produce is at its peak ripeness in order to prevent wasting money on food that has spoiled. In total, Americans throw away 25% of the produce they buy annually, mostly because it has expired [2]. Throwing away produce is akin to throwing away money and it is high time to provide a solution to this wasteful trend brought about by Americans' lack of knowledge. Healthy eating is a growing trend that contributes to the increased demand for fruits and vegetables.

In an October 2014 report on Mintel, 28% of people reported eating less canned fruit and 21% eating less frozen vegetables. This translates that fresh produce demand will continue to increase as people shift their preferences. According to the USDA Economic Research Service, organic produce sales alone were an estimated $12.12 billion in 2012 and would increase an estimated 23% in 2014. These statistics display the trend of individuals seeking fresher produce.

A study conducted by the Natural Resources Defense Council found that the average American household loses approximately $2200 every year due to food spoilage. In general, Americans lose approximately $165 billion worth of food each year [3]. Not only is this an unfortunate statistic on practical terms, but this also spills over into environmental issues and the hunger problem in America. According to [3], "the uneaten foods ends up rotting in landfills as the single largest component of US municipal solid waste where it accounts for a large portion of US methane emissions." [3]. Clearly, this points to an exacerbation of the problem of pollution in the United States. Also, one in six Americans suffer from the lack of a stable food supply. If the rate of food waste was to be reduced by 15%, this would alleviate the hunger problem for 25 million Americans [3].

In essence, research suggests that food wastage is a problem that when solved, it will actually provide partial solutions to other pressing problems such as pollution and hunger. Hence, finding solutions to this problem is of utmost importance in terms of improving the quality of life of every American citizen.

2. Stage 1←Scoping, Screen & Verify Opportunity Viability

Target Market: People living in the US and in the age group ranging from 25 - 34 will benefit most from this opportunity. They are often classified as young professionals and are at a life stage when they are most likely to be acquiring new appliances at a level well above that of other age groups. Most are single, have some extra spending money each month and only purchase food for themselves. This is important because I have to link promotions to key events to this target market's different stages in life including: graduations, weddings, house-warming parties, and the arrival of children [4]. While millennials do not purchase more produce than any other age group, they are starting to "increasingly opt for

fresher and healthier food" [4]. This growth suggests the significance of marketing to this young target market that is, overall, very proficient at navigating websites and social media to learn about new products, compare prices, and find new promotions [4].

Competitive Analysis: Below are a few current solutions to this need, followed by the reason they still leave a gap for consumer's needs. The failure of other products leaves room for a new solution to the problem. I know this problem is real because it was the number one concern of the target market that emerged from my primary research and the current solutions are inadequate.

Ethylene Gas Absorber: This is a small fake apple that is placed in your produce drawer, to absorb the ethylene gases fruits give off, making the produce last longer, preserving freshness.

Amazon reviews prove consumers are still disappointed by the lifetime of their produce even with the use of these gas absorbers. "Used it as directed and noticed no changes in my vegetables. They made no difference in the freshness or lifetime of the veggies. Was extremely disappointed in the product. Don't waste your money".

Debbie Meyer: Various products including, green plastic bags and Tupperware containers, that help extend the life of produce [5].

According to Ph.D. chemistry expert, Anne Helmenstine, "most produce really shouldn't be stored in plastic bags … the shelf life of most produce is reduced" [6].

Consumer "Workarounds": From my ethnographic research, consumers informed me about their "workarounds"; tasks performed due to the absence of appropriate products. Consumers spoke about different tricks, including wrapping the stems of bananas in plastic or storing fruits in glassware to keep their produce fresher for longer. These different "workarounds" were more personal trial-and-error solutions compared to universal solutions for the target market. This category of solutions is inadequate because consumers are typically uninformed of these makeshift ways of preserving produce and are usually unsatisfied with the outcome.

Sources of Differentiation: The Ripe & Ready is considered both a breakthrough product and a line extension for KitchenAid, making it unlike anything else consumers have seen within the countertop appliance industry. The ethylene gas detection technology built into the appliance enables it to sense exactly when the fruit or vegetables will be at peak ripeness as well as when it will no longer be good to eat. This separates us dramatically from any new entrants into the market. The accuracy of the appliance is another source of competitive advantage. The 99.9% laboratory-tested accuracy, I can guarantee that Ripe & Ready will always be exact and correct when informing consumers of the lifespan of their produce. This was difficult to attain and took many trials to perfect, so this definitely sets me ahead of my competition. Also, my affiliation with the well-known and highly trusted brand of Kitchen Aid will give our product a

huge competitive advantage. When consumers see this new product with the Kitchen Aid logo in stores, they'll be more inclined to try the product and trust that it'll work because of the established brand loyalty and equity.

Internal Evaluation: From my group brainstorming sessions, I came up with a long list of potential new product ideas to meet my unmet need. I immediately eliminated impractical concepts that had large initial investments or were technically unfeasible. To narrow down the list further, the prospective solutions were subjected to a preliminary screening. The ideas were evaluated based on different strategic filters with emphasis on the ability to sell through distribution channels, patentability of the product and growth potential. This screening process allowed me to focus on the most fitting, feasible and profitable solutions. After several group discussions weighing the advantages and disadvantages of my remaining concepts, we agreed on two, a produce sticker and an appliance.

I scrutinized the final two and realized there would be more of a complication with the produce sticker because it was a B2B product and could potentially cannibalize supermarket sales due to too much consumer awareness of produce ripeness in-store. On the other hand, the Ripe & Ready appliance is a B2C product that allows me to reach my target market more effectively. By forming a brand alliance with Whirlpool's KitchenAid, a well-known home appliance company, I am able to rely on their brand equity and current consumers. The Ripe & Ready appliance fits extremely well with their existing product mix and benefits from their established distribution channels, such as Bed Bath & Beyond, Macy's and Target. Additionally, this product would likely be approved for a provisional patent, protecting the unparalleled technology and concept from immediate competitors.

2.1. Ripe & Ready Concept

Fit: The concept I chose fits very well into my identified opportunity because with this product, I have solved the biggest concern that was voiced during my ethnographic research. The Ripe & Ready appliance solves the problem of lack of consumer knowledge of when produce is ready to eat. This countertop kitchen device informs the user which stage of ripeness the produce is in, preventing produce going to waste, ultimately saving consumers money. By partnering with KitchenAid, Ripe & Ready easily fits into the existing brand image. As a well-known and highly trusted company, it possesses strong brand loyalty when it comes to all kitchen appliances, especially countertop appliances. KitchenAid's countertop appliance product mix includes blenders, toasters, microwaves, coffee grinders, and food processors. I found that our product could easily fit in with their current product lines, complementing their products and creating a stronger, more cohesive brand image.

Feasibility: The kitchen appliance industry is well-developed. Quality products with a similar design and structure to that of my product concept are already efficiently manufactured. My alliance with KitchenAid brings with its expertise in the industry, making it easy to find suppliers and manufacturers for

my product. Furthermore, engineers at MIT developed the technology needed to detect ethylene levels released by small quantities of produce, like that used by a single user [7].

Profitability: According to Mintel, "the small kitchen appliance market is estimated to reach $5.9 billion in 2013, representing a substantial gain of 44% over the past five years". This forecasted growth offers a huge opportunity for the industry and for new products. In addition, Mintel also characterized the market as, "an environment in which innovative new products can flourish and drive incremental sales". This highlights that creative, novel products, like the Ripe & Ready appliance, are in a suitable domain where they can thrive [8]. Due to my strategic alliance and having the KitchenAid name on our appliance, I am able to charge a higher price because of the premium brand image. KitchenAid products range from less than $100, for blenders and toasters, to hundreds of dollars, for food processors and multi-cookers. For the Ripe & Ready appliance, I was thinking about pricing it mid range in comparison to their other products, around a few hundred dollars. I plan to conduct more research to understand the consumer's willingness to pay and the value proposition.

2.2. Produce Perfect Concept

Fit: The Producer Perfect sticker answers the key problem I am trying to solve in this situation; consumers not knowing when their produce is at peak ripeness. This product fits perfectly because as the produce ages, the ethylene gas it emits will turn the sticker from yellow, to green, to brown as it becomes ripe and then rotten. This process informs the consumer what stage the produce is at while in the grocery store so they can more effectively choose the proper produce for their personal use timeline.

Feasibility: The technology used in the Produce Perfect stickers would be similar to the ethylene gas detector sensors already developed today. However, since we want the sticker to be more flexible and flush with the produce, it would have to engineered differently in order to be scaled down and made in to a different form since the current sensors are stiff data chips. Technologically speaking, this task could be quite difficult and has high potential to be impossible or ineffective.

Profitability: As stated above, the sticker's purpose is to inform consumers of the state of their produce while still in-store. Although I found this to solve their lack of knowledge, I came to the conclusion that the sticker has a high chance of creating a threat to supermarket sales and quality control due to consumers not buying as much produce because they know how quickly it will go bad. Therefore, it would be challenging to convince grocers to implement the stickers into their operations. Before choosing an effective price for this product, through research, I realized that Produce Perfect would ultimately not be profitable due to the cannibalization is would cause to produce sales in supermarkets.

3. Stage 2: Business Case

Concept 1 (Figure 1).

Concept 2 (Figure 2).

I examined both the Produce Perfect sticker and Ripe & Ready as potential product concepts that could potentially fulfill the needs consumers expressed with their greatest concern when purchasing produce. After collecting feedback from my peers based on product skeletons for each, I realized that there would be more of a complication with the Produce Perfect sticker because it's a business to business product. The sticker displays the stage of ripeness their produce is in, creating a potential threat to supermarket sales due to consumers' reluctantly to purchase produce that doesn't display a green sticker. Therefore, it would be challenging to convince grocers to implement the stickers into their businesses. Most grocery store employees are well educated on the state of ripeness of the stores' produce, making the sticker concept unfeasible. On the other hand, the Ripe & Ready appliance is a business to consumer product that allows me to reach my target market effectively as well as being more feasible technologically. By forming a brand alliance with Whirlpool's KitchenAid, a well-known home and kitchen appliance company, I am able to rely on their brand equity and current consumers. The Ripe & Ready appliance fits extremely well with their existing product mix and benefits from their established distribution channels, such as Bed Bath & Beyond, Macy's, Target and e-commerce on the Kitchenaid website. Additionally, I have the opportunity to apply for a provisional patent with the KitchenAid Ripe & Ready concept which will ensure the protection of the unparalleled technology from immediate appliance competitors.

3.1. Product Positioning Statement

"For health-conscious young professionals, Kitchenaid Ripe & Ready is the easy-to-use countertop appliance that informs you of the ripeness of your produce within seconds, utilizing ethylene detecting technology".

Figure 1. KitchenAid ripe & ready [9].

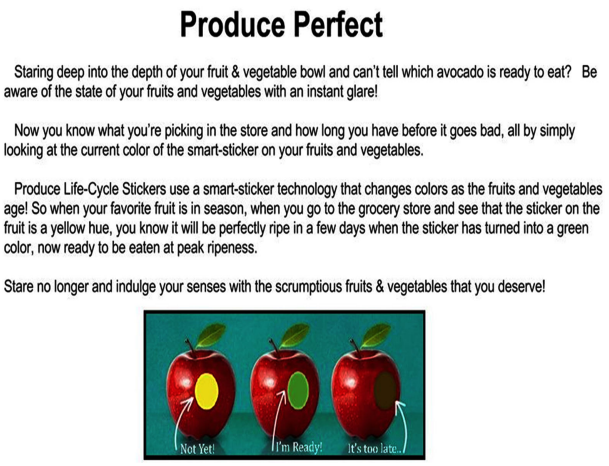


Figure 2. Produce perfect [9].

3.2. Concept Test Results

3.2.1. Quantitative Summary

I conducted a qualtrics survey utilizing skip technology to direct the participants to different concept surveys. If respondents chose numbers 1 - 5 for the first question, they were directed to the KitchenAid Ripe & Ready concept survey. On the other hand, if they chose 6 - 10 for the first question, they were directed to the competitive benchmark of my product concept, Debbie Meyer Green Bags [10]. When arriving at either survey, participants were shown the concept skeleton for each concept along with a description of the chosen product. They were asked about their purchase intent, pricing (the Von Westendorp method), what they like/dislike and demographics at the completion of the survey.

The top 2 box purchase intent for KitchenAid Ripe & Ready equated to 28%, compared to the Debbie Meyer Green Bags top 2 box purchase intent which equated to 0%. This proves that my product will survive and thrive in the competitive landscape. More than 90% of the respondents understood the main benefit of the product when asked, "What do you like most about this product?" and "What is the main benefit of this product?". I had 56 respondents to my survey in total and these results assisted in the redirection of my target market.

Initially, I planned to target health-conscious college students and young professionals. Through the quantitative research results, I realized that students aged 18 - 23 were the majority of participants in my survey that responded negatively to the Ripe & Ready product concept. This negative feedback included the 30% of respondents that chose that they probably would or definitely would not purchase and gave their description of why they would not purchase. These responses were answers such as, "I personally don't go grocery shopping because I am on a meal plan" and "It would take up counter space in my small kitchen".

After reevaluating my options, I saw the opportunity to market to young professionals who cook for themselves often, have extra space in their kitchen, and

more money to spend at the end of each month.

The two bar graphs in the following page indicate the results of the survey. That is, the KitchenAid Ripe & Ready Purchase Intent and the Debbie Meyer Green Bags Purchase Intent [10]. As observable, the y-axis labels are the following: Definitely Would Purchase, Probably Would Purchase, Might or Might Not Purchase, Probably Would Not Purchase, and Definitely Would Not Purchase. Each label has its own bar—which is an indicator of what percentage of the respondents hold that particular sentiment. For instance, it was stated earlier that approximately 28% of the respondents answered "Definitely Would Purchase" and "Probably Would Purchase". This means to say that 28% of the total respondents express the sure intent to purchase the product. This is precisely why the product will remain competitive in the market.

Conversely, the Debbie Meyer Green Bags Purchase Intent survey does not indicate the same level of success as that of the KitchenAid Ripe & Ready Purchase Intent survey [10]. The figure indicates that none of the respondents have any plans of purchasing the product. At any rate, the interpretations of these figures are integral to determining the ideal target market and the price range for the products (**Figure 3**).

3.2.2. Qualitative Summary

I conducted a focus group with 60 participants including male and female students ages 18 - 23. The focus group lasted about 30 minutes and included questions such as "What do you believe is the primary benefit of this product?" and "How much would you expect to pay for this product?". Similar to the quantitative results, the participants' ages and occupations proved to be the wrong market that I was attempting to research. The students' overall feedback was that they do not consider this a need for themselves because they eat out or have meal plans and most of their consumption at home includes frozen foods, not fresh produce.

The focus group helped me get a deeper insight into why our target market saw no need for this in their lives. The good outcome of this negative feedback is that it guided me towards conducting more secondary research on Mintel and found that the majority of purchasers in the small kitchen appliance industry includes individuals ages 25 - 34 [12].

Figure 4 illustrates product ownership in three age groups: all age groups, adults aged 25 - 34, and adults aged 65+. The y-axis includes the following labels: Any coffeemaker, Any toaster, Any food processor, Any blender, and Any mixer. Each bar represents a different age group. Purple is meant to refer to all age groups, green is meant to refer to adults aged 25 - 34, and blue is meant to refer to adults aged 65+. The percentages indicate the amount of people in that age group that owns the product being referred to in the y-axis label. Since this info graphic is on the product ownership of small kitchen appliances, this gives telling information on the likelihood of aage group to engage in the usage of certain products.

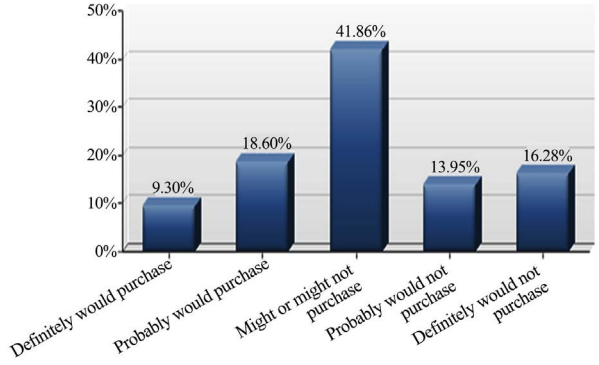


Figure 3. KitchenAid ripe & ready purchase intent [11].

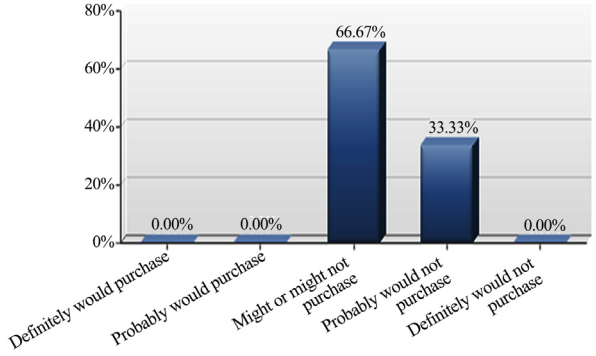


Figure 4. Debbie Meyer green bags purchase intent [11].

Note however that this was conducted on 60 participants only. Hence, the sample size is far small and not representative of the wider market that we are trying to evaluate (**Figure 5**).

3.3. Financials

Presented below is the financials table. **Table 1** is used to indicate the financial projections for the production, advertising, and sales of the Ripe & Ready appliance. It contains all kinds of telling information. For instance, the projected amount of units sold is 806,907. Based on this, a revenue of $201,718,680.93 was computed since each unit is worth $249.99. The next computations for Retail Markup, Invoice Sales, etc. follow from this—of which the detailed computations and explanations are provided in the paragraph that follows the table. Overall, the most significant figures of interest are the net income and payback period. These are $15445454.87 and 1.58 years respectively. That is, 1.58 years is predicted to pass before initial costs are leveled.

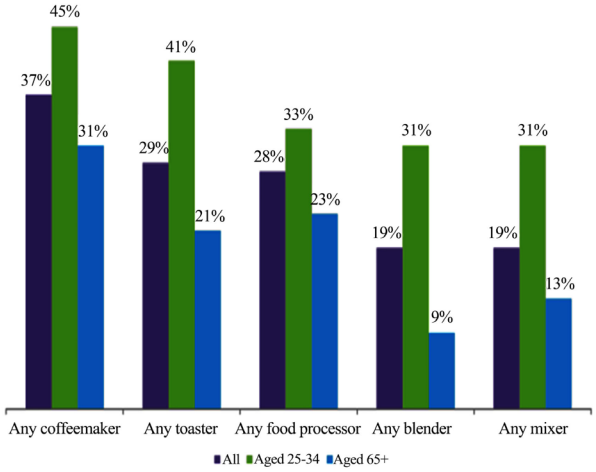
According to the 2010 US Census, there are 41,063,948 men and women in the age range of 25 - 34. I multiplied this number by 15% because one of my advertising objectives is to gain 15% awareness in the target market for my product. After I got that number I multiplied it by Whirlpool Corporation's market share, the parent company of KitchenAid, in the blender industry for 2014, which was 13.1% (IBISWorld US Food Processor & Blender Manufacturing). This number gave me my sales forecast of 806,907 units sold.

I researched several industry standards and used those to predict the retail markup and the manufacturer markup, which ultimately gave me the cost of goods sold. The average retail markup for electronics and appliances was 33% in 2014 [14]. One source stated slotting fees range anywhere from $1.5 to $3 million when introducing a product nationally [15]. I decided to estimate about $2.5 million dollars in slotting fees because I want to increase shelf-space and I plan for retailers to place end-of-aisle displays to help boost sales and awareness [15].

FIGURE 4: OWNERSHIP-SMALL KITCHEN APPLIANCES PURCHASED IN PAST TWO YEARS, BY AGE, SEPTEMBER 2014

"Which of the following products, if any, do you currently own?"

Base: 2,000 internet users aged 18+



SOURCE: LIGHTSPEED GMI/MINTEL

Figure 5. Ownership-small kitchen appliances purchased in past two years by age, September 2014 [13].

Table 1. Financials.

Revenue ($249.99/unit)	$201718680.93
Retail Markup (33%)	−66567164.71
Invoice Sales	135151516.22
Selling Costs	−2,500,000
Net Sales	132651516.22
COGS (70%)	−112856061.22
Gross Profits	19795454.87
SG&A	−4350
Net Income	$15445454.87
Retail Markup	33%
Gross Margin	9.81%
Gross profit	7.66%
ROI	−36.57%
Payback Period	1.58 years

Average appliance manufacture markups in the industry start at 30% [16]. Based off pricing classes, multiplying the manufacture markup times net sales will leave me with my cost of goods sold. It will cost $115.08 to manufacture one unit of the Ripe & Ready. This includes the cost of materials and labor, as well as any manufacturing overhead. The ethylene detecting sensors inserted in the appliance will cost a total of one dollar for each unit of production and are accounted for in the total cost of $115.08 per unit [17]. Included in the cost of goods sold on my P & L is $20 million dollars in fixed costs.

In 2014, KitchenAid put $40 million into expanding their Ohio production factory [18]. I assumed about half of that expansion will go towards the manufacturing of the Ripe & Ready kitchen appliance and will therefore go towards my fixed costs. Lastly, to figure out my Net Income I subtracted the $4.35 million from my advertising budget.

My return on investment is −36.57% in the first year because I do have high fixed costs. However, the payback period on my investment is 1.58 years. With a short payback period, my product will contribute to KitchenAid's overall profit margin after being on the market for only a couple years.

4. Stage 3←Development, Work Cross Functionally Design and Develop

The Ripe & Ready is a breakthrough innovation because there are no other products, in the countertop appliance industry, that solve this current unmet need. I took a well-defined problem, with no viable market solutions and capitalized on this opportunity by introducing a product that is new to the world. The Ripe & Ready features revolutionary technology, ethylene gas sensors, which were designed, built and tested by MIT chemistry professors. These sensors can detect the ripeness based on levels of ethylene gas secreted by produce throughout their maturation process [19]. By installing these innovative sensors into the chamber of my appliance, I am the first to take advantage of this technology and provide a solution to address a meaningful unmet need. In addition, for the KitchenAid brand, the Ripe & Ready is a line extension to their existing countertop appliances and overall product portfolio. My appliance adds value to KitchenAid's current products and fits harmoniously with their juicers and blenders.

Launching the Ripe & Ready appliance, I am utilizing a proactive strategy to initiate change within the market. By explicitly allocating resources to the product development process, I am preempting my competition by being first to market with our appliance. I have produced a product that competitors will find difficult to improve upon due to the technological innovation. I was also proactive in identifying consumer needs and developing an appliance that provides the benefit to satisfy those needs. More specifically, my proactive strategy was based on internal Research & Development. I devoted considerable time, energy and resources to fully understand my consumer and to develop a technically su-

perior product.

Flesh out manufacturing approach, intellectual property, design issues and solutions, technology "how it works".

My manufacturing approach will rely on KitchenAid and its parent company, Whirlpool, to assemble my appliances. I will utilize their various industrial factories across the United States, from Ohio to South Carolina to Arkansas. Whirlpool has primarily focused on being a US manufacturing-based company with the mantra, "invested in America, and designed and built in the USA" [20]. By capitalizing on their local state of the art facilities, I can make use of their current manufacturing expertise and reduce my costs significantly. In addition, the "Made in the US" label will emit a durable and premium image for the Ripe & Ready appliance.

The intellectual property used in tandem with the innovative technology of the Ripe & Ready will be a huge driver toward success for my appliance. I have a registered provisional patent for the Ripe & Ready appliance. I took the provisional route because it quickly granted protection for an affordable cost. This patent will guard the Ripe & Ready appliance for one year, as I look into pursuing a utility patent in the future. The provisional patent will be a strong barrier to entry for my various competitors and will allow me to further develop and enhance the appliance. In addition, I will heavily be relying on KitchenAid's well-established trademark. KitchenAid has been a strong brand for almost 100 years and is best known for their high quality and dependability. By placing the KitchenAid trademark on the Ripe & Ready, my appliance will immediately be perceived as credible with a premium image.

Throughout the product development process, I ran into a couple design issues. The first predicament related to the size of the appliance and choosing between two alternatives. My first option was a larger countertop appliance which could fit a wider variety of produce, as well as, larger pieces of produce. Or, on the other hand, a smaller appliance that was compact and easy to store. Based on my spiral development process and continuous concept evaluation, I recognized that consumers placed a high importance on the ease of storage and their already cluttered countertops. Based off of the voice of my consumers and our own intuition, I decided to go with a smaller, more compact size for the Ripe & Ready appliance. Another design issue I faced was that this new, innovative technology, the ethylene gas sensors, required the expertise of external contractors. I found it more beneficial, time and money wise, to work alongside the MIT chemistry professors who helped create and manufacture these sensors. This allowed me to completely understand the technology behind the sensors and to implement them into the most efficient part of my appliance.

Technology & "How It Works"

The Ripe & Ready appliance is extremely user-friendly and is commended for its simple design. The appliance was purposely constructed for effortless use and

the process can be completed in a few short steps:

1) Place your single piece of produce in the top chamber and close.

2) Turn the dial to the correct produce setting and press the "Start" button *i.e.* if testing avocado—turn dial to the avocado selection and hit "Start".

3) Wait 5 - 10 seconds—allow produce to discrete ethylene gas and sensors to pick up levels.

4) Light will appear informing you what stage your produce is in Light will be either green, yellow or red.

5) If green—produce is Ripe & Ready—enjoy your perfect piece of produce!

The Ripe & Ready appliance is centered around its revolutionary technology, small sensors that, "can detect tiny amounts of ethylene, a gas that promotes ripening in plants" [21]. Each appliance has four sensors embedded in the top chamber, that allows the machine to work quickly but also with extreme accuracy and precision. According to Timothy Swager, a chemistry professor at MIT, "plants secrete varying amounts of ethylene throughout their maturation process … Once ripening begins, more ethylene is produced, and the ripening accelerates" [22]. These sensors, consisting of an array of tens of thousands of carbon nanotubes, can detect the amount of ethylene gas and exactly what stage of ripeness your produce is in. Below is a scientific visual that portrays this innovative technology (**Figure 6**).

The Ripe & Ready includes a dial with an assortment of different ethylene-producing fruits and vegetables, which allows the consumer to select the correct produce setting for their use. Different types of fruits and vegetables secrete varying amounts of ethylene gas during the maturation process and are at peak ripeness at varied levels. Below is a graph from a scientific journal that visually displays this concept (**Figure 7**).

The dial allows you to pick a specific setting and the sensors know the optimal ethylene gases for that type of produce, ensuring the most accurate detection. According to a study from Oxford's Science and Mathematics Journal, theses sensors can obtain detection of ethylene gas within 5 to 10 seconds [24]. This time is so short that consumers will be instantly gratified and never bothered by a long wait time will using the Ripe & Ready appliance. After gas levels have been identified, a bright light will notify the user of the ripeness. A green light simply means Ripe & Ready, your produce is at peak ripeness and ready to consume. A yellow light indicates that your produce is still maturing and to wait. The digital screen next to the light will display an approximate number of time (days or hours) until the produce should be ripe. A red light designates that your produce is spoiled and not to eat. The Ripe & Ready appliance is easy and quick to use, saving you money from produce spoilage and enables you to consume the freshest and most delicious fruits and vegetables.

http://onlinelibrary.wiley.com/doi/10.1002/anie.201201042/abstract.

http://aob.oxfordjournals.org/content/early/2012/12/12/aob.mcs259.full#ref-56.

Show sketch or prototype.

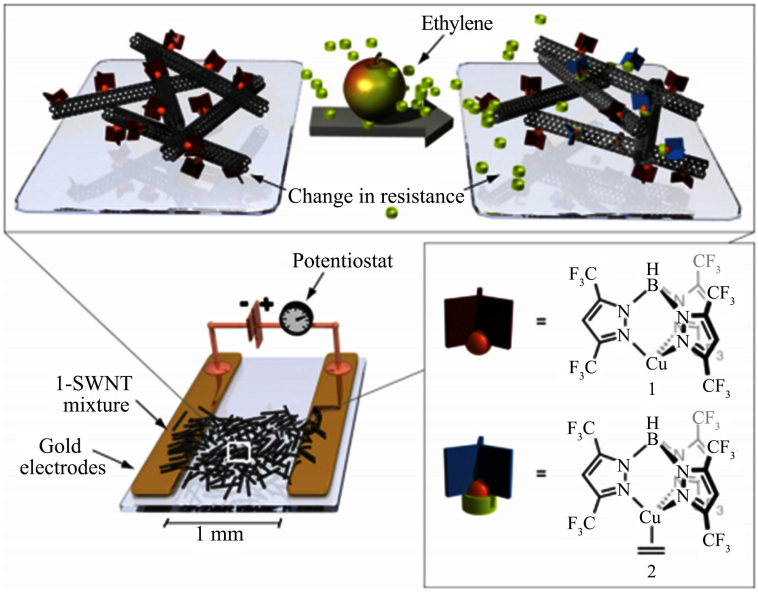


Figure 6. Esser, Schnorr and Swager 1 [23].

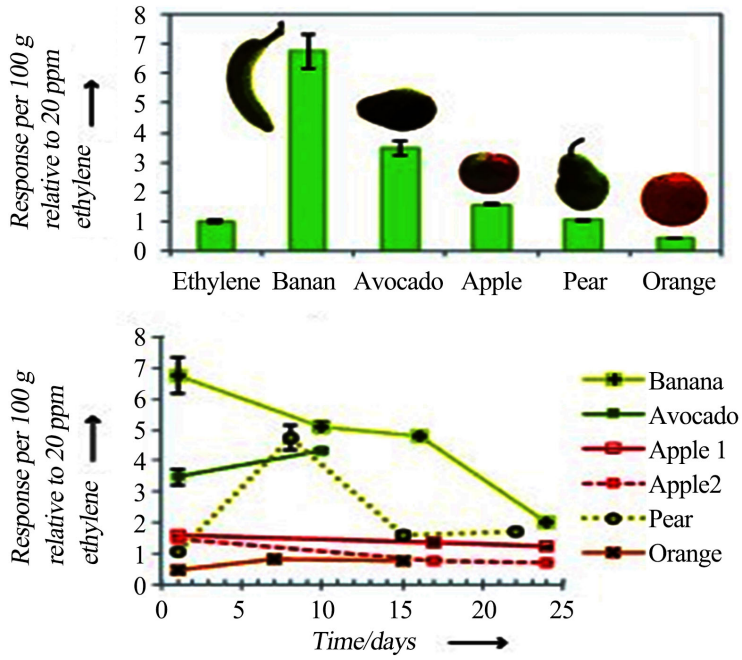


Figure 7. Esser, Schnorr and Swager 2 [23].

5. Stage 4

Pre-Launch Testing Plan

Prior to a full-scale launch, we plan to conduct alpha testing with KitchenAid employees. Specifically, young professionals ages 25 - 34 working in the engineering and financial departments are best fit to test the Ripe & Ready. By choosing to test my product on this age demographic, I am remaining consistent with my target market so that my results are relevant. The alpha tests will be unobserved and take place in the comfort of the participants' homes for the du-

ration of one month. Information and instructions will be given to participants so the consumer understands the primary benefit of the product and its' capabilities. A branded test is most appropriate for the KitchenAid Ripe & Ready because of the brand equity behind the KitchenAid name. In-home usage tests provide greater accuracy, especially for small kitchen appliances because the individuals are using the product in its actual usage environment [25]. One month is the perfect amount of time to test the Ripe & Ready, giving participants the chance to use it multiple times per day for about 30 days. Monadic tests are the closest to the real thing and possess the highest validity. Therefore, they're deemed as the most appropriate for testing the final design of the product.

After the testing period concludes, I'll reconvene with the test group and ask a series of questions as well as receive general feedback about the usefulness they personally found in my product and open up the feedback session with comments and suggestions. If comments or suggestions are made from a significant amount of participants, I'll redesign or fix the product accordingly.

6. Stage 5←Launch, Successfully Market and Sell Product

Product name: Initially when I discussed this product concept idea, I labeled the mock-up as the "Produce Perfect", hinting toward the use of the appliance. However, after reviewing the name and listening to peer feedback, I decided to brainstorm new options. I narrowed my list to three product names; Ripe from the Vine, Ripe-n-ator, or Ripe & Ready. The latter was chosen for my official product name. I decided that Ripe & Ready sounded the best, was easy to remember, and evoked a positive connotation to the actual product, while also differentiating the product from a typical named kitchen appliance and relaying the benefit of the Ripe & Ready.

Pricing approach: my final price and the inputs and outputs used to determine price.

I set my final price at $249.99. The results from my concept survey on qualtrics informed me that consumers were not willing to pay more than $100 for this product. However, they were most likely between the ages of 18 - 23 and so their attitudes and values are different from those in my target market. Since the Ripe & Ready is a breakthrough innovation, I decided to introduce it to market at a more premium price. There exists no reference price in the consumer's mind for a product like mine, both functionally and aesthetically. Furthermore, when determining a price, I referenced KitchenAid's current product line. Most of its small kitchen appliances, such as blenders and food processors, range from $130 - $350.

Distribution approach: overview of approach for my product, intensive or selective? different retail outlets or channels.

In order to effectively reach my target market, the ideal approach is selective distribution in retailers like Bed Bath & Beyond, Macy's, and Target. Through these retailers, Ripe & Ready will be available for consumers across the nation.

Also, the brand images of these companies will not compromise the perceived quality of my product. Using a majority of my $2,500,000 selling fees, I will purchase end-of-aisle in-store displays. This will drive consumer awareness, and ultimately sales. The Ripe & Ready appliance will also be sold directly on the KitchenAid's website, http://www.kitchenaid.com/, providing information and purchase opportunity. Selling through e-commerce will enable me to reach a broader number of my targeted consumers. In addition, my target market, consumers 25 - 34 years old, "remain the key age demographic for online commerce, spending more money online in a given year than any other age group" (Smith 1). This integrated distribution approach places the Ripe & Ready appliance in multiple places, increasing chance of purchase, and most efficiently reaching my target market.

Promotion launch plan: prioritized consumer touchpoints, plan theme, tag line, creative executions, timing, budget, and specifics about where and when ads/promotions will be placed.

Budget:

- $4.35M

✓ According to AdAge, KitchenAid increased its marketing budget to a total of $50M annually in the year 2000 [25]. After accounting for inflation over the last 15 years, I calculated that $4.35 million is a good marketing budget for Ripe & Ready because it represents a small portion of the KitchenAid product line compared to the various types of blenders, food processors, coffee makers and toasters.

Objectives:

1) Generate 15% awareness of ripe & ready appliance amongst health-conscious adults aged 18 - 34 years' old.

2) Help 80% of aware audience understand primary benefit of ripe & ready.

Priority Touchpoints:

1) #1 Need Identification

✓ Due to this category being new and possessing high-growth potential, the need identification consumer touchpoint is an important focus for connecting the consumer with the KitchenAid Ripe & Ready appliance.

2) #3 Brand Awareness

✓ By partnering with KitchenAid, I am acquiring the brand loyalty of their current consumers in the countertop appliance industry. I can inform these consumers of the benefits of using my appliance and how it's unique compared to the competitor's product.

Promotional Tactic #1:

I chose to promote my Ripe & Ready appliance using the social media mogul, Kimberly Snyder. Snyder, deemed the "Princess of Plant Power" is a nutritionist and New York Times best-selling author, best known for her dietary expertise through her blog and podcast [26]. Using her frequently visited blog, Snyder can endorse my new appliance and post a customer review. By tapping into Snyder's extensive social network, I am able to easily access my target market and com-

municate our message through a highly trusted nutritional expert. In addition, according to the research study, Marketing to Millennials conducted by Mintel, millennials are reliant on customer reviews when shopping, "and may respond to sponsored blog posts" [26].

Creative Execution (Figure 8):

Promotional Tactic #2:

One way to reach my objectives is to run banner advertisements on the phone apps and websites of the two "leading online ordering providers for independent restaurants", GrubHub and Seamless (Glass). With a combined coverage of over 1400 US cities, the services provided by the companies appeal to over 3.6 million consumers every month. The typical user is a young, media-savvy professional with a fast-paced lifestyle who is looking for a meal that is more nutritious than that provided at chain restaurants and fast food. My advertisement will acknowledge the frustration of not knowing if produce is ripe or too ripe, therefore leading to the throwing away of spoiled food. Also, when the user is on the site or app food is on their mind, so my advertisement will be relevant and will have a better chance of recall later on.

Creative Execution (Figure 9):

According to Damen Jackson, a Chicago-based brand and design agency, who conducted a package design case study on KitchenAid, discovered American shoppers are more interested in features and benefits when it comes to packaging. Based on this research, the Ripe & Ready packaging will feature bright colors, a realistic picture of the appliance and most importantly, "a standardized format for key product information, helping shoppers make informed comparison and buying decisions" [26].

http://damenjackson.com/case_studies/chicago-packaging-design-for-kitchenaid/.

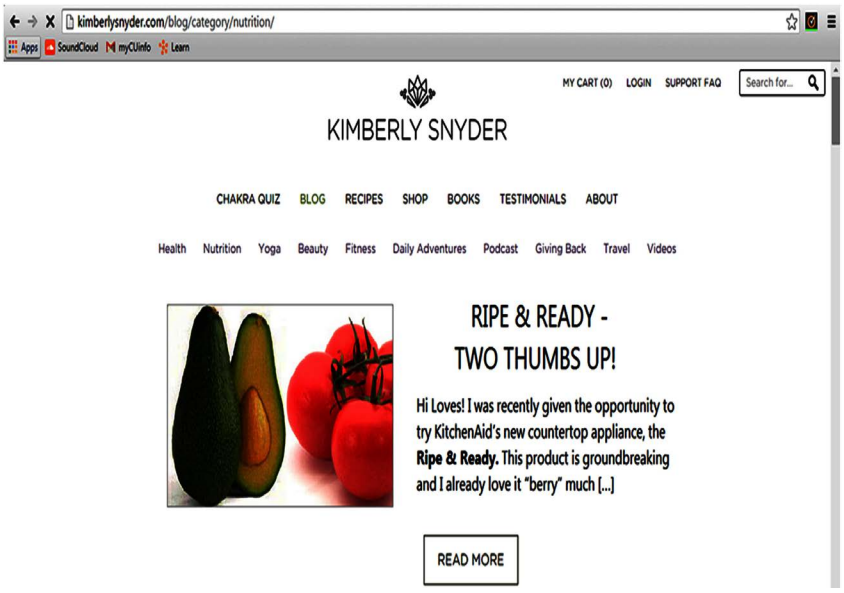


Figure 8. Creative execution [26].

Figure 9. Packaging mockup/description if available [1].

7. Conclusions

The rationale behind the conception of the Ripe & Ready KitchenAid appliance is rooted in improving the average American citizen's quality of life. The Ripe & Ready KitchenAid is intended to help alleviate the food wastage problem in America, thereby reducing the gravity of other major problems such as pollution and hunger. After conducting various forms of research and surveys, it can be concluded that this goal is achievable with the right marketing and sales strategies.

The study suggests that the ideal target demographic is young professionals within the age of 25 - 34. Additionally, sales forecasts project a payback period of 1.58 years. The included within this study are other relevant matters such as the product concept, sales logistics, and technical discussions. All these different facets have been studied carefully and support the idea that the product is a worthwhile business venture and agent of improvement concerning the American lifestyle.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix

Survey Link

https://cuboulder.qualtrics.com/SE/?SID=SV_6ofZub8aZHuQ2ln.

List of product ideas

1) Interactive computer in stores—computer updates ripening dates and how long produce will last.

2) Reorganize stores by ripeness—produce in sections so that everything that is ripe in 1 - 2 days is group together and then a separate group of 3 - 5 days, and etc.

3) Customized sections of refrigerators—different sections for typical produce that goes bad, can be grouped separately.

4) Produce stickers—sticker informs the consumer which produce is ripe and when, sticker changes colors as it matures.

5) Countertop appliance—appliance that slows the ripening process of produce, extends its life.

6) Wireless signal—a Bluetooth type signal that notifies consumer when produce is ripe and ready.

7) A scale—a scale within the store that detects when produce will be ripe, or the approximate number of days until ready to eat.

8) In-home storage containers—containers that store your produce and can also separate produce by when/what days they will expire.

9) Screen on refrigerator—a small, interactive screen that displays which produce/what type is in it and alerts when it is ripe.

10) Aerogel containers—aerogel containers used to store produce that keep produce at the correct temperature, with the correct amount of airflow, the most optimal storage environment for the produce.

11) Produce glasses—glasses that are able to quickly scan the entire piece of produce and alert consumer if should eat, wait or dispose.

12) Vibrating gloves—feel the produce with the gloves on and gloves will vibrate if produce is ripe and ready to eat.

13) Sensors in bowls—sensors placed in the bowls/places where you store your produce, sensors can detect what stage of ripeness the produce is in.

14) Produce delivery card—informs the consumer when the produce was delivered to the store and the frame of peak ripeness.

15) Smart kitchen—able to quickly and accurately inform consumer about produce, can also cut up/make and deliver produce to consumer.

16) Probing—stick type of thing inserted into the produce that is able to extract a tiny amount and analyze to see ripeness.

17) An app—an app that has the capabilities to scan produce and see behind the skin/inside of the produce to know how ripe it is.

18) Robots—robots choosing the freshest and most optimally ripe produce for consumers.