Individual Product Innovation Proposal – All-In-One Breakfast Station

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Executive Summary

The proposed innovation is an All-In-One breakfast station that serves to solve the problem of people skipping breakfast that is experienced by 31 million Americans (NPD, 2011). This proposal will discuss what constitutes this innovation, the market it will be competing in, the innovations category & type as well as the value proposition to its customers. Simply put, the proposed innovation consists of a coffee brewer, a breakfast maker, an alarm clock, and a condiment section. This product will compete in the Smart Kitchen Appliance market that is expected to be valued at $8.2 billion by 2024 (BccResearch, 2020) and will use a market pull strategy to be more desirable over the existing market offerings. To implement this market pull strategy, further market (customer) research will need to be conducted in order to make this innovation more customizable and adaptable to capture a larger audience.

Introduction

Breakfast has been linked to numerous health benefits such as lower risk of diabetes, improved memory, healthy heart, better metabolism, boosted energy level, and weight control (TNN, 2019). Then why does nearly 10% of the U.S. population skip it? (Census Bureau, 2020). Common reasons are having no time, wanting more sleep, dieting, being too lazy, and/or having no appetite (Deakin University, 2020). The proposed innovation is a fully automatic All-In-One breakfast station that would feature as a kitchen appliance and will be targeted towards those that lead very busy lives or could simply benefit from a little automation. The product consists of a brewing section, a breakfast section, a condiment section and an alarm clock (Figure 1, Appendix B). The breakfast section consists of a refrigeration unit, a conveyor belt, and a heating plate; the mechanism can be seen in Figure 3, Appendix B.

Market Context

This product will be competing in the Smart Kitchen Appliances market that is expected to grow to $8.20 billion by 2024 (BccResearch, 2020). While the individual components of the All-In-One breakfast machine (coffee brewer, egg boiler, alarm clock) compete against similar products in the Smart Kitchen Appliance market, the proposed innovation will be competing in its own subsegment known as the multifunctional breakfast machine. This is a fairly new market subsegment with very little data making it very hard for us to measure its actual size or growth rates. One way of speculating the product demand could be by studying the number of people that skip breakfast daily, on the assumption that they do it because they don't have time/appetite or are lazy. This number equals nearly 10% of the U.S. population, 31 million Americans (NPD, 2011), indicating that a demand for this product could be generated. These reasons are also justified through the preliminary market research I conducted by surveying 40 of my friends, family members, and classmates. As seen in Appendix A, question 3, 25% of the people surveyed skipped breakfast because they had no time, or it was inconvenient. An additional 25% of them skipped it because they had no appetite in the morning, while 10% were too lazy and 2.5% were on a diet. The all-in-one breakfast station would help such people overcome the struggles related to having breakfast while also being a personal coffee shop for the 77.5% of the people surveyed who drink coffee every morning.

The global coffee machine market, on the other hand, is well established and was valued at $5.88 Billion in 2018. This market is also expected to grow by 3.7% from 2019 to 2025 indicating a demand for coffee machines (GVR, 2019). While the coffee machine market is not the market we will be competing in, it is still a decent indicator for the potential demand for this innovation since it does consist of a coffee/tea brewer section.

Since the idea of an automated (smart) breakfast station has not been deeply explored by other kitchen appliance manufacturers, this product will be competing in a dynamic market with virtually no competition. However, the key to this products success is closely interacting with potential customers. Through the preliminary market research conducted, seen in Appendix A, multiple design changes will be needed to add value for the customer. These changes are as follows:

- Change breakfast option from boiled eggs to omelets/pancakes. Question 5 on the survey indicates that boiled eggs was the interviewees least favorite option.
- Research new storage and delivery system for omelet/pancake mix. Possibly use temperature-controlled flasks to store the mix and a material extrusion (3d printing) style to dispense this mix onto a heating plate.
- Additional storage for coffee stirrers, utensils and napkins.
- Explore smart device integration (Google Home, Amazon Alexa, Apple Home). While the feasibility still needs to be analyzed, smart device integration can allow users to control this product easily through their smartphones.
- Explore Bluetooth speaker integration. While the feasibility of this also has needs to be analyzed, Bluetooth speakers can increase the functionality of this device and add more value for the customer. i.e. users can now listen to music while cooking/working and the device is no longer limited to its initial use of simply making coffee and breakfast.

Category of Innovation

This product can be categorized as an incremental process innovation as it builds off existing breakfast stations. The most popular all-in-one breakfast station found on Amazon (Figure 5, Appendix B) is offered at $79.99 and is completely analogue. This means that while this machine can brew coffee and make breakfast, it still requires the users input (add coffee beans/filter, crack open eggs, put in toast, and select settings) in the morning, and therefore lacks automation. This innovation aims to solve this by automating the entire process, so no user input is required in the morning.

Since this product is defined by market pull, the potential market for it can be expanded by adding functional improvements to the existing breakfast station. By doing this, the All-In-One breakfast station is no longer limited to just people who skip breakfast or brew coffee at home. For example, designing a brewing system that uses the popular K Cup coffee pods will allow customers to enjoy their favorite blend of coffee OR tea. Designing a new storage system that uses standard temperature-controlled flasks along with a 3d printing style delivery method can also make multiple breakfast options possible for customers. Moreover, customers can refill these flasks using manufacturers recommended ingredients for best results or purchase the omelet/pancake batters refills sold by the manufacturer. This way, batter refills can also act as complimentary products to the All-In-One breakfast station and generate additional revenues.

The proposed innovation is expected to affect the current state-of-the-art breakfast stations but not radically; it will give users the option to either run the machine automatically or manually whenever they chose to do so. It is also worth noting that this innovation will most likely be more expensive than current breakfast stations such as the one in Figure 5, Appendix B that is listed for $79.99. This is simply because while the All-In-One breakfast station consists of nearly the same core components as the current state-of-the art, further research and development needs to be done in order to effectively automate the process. However, strategic alliances with firms such as Keurig, Black + Decker, and/or Hamilton Beach will allow to cut down these R&D costs and even help bring this innovation to market sooner. In the current market, Keurig and Black + Decker make some of the most popular single-serve (K-Cup) coffee makers (Quinn, 2020) while Hamilton Beach has contributed significantly to affordable sandwich makers (Martins, 2020). Based on this, a strategic alliance with a firm that specializes in single-serve coffee machines as well as one that specializes in breakfast makers will be most beneficial to progress this innovation.

Type of Innovation

This innovation can closely be defined as a package innovation. Trott defines this as “a package of component products that provides those benefits defined in the concepts, i.e., what the customer actually purchases and constitutes the ingredients of the design; and the process, which defines the relationship between the component product and services by which the design fulfils its concept” (Trott, 2017). In the case of the All-In-One breakfast station, the individual components that make up the brewing & breakfast sections will pose at the package. On the other hand, the automated system that times the brewing and breakfast section to run simultaneously will pose as the process. Moreover, the delivery method (proposed 3d printing style) for the breakfast section will also pose as a process. These processes connect the individual components of the All-In-One breakfast station making it a whole package.

The automation (zero user input) of said processes is what differentiates this innovation from existing breakfast stations such as the one seen in Figure 5, Appendix B and is just one of the customer values propositions for this innovation. It would help users who are lazy or don’t have time in the morning to have breakfast (25% from survey). The proposed new storage system (temperature-controlled flasks) would allow users to have different breakfast options as opposed to just boiled eggs. This can also help users that skip breakfast due to a lack of appetite (25% from survey). Lastly, designing the brewing station to operate on industry standard K-Cup pods give users multiple brewing options as well unlike existing breakfast stations that are limited to just ground coffee beans. Moreover, the growing popularity of K-Cup pods along with third-party manufactures means that the possibilities are endless. Users can purchase their choice of K-Cup pods and brew coffee, tea, hot chocolate, cocktails, cider, lemonade, oatmeal or even soup (Werner, n.d.). Crazy right?

Several different design tools were used leading to this innovation. Some analytical & intuitive thinking, a few observations (Appendix C), a few incremental changes and a lot rapid prototyping. Analytical (realistic) thinking was part of the brainstorming process to determine how the prototype was going to be built. The plan constituted of using a Keurig coffee machine and egg boiler that was available at the time; however, flaws to this plan were realized as soon as prototyping began. The biggest one being that there was no refrigerated space to store eggs and no automatic system to load the eggs into the boiler. Physically prototyping the idea out of cardboard and glue is what led the brainstorming process to become more intuitive (creative). Through this, a novel system was developed to refrigerate, store, and load the eggs into the boiler. Balancing both analytical and intuitive thinking yielded the best results for this prototype and incremental changes were used to add useful features such as a storage compartment for coffee pods, creamer/sweetener, salt, and pepper.

Proposed Value Proposition

As stated in the "Market Context" above, this innovation will be competing in the Smart Kitchen Appliance market and will continue to undergo research & development to further align it with the markets (consumers) needs to create a market pull. Most of the value propositions have been discussed in the second paragraph of "Type of Innovation" above. One way to improve these benefits would be by conducting further market research to determine how the majority of customers would like their omelet/pancakes cooked. This will allow engineers working on the innovation to optimize the quantity of batter being used along with the time/temperature for cooking to yield the best results. Moreover, additional market research can help determine the best ingredients to use for these batters ensuring that the omelet/pancake being cooked is appetizing for those who lack an appetite in the morning (25% from survey). Additionally, developing settings to prepare the omelet/pancakes at different levels of doneness can cater to multiple individuals using the same product or the even the same individual who'd like to switch it up.

What makes this innovation unique and more desirable to the customers than existing breakfast stations would be its customizability. From being able to choose from the several different K-Cup pods available in market to how the customer would like their omelets/pancakes done; this sort of customizability will make this product more desirable than others and generate more demand through market pull.

The problem this innovation serves to solve is that of people skipping breakfast in the morning. Breakfast gets skipped due to several reasons (no time, no appetite, lazy) and through the use of automation and customizability, this innovation will serve to solve this problem. People with no time for breakfast will specifically benefit from the automatic capabilities of this innovation as it will require zero user input in the morning. On the other hand, the new and improved breakfast options (omelet/pancakes) will help those that suffer a lack of appetite. Lastly, the newly proposed 3d printing style delivery system for the breakfast section will eliminate the R&D costs associated with developing a new breakfast system (boiling eggs). Savings here could be reinvested in the form of additional useful features to increase the products functionality and attractiveness to customers.

Conclusion

In conclusion, the All-In-One breakfast station is nowhere near production and will require high levels of research & development to make it more attractive to customers. The initial proposed method for the storage, delivery and boiling of eggs for the breakfast section seen in Figure 3, Appendix B will also be discarded since it failed the preliminary feasibility analysis. Instead, temperature-controlled flasks along with a 3d style delivery system will be explored to cut down R&D costs and allow for more customizability of breakfast options. Lastly, since this innovation is defined by market pull, it's success will ultimately depend on how efficiently/accurately customer feedback is translated into the product design to solve the problem of skipping breakfast.

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Appendix A: Survey sample size – 40 people

1. I am

Undergraduate student	40%
Graduate student	25%
Industry professional	30%
Self-employed	5%

2. My age group is

Under 18	0%
18 – 24	80%
25 – 34	7.5%
35 – 44	7.5%
45 – 54	2.5%
55 – 64	2.5%
65	0%

3. Do you have a breakfast every morning? If not, why?*

Yes	50%
No, no appetite	25%
No, no time/inconvenient	25%
No, too lazy	10%
No, just coffee	7.5%
No, on a diet	2.5%

4. How effective is your current alarm clock at waking you up?

It gets me up EVERY time	35%
It gets me up MOST of the time	37.5%
It gets me up SOMETIMES, its not loud enough	17.5%
It RARELY gets me up, its not loud enough or I hit SNOOZE	10%
It NEVER gets me up, its not loud or I hit SNOOZE	0%

5. Rate these breakfast options to your liking (1 being your best pick)

	1	2	3	Score
Boiled eggs	25%	25%	50%	1.75
Omelets	55%	27.5%	17.5%	2.38
Pancakes	20%	47.5%	32.5%	1.88

6. At what frequency are you comfortable maintaining the device? (add water to the reservoir for brewing coffee and eggs, loading eggs into the built-in refrigerated unit)

Once every 2 days	52.5%
Once every 4 days	25%
Once a week	22.5%

7. How many times a week do you get coffee in the morning from a store? (starbucks, dunkin, etc)

Never, I don't drink coffee	22.5%
Never, I only brew at home	32.5%
1	17.5%
2	5%
3	2.5%
4	2.5%
5	5%
6	0%
Everyday	12.5%

8. How long does this coffee stop add to your commute?

I don't stop for coffee	57.5%
5 minutes	17.5%
10 minutes	15%
15 minutes	7.5%
20 minutes	2.5%

9. There is also a condiment holder built in to hold (salt, pepper, coffee pods, creamer/sweeter). Are there any other features you would like to add to this?*

No, its perfect	57.5%
Coffee stirrer & utensils storage compartment	7.5%
Milk, for coffee	5%
Toaster for bread; storage for butter, cream cheese, etc	5%
Napkins	5%
Smart device integration (google home, amazon alexa, apple home)	5%
Iced coffee compatible	2.5%
Bluetooth speaker	2.5%
Basket for eggshells	2.5%
Phone charging station	2.5%
Brew tea, not everyone drinks coffee	2.5 %

10. How much would you realistically pay for such a device?

$50	47.5%
$100	15%
$150	22.5%
$200	15%
$250	0%
Average (With Undergraduates)	**$102.5**
Average (Without Undergraduates)	**$150**

* Percentages in these open-ended questions may evenly add up to 100 due to multiple-overlapping responses.

Appendix B: Reference Images

Figure 1: All-in-one breakfast station (alarm clock, egg boiler, and coffee brewer)

Figure 2: (Red Arrow) Pipe that draws water from the coffee machine reservoir to the heating plate

Figure 3: Path taken by the eggs from the refrigeration unit to the conveyer belt to the heating plate

Figure 4: Incremental addition to the design resulting in a condiment section

Figure 5: Nostalgia 3-in-1 Breakfast Station priced at $79.99 (Amazon, 2020)

Appendix C: Observations on Design Specifications

1) One of the biggest criteria for this concept was to ensure people don't skip breakfast. This is translated in the design as synchronous operation of the alarm clock, egg boiler and coffee brewer.
2) Since studies (Nazario, 2018) have shown several health benefits of having breakfast, the idea of a "healthy" breakfast option was included in the design as boiled eggs.
3) This innovation will make it less likely for people to hit the snooze button since the opportunity cost of doing that will be wasting a cup of coffee and some boiled eggs. Moreover, the design is programmed to stop its own alarm clock only when the user has taken the coffee mug out of machine, this can be implemented through the use of low-cost motion sensors. Lastly, the smell of fresh coffee in the morning can act as an enticing bonus for the user to not hit the snooze button.
4) The average cost of a Starbucks breakfast comes up to about $7 (MenuPricesGenie, 2020). This adds up to about $210 per month, and $2520 per year. Combined, the automatic egg maker and coffee machine cost about $70 without the integration of the all-in-one breakfast station design. The most challenging section of this innovation will be creating a cost-effective refrigeration unit and egg dispenser/loader mechanism. For this reason, I would estimate the cost of this design at about $200 - $250. Ultimately, the user will still save money in the long term using this device. Moreover, the time spent waiting in a coffee shop will also be eliminated.
5) Since both machines use water, a water-pump will be used to draw water from the reservoir built into the coffee machine to boil the eggs when the alarm rings.
6) Since eggs cannot be stored outside overnight, a refrigeration unit will be designed to store them.
7) To ensure the eggs don't crack in the loading phase, a conveyer belt will be used along with a sloped edge to carefully roll the eggs onto the heating plate. Moreover, the eggs would be landing into a body of water, that is also expected to absorb some of the impact.