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Nutrition and Synchronization App

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1. Introduction

1.1. Project titles

1.1.1. Full

Nutrition and Synchronization App

1.1.2. Short

NutriSync

1.2. Problem statement

In today's digital age, a significant number of health-conscious individuals, including athletes and busy professionals, are leveraging technology to achieve their fitness and dietary goals. While smart devices and applications such as Strava, Garmin, Google Health, and Apple Health offer insights into one's activity levels, a disconnect persists in aligning these insights with the dietary provisions in one's fridge. This misalignment manifests when they find their refrigerators either overstocked or lacking essential items tailored to their real-time nutritional needs. Consequently, individuals often find themselves making hasty grocery orders, leading to financial inefficiencies by either purchasing items at non-optimal prices or incurring frequent delivery charges. This challenge emerges due to the lack of an integrated system capable of harmonizing the data from fitness activities with real-time dietary stock, ensuring both health optimization and financial prudence. Addressing this disconnect is crucial, not just for the individual's well-being and financial health, but also to fully harness the potential of technological integrations in modern living.

2. User needs analysis

2.1. Expectations of the stakeholders

2.1.1. Primary users

2.1.1.1. Health-conscious individuals & Fitness Enthusiasts:

They will use NutriSync daily to monitor their food stocks, get recommendations tailored to their physical activities, and ensure that their dietary needs are in line with their fitness goals.

2.1.1.2. Online Grocery Shoppers:

Regular users of online grocery platforms will use the application to optimize their shopping lists and automate their order processes based on real-time needs.

2.1.1.3. Intentions

To have a seamless and efficient grocery management system that ensures their dietary needs are consistently aligned with their fitness goals.

2.1.2. Secondary users

2.1.2.1. Dieticians and Nutritionists:

They may analyze activity and consumption statistics to provide better dietary recommendations.

2.1.2.2. Family Members or Roommates

Individuals who might occasionally input information or use the system outputs, such as system-generated grocery lists, reports, or notifications about the stock status.

2.1.2.3. Intentions

To support primary users in their goals, understand patterns, and make informed decisions or recommendations.

2.1.3. Business Owners and Managers

They expect the application to increase sales by ensuring that user orders are frequent and tailored. Fitness App Providers (e.g., Strava, Garmin, etc.) might expect an increase in the usage of their platforms, as users would want more accurate dietary recommendations.

2.1.3.1. Intentions

To see a boost in user engagement, sales, and overall brand loyalty. They would invest in the system with the expectation that, for instance, sales might increase by at least 10% due to tailored and frequent orders.

2.1.4. Competitors

2.1.4.1. Traditional Grocery Apps

Apps that simply allow users to order groceries without any smart integrations like Barbora, Bolt, Wolt and Walmart. Other Fitness & Health Apps like Strava, Google Health and Apple Health: Apps which provide health insights but don't have the fridge and grocery integration.

2.1.4.2. Intentions

They will be observing the success of NutriSync and might be motivated to offer similar or better experiences to retain their user base.

2.1.5. Maintainers

2.1.5.1. NutriSync Team

Our team is going to maintain and continue the development of the platform without any additional help from other companies. We will work on the regular updating, troubleshooting, and maintenance of the NutriSync application to ensure smooth user experience.

2.1.5.2. Intentions

To ensure the application runs flawlessly, integrating feedback and ensuring any issues are promptly addressed.

2.2. Current Users' Activities

2.2.1. Primary User Group: Health-conscious individuals & Fitness Enthusiasts

2.2.1.1. Morning Routine

Jane, age of 20, starts her day with a morning run, tracked by her Garmin device. After her workout, she checks her Samsung Family Hub fridge and finds she's out of yogurt and bananas for her smoothie. Instead of making a mental note, the fridge suggests a grocery order on Barbora based on her usual post-workout meals.

Problem: Manual checking of inventory after physical activity can result in forgetting to reorder necessary items.

Opportunity: Using smart fridge technology combined with grocery ordering platforms to automate product recommendations and ordering after exercise.

2.2.1.2. Weekly Meal Prep

John, an avid meal prepper, often plans his meals around his workouts using a smartwatch based on data by Strava. John uses Google Health databases to find recipes based on his workout data to align his meals with his workout intensity.

Problem: Difficulties in manually finding recipes that align with specific workout intensities.

Opportunity: Using health databases and tracking apps to suggest recipes in line with recent physical activities.

2.2.1.3. Dietary Adjustments

Lucy has increased her swimming sessions this month and tracks them on her Apple Health app. She's unsure about the dietary changes she should make to support this activity and tries to use MyFitnessPal to get recommendations on the dietary adjustments.

Problem: Uncertainty in modifying diet to align with increased physical activity.

Opportunity: Using dietary platforms to automatically recommend dietary adjustments based on increased exercise data.

2.2.1.4. Dietary Restrictions

Tom recently learned he has a mild lactose intolerance. He wants to ensure his meals post-workout don't contain dairy, but he often forgets and ends up having dairy-based protein shakes.

Problem: Remembering dietary restrictions while aligning with workout nutritional needs can be challenging.

Opportunity: Considering medical or dietary restrictions when suggesting post-workout meals.

2.2.1.5. Balancing Dietary & Cultural Values

Mrs. Aisha, a 70-year-old woman, is dedicated to her vegan lifestyle and equally committed to her Muslim faith. She aims to balance her meals with plant-based protein sources. Given her age, navigating multiple apps on her phone to find food that is both nutritionally appropriate and in line with her religious beliefs can be challenging.

Problem: Identifying plant-based protein sources that also adhere to Halal guidelines is a complex task on standard applications, especially for older users not well-versed with technology.

Opportunity: A user-friendly system that merges dietary and cultural preferences to provide personalized food recommendations, ensuring ease of use for elderly users.

2.2.2. Secondary User Group: Dieticians and Nutritionists

2.2.2.1. Dietary Recommendation

As a nutritionist, Dr. Smith frequently gets logs to his work computer from his clients about their physical activity. During his work he spends hours manually aligning these with dietary recommendations using simple document editing software and can’t help many clients in a day.

Problem: Manual alignment of activity data with dietary recommendations is time-consuming, leading to less served clients.

Opportunity: Integrating automated fitness apps with dietary databases can provide instant recommendations, saving time.

2.2.2.2. Client Monitoring

Dr. Fernandez wishes to monitor on his computer and phone her client's dietary intake over a week to adjust a diet plan. However, relying on the client's memory or manual logging is often inaccurate.

Problem: Relying on manual logs or memory for dietary intake can lead to inaccuracies.

Opportunity: Giving real-time dietary intake based on fridge inventory and activity can provide precise data for monitoring.

2.3. Characteristics of the users, activities, context and technologies

2.3.1. People

2.3.1.1. Demographics

- Age ranges from young adults (e.g., 20 years old) to elderly individuals (e.g., 70 years old).
- Health-conscious individuals with varied workout routines and dietary needs, including those with medical or dietary restrictions.
- Nutritionists and dieticians who provide tailored dietary advice based on physical activity and require accurate logs of dietary intake.
- Some may have dietary restrictions or health issues, such as lactose intolerance.
- Some users may have specific cultural or religious dietary guidelines, such as Halal requirements or veganism.

2.3.1.2. Motivation to Learn New Technologies:

- High motivation among those who already utilize technology for tracking fitness and meals.
- Potential resistance or challenges among the elderly, but a willingness exists if the technology meets their specific needs.
- Used Information Technology and Devices:
- Various devices like fitness tracking gadgets, phones for meal planning, and computers for data logging and analysis.

2.3.1.3. IT Usage Skill Level:

- Ranges from moderate to high among younger users and professionals.

- Potential for low to moderate skill level among the elderly or those not well-versed with multiple applications.

2.3.2. User Activities:

- Activities can vary from short tasks like checking inventory to longer tasks like meal prep or workouts.
- Some tasks might be rushed, like post-workout routines or providing dietary recommendations for clients, while others, like meal planning, may not have immediate time pressure.
- Activities can be a mix of single actions (e.g., morning routines) and continuous actions (e.g., monitoring dietary adjustments).
- For automated recommendations, faster responses are preferable.
- Activities can be solitary or collaborative, especially among professionals coordinating with clients.
- Tasks can range from well-defined actions to more vague ones that require browsing multiple types of information.
- Ensuring accurate dietary recommendations is critical, especially when accounting for medical or dietary restrictions..

2.3.3. Context

- Home environments, particularly kitchens, where meal prep and inventory checking happen.
- Professional settings like nutrition or dietician clinics where dietary recommendations are discussed.
- Fitness centres or gyms where users engage in physical activities and might discuss their dietary habits.

2.3.4. Technologies

- Fitness tracking devices and apps (Garmin, Strava, Apple Health).
- Grocery ordering platforms (Barbora, Wolt, Bolt).
- Smart fridge inventory management systems (Samsung Family Hub).
- Dietary databases or platforms where dietary restrictions and recommendations are stored (MyFitnessPal, Google Health databases).
- Smartwatch

- Phone
- Fridge
- Computer

2.4. User needs

N1. Efficient Grocery Management: Users need a way to efficiently manage their groceries to ensure they have the right items on hand after physical activities. (2.2.1.1)

N2. Customized Recipe suggestions: Users need a recipe suggestion feature to quickly find meals that align with their recent workouts, helping them during meal preparations. (2.2.1.2)

N3. Dietary Adjustment Assistance: Users need a dynamic dietary adjustment tool that reacts to changing physical activity, allowing them to get relevant dietary recommendations. (2.2.1.3)

N4. Dietary Restriction Support: Users with dietary restrictions, such as lactose intolerance, require a system that considers and suggests suitable food items. (2.2.1.4)

N5. Cultural and Religious Dietary Support: Users with specific cultural or religious dietary guidelines, like Halal or veganism, need assistance in finding suitable food items. (2.2.1.5)

N6. Real-time Inventory Tracking: Users need real-time tracking of their fridge inventory to avoid overstocking or running out of essential items. (2.2.1.1)

N7. Accessible Interface: Users, especially elderly or less tech-savvy individuals, need an accessible interface that simplifies navigation and use. (2.2.1.5)

N8. Client Dietary Monitoring: Nutritionists requires a real-time dietary monitoring system to accurately track and adjust their clients' diet plans without relying on potentially flawed memory or manual logs. (2.2.2.2)

N9. Client Activity and Dietary Management: Nutritionists needs a client activity integration feature so he can automatically align physical activity with dietary recommendations, maximizing the number of clients he can assist each day. (2.2.2.1)

N10. Remainder System: Users need a reminder system for dietary restrictions when they are searching for meals, ensuring dietary restrictions, such as lactose intolerance. (2.2.1.4)

N11. Grocery List Maker: Users need a predictive grocery list maker which considers their previous patterns and dietary habits, saving time during their usual routine. (2.2.1.1)

N12. Grocery Ordering System: Users need an integrated grocery ordering system within the app, so they could conveniently order missing ingredients without switching between multiple platforms, streamlining her morning routine. (2.2.1.1)

N13. Automatic Grocery Ordering: Users need an option to automatically order needed items within the app to desired location without any intermediate actions.

N14. Searchable recipes: Users need a searchable recipe database within the app so they can easily find and select meals from a provided list that align with their workout intensities and nutritional preferences. (2.2.1.2)

N15. Recipe Nutrition: Users need a recipe nutritional information viewer within the app so that they can see the detailed nutritional content and breakdown of provided recipes from the database. (2.2.1.2)

2.5. Usability objectives

U1. Efficient Learning Curve: Users will be able to navigate and use the NutriSync application effectively the first time they open it, without any prior training. First-time users should find essential features within two minutes of accessing the application, while expert users (frequent users) should achieve the same within 30 seconds.

Aligned with User Needs: Learning Efficiency (N1).

U2. Rate of Errors: Users should make minimum count of errors while using NutriSync. On average, users will not navigate to more than three incorrect screens or pages when completing a task. Critical errors, such as entering incorrect dietary restrictions or ordering the wrong groceries, should occur no more than 1% of the time.

Aligned with User Needs: Data Accuracy (N3), Efficient Grocery Management (N1).

U3. User Satisfaction: Users' subjective impressions of NutriSync should be highly favorable. On a scale of 1 (very appealing) to 7 (very unappealing), users should rate the application at least 2.5 on average.

Aligned with User Needs: Accessible interface (N7).

U4. Task Completion: Users should successfully complete tasks related to grocery management and dietary adjustments. At least 75% of users who add items to their grocery list should proceed to complete a purchase. Furthermore, at least 95% of users who input their dietary restrictions or preferences should successfully use the system without encountering issues.

Aligned with User Needs: Efficient Grocery Management (N1), Dietary Adjustment Assistance (N3), Dietary Restriction Support (N4).

U5. User Engagement: NutriSync should maintain user interest and encourage regular use. At least 50% of registered users should revisit the application at least once per month to check their inventory, receive recommendations, and manage their dietary needs.

Aligned with User Needs: Efficient Grocery Management (N1), Customized Recipe suggestions (N2), Dietary Adjustment Assistance (N3), Real-time Inventory Tracking (N6), Remainder System (N10), Grocery List Maker (N11), Grocery Ordering System (N12), Searchable Recipes (N14), Recipe Nutrition (N15).

2.6. Examples of user interface designs

2.6.1. Samsung Family Hub fridge interface

Figure 1. Samsungs' Family Hub Fridge

The image above shows a neat user interface for fridge. It is a Samsung Family Hub fridge that have its own interface and shows current items in a fridge. It also has other useful features like interactive calendar, browse family photo gallery and other features. It inspired us to use a similar fridge interface design for NutriSync app.

2.6.2. Apple Health analytics app

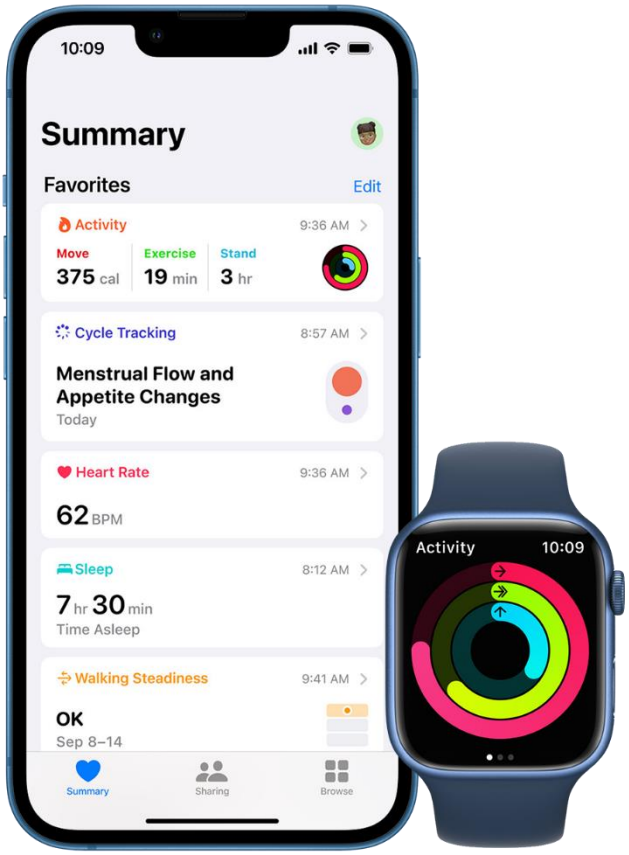

Figure 2. Apple Health App

The image above shows an Apple Health app interface on a phone and smartwatch devices. It inspired us for its smart interface that have all needed information about user's activity and how it can be simply represented in a small smartwatch screen.

2.6.3. Diet & Nutrition Tracking App

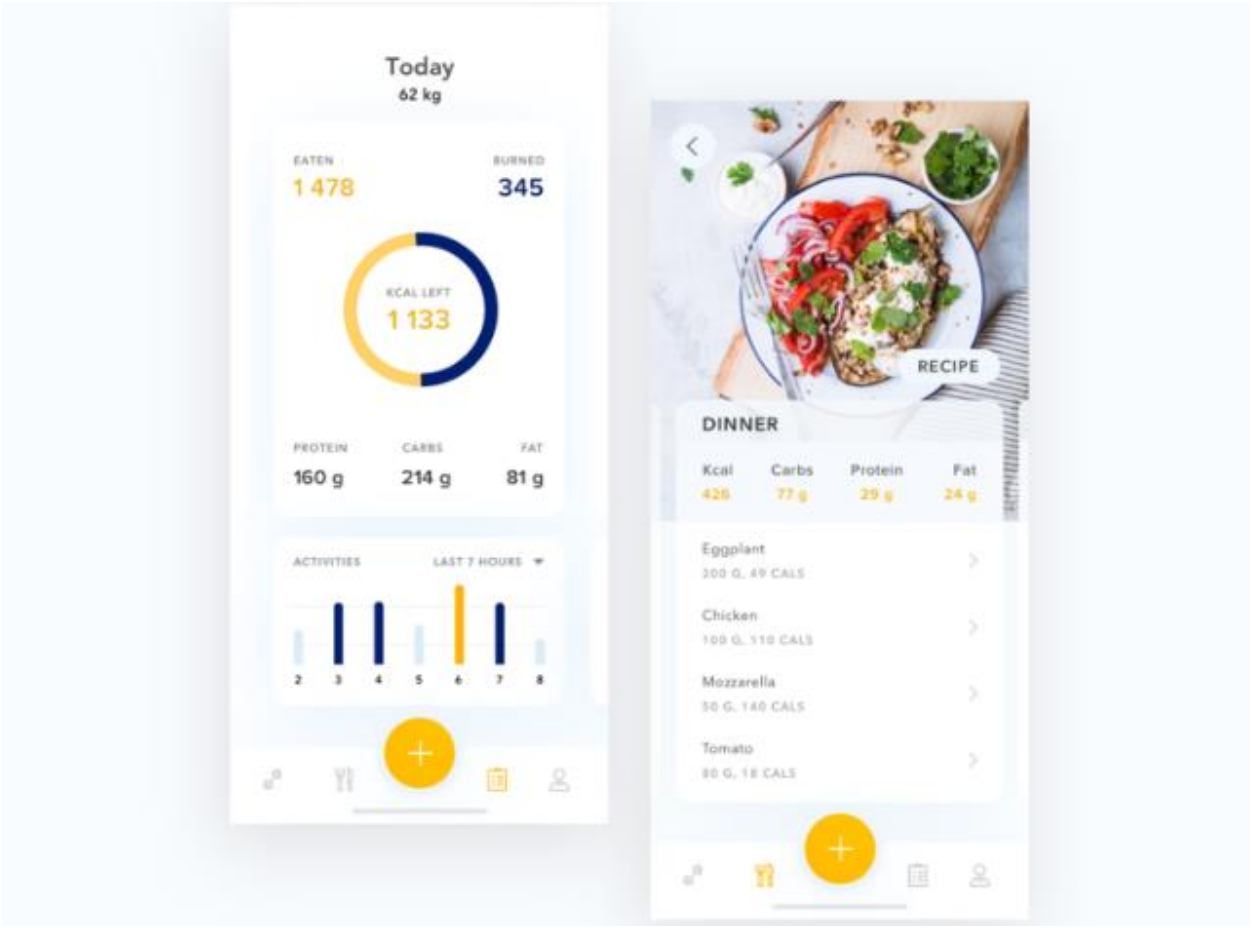

Figure 3. Concept design of diet and nutrition tracking app design

The image above shows a concept design of diet and nutrition tracking app. It is inspiring for its simplicity and how all need information about recipe nutrition can be shown on a screen, while preserving its interactiveness.

2.6.4. “Nutritics” - Nutrition Analysis Software

Figure 4. Nutritics app

The image above shows a Nutritics app design on a personal computer and phone devices. It is inspiring for us as a professionally looking recipe database design that could be used similarly used for NutriSync app and its own recipe database.

2.6.5. “Noom” – nutritionist coaching app

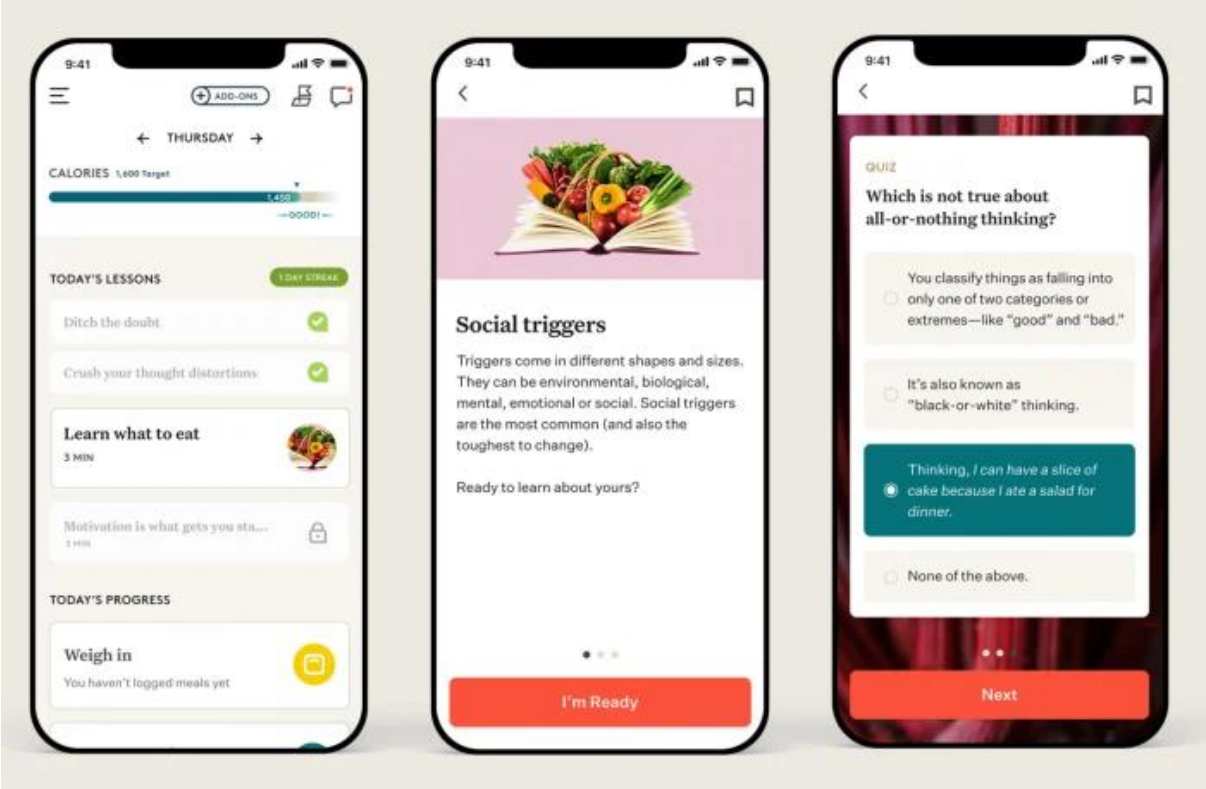

Figure 5. Noom app

The image above shows an Noom app interface on a phone device. It acts as a example of how the design of NutriSync app could look from nutritionist view. It has some of important features like tracking client’s activities and feedback about his diet.