AI POWERED NUTRITION ANALYSIS FOR FITNESS ENTHUSIASTS

INTRODUCTION

Eating is for some people just a necessary everyday activity, while for others, a unique moment in their daily schedule that gives them great enjoyment. No matter the side that each person has chosen, it is becoming more and more evident that the role food plays in our overall health is of utmost importance. From a superficial point of view, our bodies need a specific amount of energy to function properly and food provides just this. Health and fitness enthusiasts are people passionate about fitness and health. They search for exercise and workout tips online. They enjoy activities like jogging or group classes such as yoga and Pilates. These enthusiasts also care about what they eat and see their diet as an essential part of their well-being.

LITERATURE SURVEY

Here, we will take a look at all the previous solutions, attempts and implementations to the AI powered nutrition analysis for fitness enthusiasts or anything that is atleast vaguely related to it.

EXISTING SOLUTIONS

Nutritional analysis is the process of determining the nutritional content of food. It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food.

Food is essential for human life and has been the concern of many healthcare conventions. Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet.

TABLE: Descriptive data of the analysis of the selected studies

Authors	Country	Sample	App Type	Theory	Data Analysis Methods	Measure Outcomes
Beldad & Hegner [43]	Germany	German's app user (n = 476) Male: 50.0% Female: 50.0% Age: 26.7 ± 5.0	Sport information	TAM	Content Analysis	Trust in the Fitness App Developer; Descriptive Social Norm; Injunctive Social Norm; Perceived Ease of Use; Perceived Usefulness; Intention to Continue Using a Fitness App
Byun, Chiu, & Bae [45]	Korea	Korean consumers (n = 261) Male:4 9.1%; Female: 50.9% Age: 20–29 (29.9%); 30–39 (34.9%); 40+ (5.2%)	Sport Brand	TAM	Content Analysis	Perceived Enjoyment; Perceived Ease of Use; Perceived Usefulness; Intention to use; Actual usage
Chen & Lin [44]	Taiwan	Fitness Community (n = 994) Age: 20– (10.06%); 20–29 (56.14%); 30–39 (1.83%); 40–49 (8.65%); 50–59 (3.32%)	Diet/Fitness	TRAM	Content Analysis	Health Consciousness; Optimism; Innovativeness; Discomfort; Insecurity; Perceived Ease of Use; Perceived Usefulness; Attitude toward Using App; Intention to download app
Chiu & Cho [61]	Hong Kong	Korean university students (n = 204) Male: 51.9%; Female: 48.1% Age: 19–25 (71.8%); 26–30 (10.7%); 30+ (17.5%)	Health/Fitness	TRAM	Descriptive Content Analysis	Optimism; Innovativeness; Insecurity; Discomfort; Perceived Usefulness; Perceived Ease of Use; Perceived Enjoyment; Intention to use
Chiu, Cho, & Chi [56]	Hong Kong	Chinese population (n = 342) Male: 45.6%; Female: 54.4% Age: 20– (1.2%); 21–25 (14.9%); 26–30 (35.4%); 31–35 (29.8%); 36–40 (11.1%); 40+ (7.6%)	Health/Fitness	ECM	Descriptive Correlational Content Analysis	Investment size; Quality of alternative; Commitment; Confirmation of expectations; Satisfaction; Perceived Usefulness; Continuance Intention
Cho, Lee, Kim, & Park [59]	Korea	University students (n = 294) Male: 33.0% Female: 67.0% Age: 23.2	Diet/Fitness	TAM	Correlational Content Analysis	Appearance Evaluation; Fitness Evaluation; Appearance Orientation; Fitness Orientation; Perceived Usefulness; Intention to Use App
Cho, Lee, & Quinlan [51]	Korea	University students (n = 508) Male: 34.6%; Female: 65.4% Age: 21.5	Diet/Fitness	TAM	Descriptive Content Analysis	Subjective Norms; Entertainment; Recordability; Networkability; Perceived Ease of Use; Perceived Usefulness; Behavioral Intention to Use
Cho & Kim [52]	Korea	University students (n = 277) Male: 34.3%; Female: 65.7% Age: 22.5	Diet/Fitness	TAM	Content Analysis	Smartphone Use Efficacy; Internet Information Use Efficacy; Internet Information Credibility; Perceived Ease of Use; Perceived Usefulness; Behavioral Intention
Dhiman, Arora, Dogra, & Gupta [58]	India	Indian fitness lefts users (n = 324) Male: 54.0%; Female: 46.0% Age: 20– (16.0%); 20–40 (80.0%); 40+ (4.0%)	Fitness	UTAUT2	Descriptive Correlational Content Analysis	Performance Expectancy; Effort Expectancy; Self Efficacy; Social Influence; Facilitating Conditions; Hedonic Motivation; Price Value; Personal Innovativeness; Habit; Behavioral Intention

Authors	Country	Sample	App Type	Theory	Data Analysis Methods	Measure Outcomes
Ha, Kang, & Kim [42]	Korea	University students (n = 226) Male: 50.8%; Female: 49.2% Age: 25.3	Sport Information	TAM	Descriptive Content Analysis	Sport Involvement; Sport Commitment; Social Influence; Personal Attachment; Media Multitasking; Perceived Enjoyment; Perceived Ease of Use; Perceived Usefulness; Usage Intention
Huang & Ren [60]	Hong Kong	Chinese app users (n = 449) Male: 43.0%; Female: 57.0% Age: 31.85 ± 6.9	Fitness	TAM	Regression	Instruction Provision; Self-Monitoring; Self-Regulation; Goal Attainment; Exercise Self Efficacy; Perceived Usefulness; Perceived Ease of Use; Perceived Enjoyment; Continuance Intention
Kim, Kim, & Rogol [1]	United States	App users (n = 233) Male: 68.2% Female: 31.8% Age: 18–24 (46.8%); 25–34 (31.8%); 35–44 (13.7%); 45–54 (7.3%); 55+ (0.4%)	Sport Team	TAM	Descriptive Content Analysis	Innovativeness; Perceived Ease of Use; Perceived Enjoyment; Perceived Trust; Perceived Usefulness; Intention; Sport Apps Use
Lee, Kim, & Wang [62]	United States	College students (n = 267) Male: 32.2% Female: 67.8% Age: 17–20 (48.3%); 21–25 (40.8%); 26–29 (8.2%); 29+ (2.6%)	Sport App	UTAUT	Correlational Content Analysis	Entertainment Motivation; Social Utility Motivation; Performance Expectancy; Effort Expectancy; Social Influence; Intention to Mobile Sports Apps Use
Li, Liu, Ma, & Zhang [63]	China	Sport App users (n = 211) Male: 45.02% Female: 54.98% Age: 25–30 (41.71%); 30–35 (47.87%) 35+ (10.43%)	Social Fitness-tracking	UTAUT2	Content Analysis	Activity Amount Ranking; Activity Frequency Ranking; Confirmation; Upward Comparison Tendency; Continuous Intention
Mohammadi & Isanejad [57]	Irán	Employers Sport Organization (n = 332) Male: 37.3% Female: 62.7% Age: 30– (10.0%); 31–40 (44%); 41–50 (38%); 50+ (8%)	IT information	TAM	Descriptive Correlational Content Analysis	Technology Anxiety; Technology Self-efficacy; Perceived Enjoyment; Perceived Ease of Use; Perceived Usefulness; User Satisfaction; Attitude; Intention to use
Ndayizigamiye; Kante, & Shingwenyana [54]	South Africa	South African population (n = 139) Male: 41.5%; Female: 58.5% Age: 18–23 (57.15%); 24–29 (29.9%); 30–35 (7.5%)	mHealth	UTAUT	Correlational Content Analysis	Awareness, Effort Expectancy; Facilitating Conditions; Performance Expectancy; Social Influence; Behavioral Intention