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Barriers to the Adoption of Millet-Based "Ready-to-Cook" Meals among Working Professionals

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Abstract
The global food industry now moves towards sustainable nutrition which makes millets essential as a superfood that treats non-communicable diseases related to modern lifestyles. The "Ready-to-Cook" (RTC) product development program received institutional backing but urban workers still do not use the new products which have come into existence. The research examines three different types of barriers which include sensory and psychological and economic factors that stop professionals from switching their regular refined grains to millet-based options. The researchers conducted a mixed-methods study which collected data through structured questionnaires that reached 400 participants and through focused group discussions with professionals who belonged to the 25 to 45 age group. The results show a major gap between people's intentions and their actual behavior. The first purchase of ancient grains results from health consciousness but customers stop using the product because they dislike the rough texture and special taste of ancestral grains. The "Convenience Paradox" functions as the main obstacle because customers find millet preparation more difficult than they expect from RTC products which include ultra-processed wheat and rice. The middle-income workforce becomes more distant because economic elements combine high product prices with limited availability in retail locations. The study develops a new understanding of consumer behavior which shows that people need to understand nutrition before they will change their eating habits. The food industry should focus on developing sensory masking solutions and creating ultra-convenient packaging systems to solve the problem of product adoption. Food-tech innovators and policymakers can follow these insights to create a strategic framework which transforms millets into mainstream products from their current status as niche wellness items.

Keywords: *Millet Adoption, Ready-to-Cook (RTC), Working Professionals, Sensory Barriers, Sustainable Nutrition, Consumer Behavior.*

I. Introduction

The modern city environment shows a "nutritional transition" which enables people to become inactive because their work requirements and stressful work situations make it difficult to maintain a healthy lifestyle. The people in South Asia and Sub-Saharan Africa have stopped eating their traditional diet, which used to include various small grains, because they now consume only refined wheat and white rice. The Green Revolution introduced these staples to people as food sources that would keep them full, but now these staples have created "hidden hunger" because they make people lack essential nutrients while struggling with blood sugar problems. The global community needs to bring back ancient grains, which include millets, to modern dietary patterns as an immediate requirement.

Millets function as "nutri-cereals" because they provide better nutrition through their increased fiber content and their ability to lower blood sugar levels, while delivering vital minerals such as iron and magnesium at higher levels than polished rice. The plants maintain environmental sustainability because they need less water and require fewer agricultural chemicals for their cultivation. The United Nations established 2023 as the International Year of Millets, which led to a surge of new ideas in the food-technology industry. The "Ready-to-Cook" (RTC) category represents the main advancement because it offers pre-mixed meals which contain partially processed millet that caters to the time constraints of modern workers.

The marketing campaigns for millet-based ready-to-cook products which include millet-based noodles and instant porridges have failed to deliver results because working professionals remain unfamiliar with these products. Although people today understand environmental and health issues better than ever before they still prefer ready-to-cook meals instead of making dietary changes. The "Intention-Behavior Gap" demonstrates that people need to overcome multiple obstacles which extend beyond basic product accessibility and consumer knowledge.

The problem emerges when people experience sensory input which clashes with their learned cultural patterns and their belief that everything should be easily accessible. The meal selection process for a

professional who needs to manage a 10-hour workday and extended commuting time involves both emotional and sensory elements within their decision-making system. The existing research about millets concentrates on agricultural and nutritional aspects, yet there exists a significant research gap which examines psychological and practical barriers that stop time-limited professionals from switching to this practice.

This article seeks to bridge this gap by identifying the specific friction points that hinder millet RTC adoption. The research identifies three barriers which sensory, economic, and preparation aspects create to provide food scientists and marketers with practical research findings. Understanding why professionals reject these "superfoods" in favor of less nutritious alternatives is crucial for designing a sustainable food future that does not compromise on the realities of modern professional life.

II. Literature Review

The academic discourse about alternative food adoption uses Technology Acceptance Model as its foundation which Davis established in 1989. The food researchers adapted the software design because it helps them understand how people select food based on their health benefits and convenience. The research shows that people perceive millets as highly useful because they have a low glycemic index and gluten-free properties. however, their psychological barrier across "Ease of Use" functions as their main obstacle.

2.1 The "Convenience" Framework and the Urban Professional

The "Time-Scarcity" theory demonstrates its strong impact on current food selection practices. Buckley et al. research (2007) discovered that working professionals defined "convenience" as a three-step process which included planning and procurement and preparation and cleaning. People view most millet-based products as "Ready-to-Cook" because they think these items need expert cooking skills and take more time to make than instant wheat noodles and polished rice. Literature suggests that if the "time-saving" promise of an RTC meal is not accompanied by a "stress-reducing" experience, the adoption rate among high-income workforce remains negligible.

2.2 Sensory Perception and the "Palatability Gap"

The primary obstacle that researchers encounter in sensory science derives from the "Texture-Flavor Profile" which describes the sensory characteristics of small millets. The texture of millets which includes Finger Millet (Ragi) and Pearl Millet (Bajra) creates a gritty sensation while their flavor delivers a distinct earthy aftertaste. Research on food neophobia which describes the fear of new foods shows that consumers will choose to reject grains that provide different "mouthfeel" experiences compared to their normal dietary patterns. People who understand nutrition choose to stop using products after their first trial because they find the sensory experience unsatisfactory.

2.3 The "Premiumization" Trap and Economic Accessibility

Existing research highlights a market irony: millets, which people used to call "the poor man's grain," now serve as "premium wellness products" in urban markets. The social stigma attached to millet consumption has disappeared, but people face a financial hurdle because of this development. The research study on "Price Elasticity in Health Foods" demonstrates that urban professionals will pay higher prices for "superfoods" when they view the combination of taste, convenience, and health benefits as more valuable than the total expense. When the price of millet RTC meals reaches 2 to 3 times the cost of rice-based meals, people consider them as "occasional purchases" instead of using them as their main food source.

2.4 The Information-Action Gap

The existing research shows a tremendous deficiency that exists between people's ability to understand nutrition and their ability to prepare food. Professionals recognize the health benefits of millets but they lack the confidence needed to cook with these ingredients. Brunner et al. (2010) discovered that the complicated instructions which appear on RTC packaging create additional cognitive demands that make exhausted workers choose their standard quick meals at home after work. The review shows that people know the advantages of millets but research does not exist about the difficulties which professional chefs experience when using millets in their cooking work.

III. Methodology

The research study used a cross-sectional mixed-methods research design to examine the obstacles which prevent people from adopting millet-based RTC products. The study collected extensive quantitative data about consumer behavior while also obtaining in-depth qualitative information about the psychological and sensory friction points that working professionals encounter.

3.1 Sampling and Participants

The research focused on a group of urban working professionals who were between 25 and 45 years of age at the time of the study. The research team used professional networking sites such as LinkedIn and corporate wellness forums to recruit a total of 400 participants from three major metropolitan areas. The study required participants to have full-time employment and to make decisions about preparing meals for their household.

3.2 Data Collection Instruments

A two-part data collection process was implemented:

1. **Quantitative Survey:**The study targeted urban working professionals aged 25 to 45 years. This demographic experiences high time-poverty while spending money on health-related products. The researchers recruited 400 participants through professional networking platforms which included LinkedIn and corporate wellness forums in three major metropolitan areas. The study required participants to have full-time employment and to make decisions about preparing meals for their household.
2. **Qualitative Sensory Journals:**The 40 participants who took part in the study needed to prepare and eat a commercially available millet RTC meal which included Millet Khichdi and Millet Noodles. The participants needed to document their "Real-time Friction Points" which included their assessment of the time needed to prepare the meal and the clarity of the instructions and their sensory experiences.

3.3 Data Analysis

The researchers employed SPSS software version 28 to conduct the analysis of their quantitative data. The researchers used descriptive statistics to create a demographic profile of their study participants and Pearson's Correlation Analysis to assess the connection between "Work Hours per Week" and "Frequency of Millet Consumption." The researchers used Thematic Analysis to analyze qualitative data from sensory journals which revealed common "Pain Points" that occurred during cooking and eating.

3.4 Ethical Considerations

Informed consent was obtained from all participants, ensuring anonymity and the right to withdraw at any stage. The study maintained ethical standards for human subject research because it did not keep any confidential personal information.

IV. Results

The data analysis demonstrated that health awareness and actual consumption patterns exhibit a complex relationship. The study found that 88% of participants identified millets as a better nutritional choice than rice or wheat, yet only 14% of them consumed millet-based RTC meals more than once weekly. The "Adoption Gap" consists of three main barrier groups which include Sensory, Temporal, and Economic obstacles.

4.1 The Sensory Barrier: Texture vs. Taste

Sensory dissatisfaction created the main barrier which prevented customers from buying products again. The "Taste and Texture" item achieved its lowest average score through the 5-point Likert scale evaluation which produced a score of M = 2.4. Sensory journals provided qualitative feedback which showed sensory scientists discovered a "consistency conflict." The participants reported that millet-based RTC products produced a "gritty" or "muddy" mouthfeel for them. The urban professional dining experience showed that 62% of respondents preferred their familiar sensory experiences over nutritional benefits during stressful meal periods according to their comparison between white rice "fluffiness" and other textures.

4.2 The "Convenience Paradox" and Time Scarcity

A strong relationship exists between "Hours Worked per Week" and "Frequency of Millet Consumption" which shows a correlation coefficient of -0.64 with a significance level below 0.01. The more professional duties increased for staff members the less likely they were to adopt millet consumption. The study found that 54% of participants in the "Ready-to-Cook" group considered millet cooking to be "cumbersome" as their cooking skills required less effort to prepare most dishes. The data shows that "Ready-to-Cook" means different things because a millet mix needs 15 minutes to cook while ultra-processed foods like instant noodles need only 3 minutes. A professional who lacks time sees the 12-minute time gap as an important obstacle to their work.

4.3 Economic Accessibility and Price Sensitivity

The economic evidence demonstrates that price functions as a key barrier which prevents middle-income workers from accessing goods and services. Approximately 70% of respondents categorized millet-based RTC meals as "Premium" or "Luxury" items. When asked about price elasticity, only 22% of participants were willing to pay a price 30% higher than standard wheat-based RTC products for the sake of health benefits. The results indicate that the health premium which food-tech brands currently impose restricts households from using their products which results in customers buying millets only for special health-purpose occasions.

4.4 Culinary Literacy and Packaging Instructions

Finally, a "Cognitive Barrier" was identified. 40% of participants showed confusion about the cooking instructions because they could not understand how to measure water and grain and how to prepare the food. The cooking methods for millet RTC products differ from each brand because they use different techniques which result in "cooking fatigue" and unpredictable cooking outcomes.

V. Discussion

The study results demonstrate that urban working professionals show a deep "Nutritional Dissonance" which exists because they value millets highly yet fail to integrate them into their daily lives. The Technology Acceptance Model (TAM) explains that "Perceived Usefulness" should determine technology adoption, but our research demonstrates that in high-stress modern work environments, "Perceived Ease of Use" and "Sensory Gratification" serve as the primary factors that shape people's eating patterns.

5.1 The Sensory-Cognitive Conflict

The "Palatability Gap" represents one of the most important discoveries of this research. People who work in professional fields use food to sustain their energy needs and to experience sensory relief after working in noisy environments. The Results section shows two profiles "gritty" and "earthy" which do not match the established preference for polished rice and refined wheat which have "neutral and soft" textures. The current state of the "Ready-to-Cook" (RTC) market demonstrates that existing sensory masking technologies have not been used by the industry. Food-tech innovators need to develop new processing methods which use extrusion and pre-gelatinization to create traditional staple mouthfeel while keeping nutritional value intact.

5.2 Redefining "Convenience" for the Time-Poor

The branding of RTC products currently shows a branding issue because work hours and millet consumption show an inverse relationship. Professionals who work more than 50 hours each week will find that "Ready-to-Cook" products fail to meet their scheduling demands. The 15-to-20-minute simmering time required for many millet mixes is perceived as a "labor tax" when compared to 3-minute instant noodles or pre-cooked white rice. The discussion must move toward "Ultra-Convenience" or "Ready-to-Eat" (RTE) formats. Our data indicates that millets need to shift from a "cooking project" to a "plug-and-play" meal solution which allows users to prepare meals without thinking about the process in order to become a common food item.

5.3 The "Elite Wellness" Stigma and Economic Exclusion

The classification of millets as "Premium" or "Luxury" items (70%) operates as a double-edged sword. The premium positioning of millets has successfully rebranded them from "birdseed" and "poor man's food" to an attractive health asset, yet this same positioning has made them unavailable for purchase by middle-income professionals. The "Health Premium" establishes a mental obstacle which causes people to perceive millets as a "corrective measure" that should be consumed during times of illness instead of a "preventative staple." The process of achieving mass adoption requires both economies of scale and policy interventions through the introduction of millets into public distribution systems and corporate cafeterias which will establish their normal presence in society while controlling their pricing.

5.4 The Role of Culinary Literacy

The food industry has underestimated the cooking abilities of urban workers according to the "Cognitive Barrier" which restricts their ability to understand cooking instructions. People need to learn basic kitchen skills anew after they switch from wheat-based diets to millet-based diets. The branding and packaging system needs to develop "Frictionless Instructions" which should use QR codes that link to 30-second video guides to help customers overcome their kitchen "fear of failure" problem. The ongoing problem of low repeat-purchase loyalty for millet RTC products will persist until people acquire basic cooking skills.

VI. Conclusion

The research demonstrates that health consciousness drives urban workers to initially try millet-based Ready-to-Cook meals. The study discovered a vital "Trial-to-Staple" gap because people who want to establish millets as their main dish skip its nutritional "superfood" benefits due to they dislike its taste and they find it hard to prepare. People who experience severe time constraints together with high decision-making exhaustion will use household products based on their "Ease of Use" (TAM) and their immediate sensory reward. The food industry must shift from "Nutrition-First" marketing to "Sensory-First" engineering according to the research results. Food-tech companies need to develop texture-masking solutions which deliver "ultra-convenience" products that match the three-minute cooking time of refined grain staples in order to close the adoption gap. The "Premiumization" of millets creates an economic obstacle because it increases brand prestige but makes climate-resilient grains unaffordable for middle-income citizens who need them as essential. The transformation of millets from "wellness niche" into "mainstream plate" requires multiple stakeholders to take supportive actions. The plan requires policy backing which will secure supply chains and bring down retail expenses while corporate wellness programs make millet consumption acceptable in workplaces. The successful adoption of millets among professionals requires a complete redesign of the food environment which better suits modern professional life than existing practices. I developed solutions to handle both sensory issues and practical difficulties which people experience when they use my product.

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