Aligning Technology Roadmaps with Consumer Reality

Ultra-Processed Foods

Lauren Gilhooly, Ph.D.
Consultant

Urbi Pathak
Senior Research Associate

From regulation to washing skittles

What to Expect

01 The Innovation Dilemma

02 The Lux Innovation Helix

03 Putting the Helix into Practice: Ultra-Processed Foods

04 Client Action Items

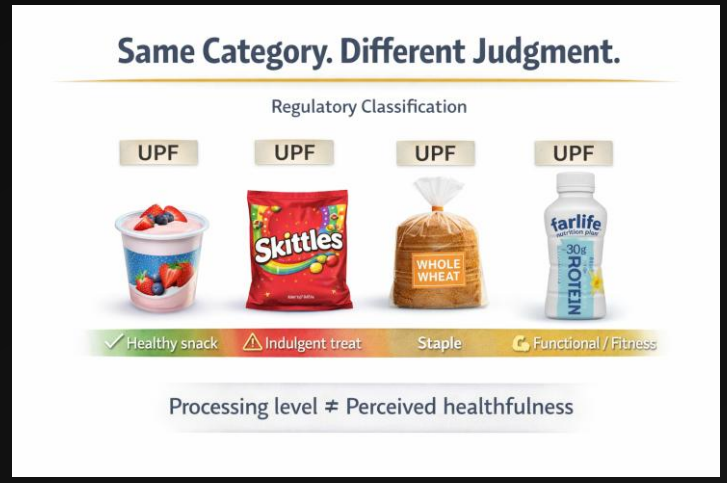
Scientific scrutiny expands

Recent studies link high UPF intake to higher risks of CVD, cancer, diabetes, and early death.

Regulation intensifies

HFSS* restrictions and FoP** labeling are reshaping consumer perception.

Consumer trust is eroding



- Consumers equate processing with harm.
- "Clean label" demand is rising.

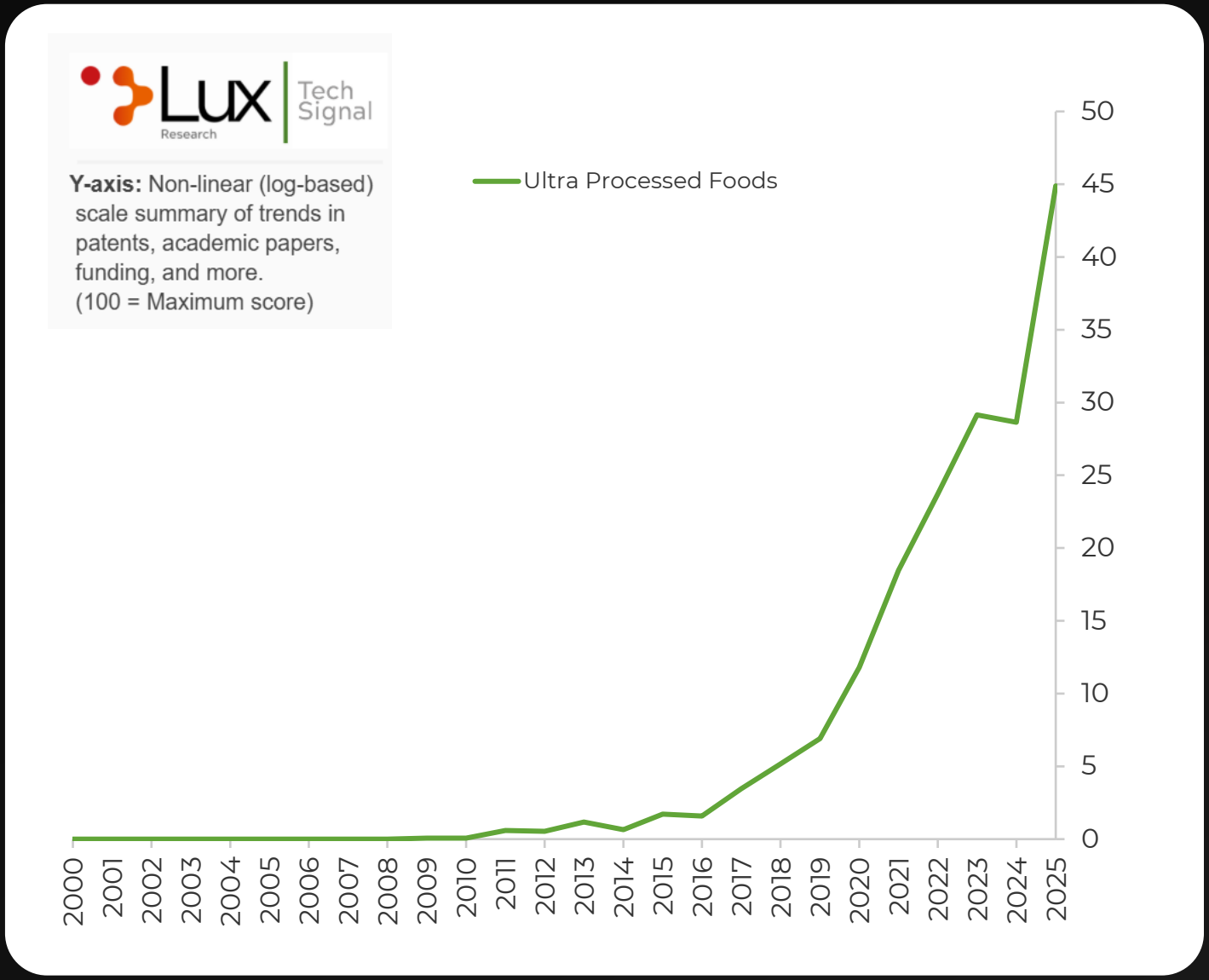
*HFSS, High Fats, Salt, and Sugar; **FoP, Front-of-package

The real risk: Growth without alignment

Most major food companies are structurally built around UPF formats

The QUESTION is:

How do companies align scalable food technologies with evolving definitions of health, safety, and trust?



How can companies sustain growth in a tightening regulatory and cultural landscape?

Diverging consumer perception and policy signals are creating growth risk for companies

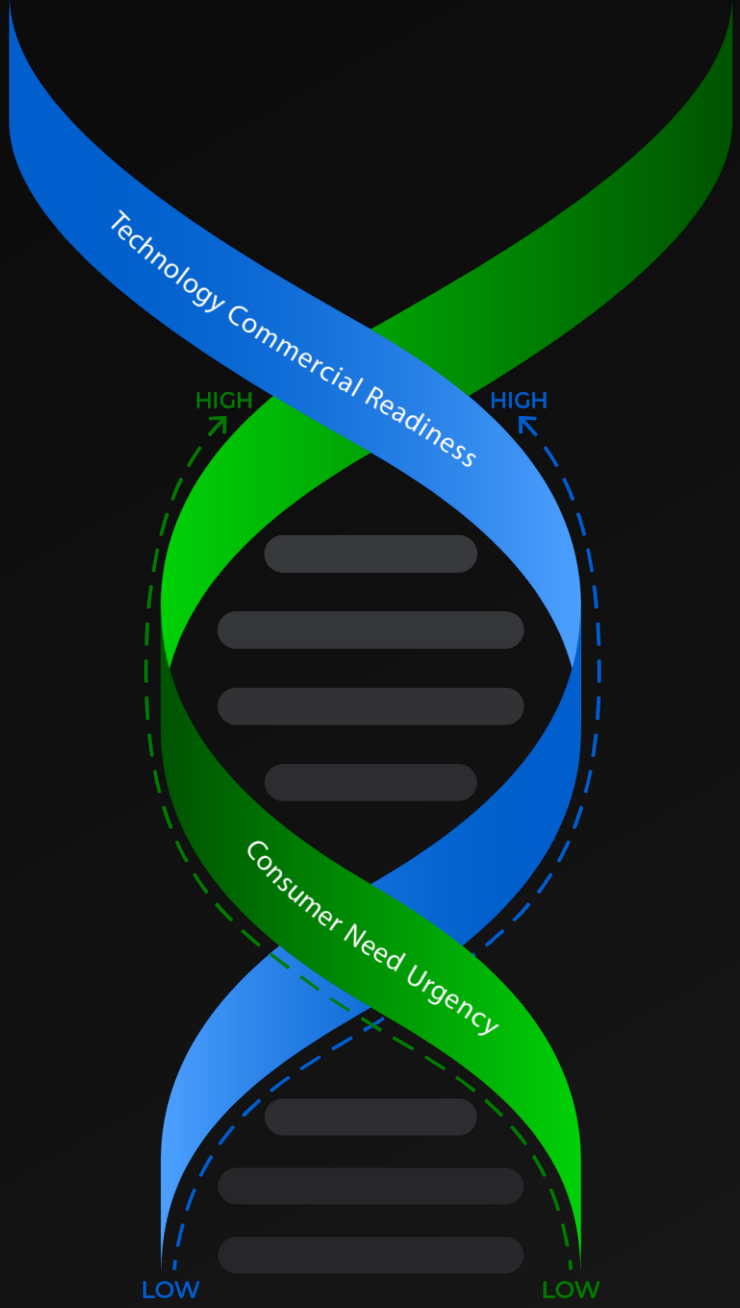
Technologies enhance shelf life and scalability, but ***people*** equate processing with harm.

≠

Consumers demand a clean label but also expect convenience, taste, and affordability.

- Fragmented strategies
- Mistimed launches
- Missed opportunities

The Lux Innovation Helix



The value of the Helix

Bridging human demand and technology readiness to make innovation inevitable, not accidental

Executives

Cut thought the noise to reveal where growth will land

R&D & Technology

Align pipelines with urgent consumer needs

Consumer Insights

Turn human signals into influence over what gets built

Structured, three-step process

1

Decode the consumer strand

Identify unmet needs through the Jobs-to-be-Done lens.

Prioritize those needs based on urgency.

2

Decode the technology strand

Pinpoint which technologies are most capable of solving those needs today, and tomorrow.

Prioritize those technologies based on readiness.

3

Create the bonds

Quantify the alignment of each need with each technology.

Identify the bonds with the highest alignment score, and map the clusters.

STEP 1

Decode the consumer strand

Decoding the consumer strand

Understanding behavior as purposeful action

Jobs-to-Be-Done Framework

Focuses on the task people want to accomplish

Reveals unmet needs — why current solutions fall short, and what people expect

50K–150K+ consumer reviews, decoded by anthropologists using predictive anthropology

Enhancing flavor
Digestive comfort
Enhancing texture
Nutritional integrity
Allergen/pathogen free
Portion control and eating behavior
Food freshness and waste reduction
Avoiding processed oils

Decoding the consumer strand

Determine **Needs Urgency** based on **momentum**, **timing**, and **scale**

Share of Voice *(Momentum)*

How strongly is this unmet need being discussed relative to others?

Cultural Maturity *(Timing)*

Has this need reached enough cultural consensus to support mainstream innovation?

Maximum Population Reach *(Scale)*

How many consumers will culturally relate to an unmet need in the near future?

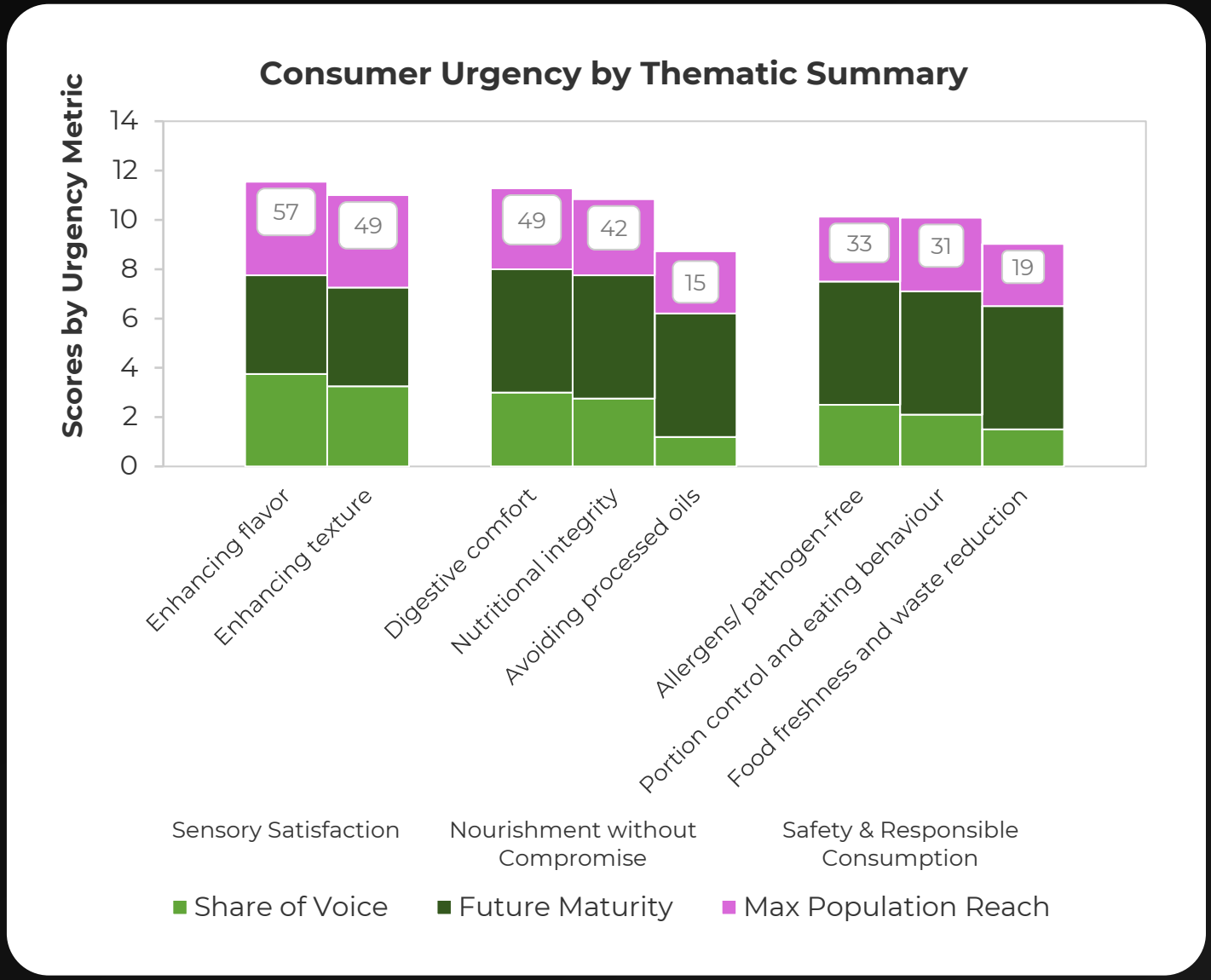
Image source: Pexels

Sensory, nourishment, and responsibility

Sensory satisfaction becomes inflexible

Balancing nutritive density with an ever-educated consumer

Safety and responsible consumption maturity surges



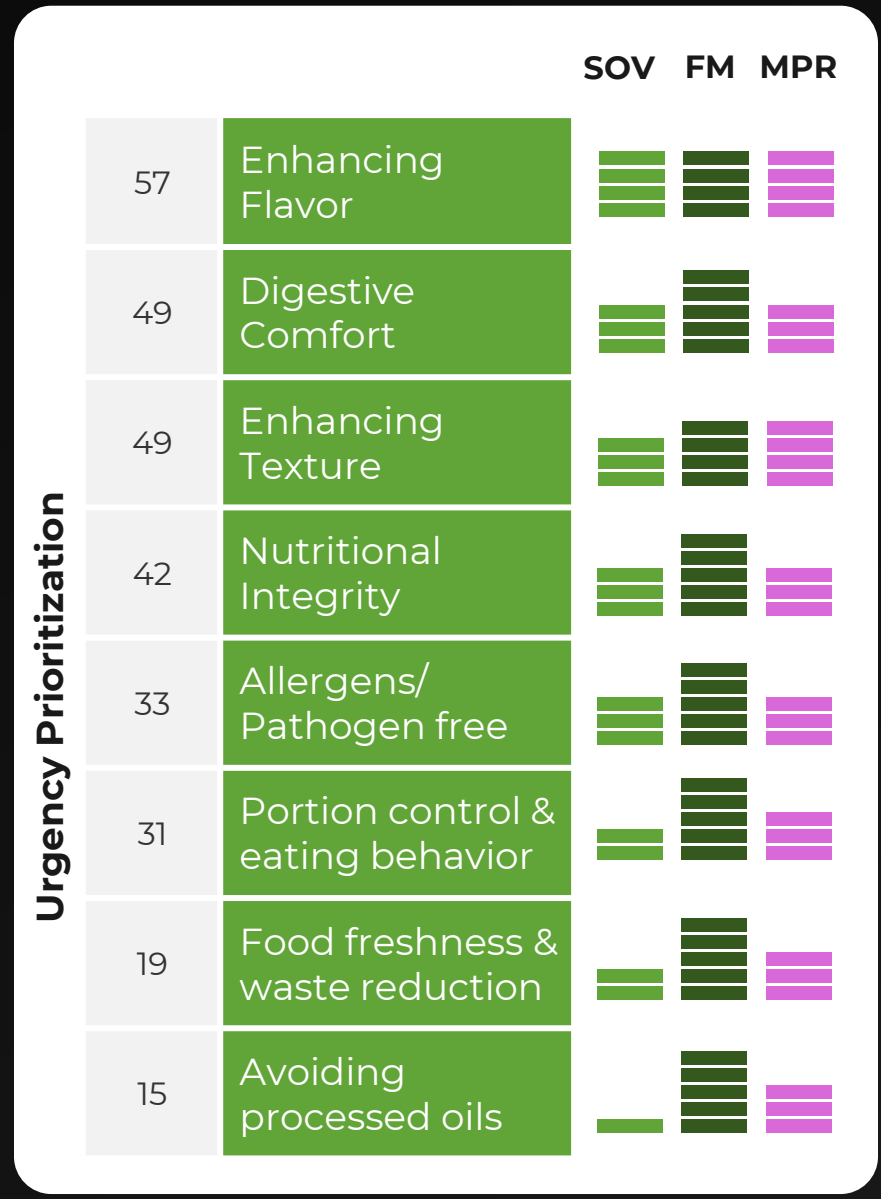
Flavor is king, but emerging needs arise

Consumers demonstrate strong signals for the industry to meet a growing list of unmet needs.

Six additional needs follow maturity trends that align well with product innovation opportunities.

LUX TAKE

Sensory satisfaction is non-negotiable, but the most rapid shift is that responsible eating has caught up to nutritive demands, creating a complex set of unmet needs.



STEP 2

Decode the technology strand

Decoding the technology strand

Build credible options from subject-matter experts

Stage of Development

Stage is categorized from concept to commercial.

Market Crowdedness

The number and maturity of active players are normalized.

Time to Scale

Time to commercial scale is based on policy, cost, and technical hurdles.

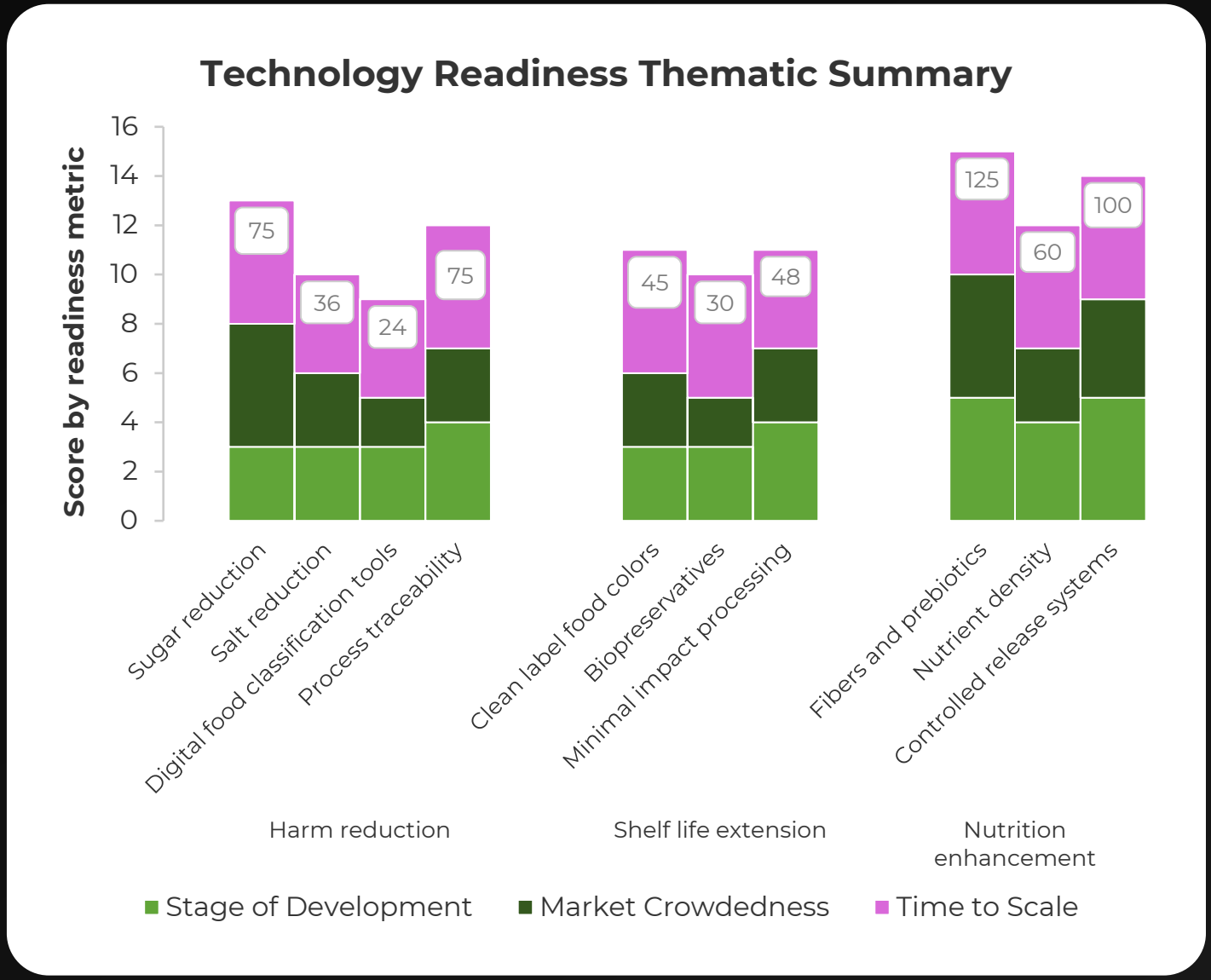
Fibers and prebiotics
Controlled release systems
Sugar reduction
Nutrient density
Process traceability
Minimal impact processing
Clean label food colors
Salt reduction
Biopreservatives
Digital food classification tools

Prioritize by tech readiness

Nutrition enhancement is best poised to influence UPF portfolios.

Harm reduction technologies are largely incremental with a moderate competitive intensity.

Shelf-life extension technologies are accelerating in premium segments but remain uneven across global portfolios.



Values in boxes are the Tech Readiness Scores, which are the product of Stage of Development (SOD), Market Crowdedness (MC), and Time to Scale (TTS) scores plotted as stacked bars

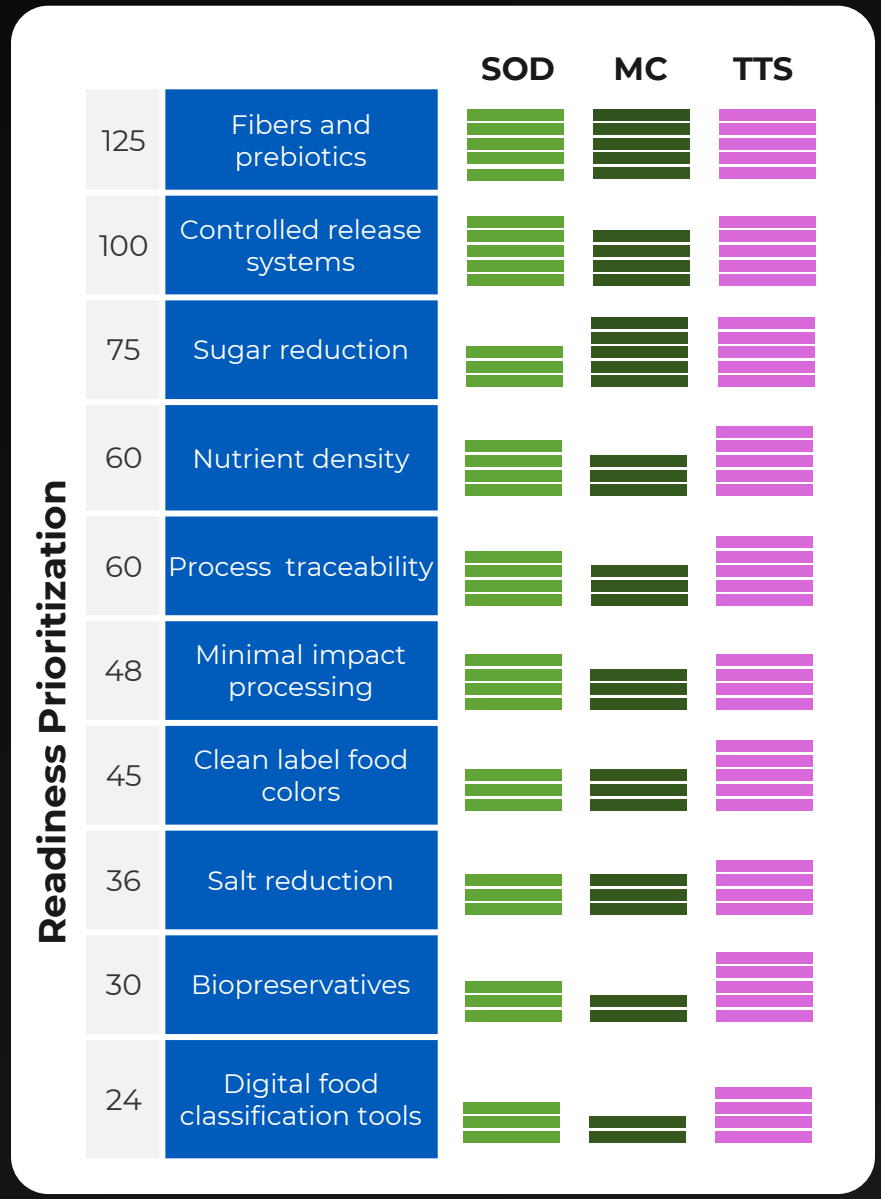
Technologies are market ready, but impact depends alignment with consumer urgency

Five technology areas show high readiness for addressing UPF.

Natural food additives often fall short of artificial counterparts in functionality, cost efficiency, and supply reliability.

LUX TAKE

High-readiness technologies are reflected through integration in processing and product launches over the past five years.

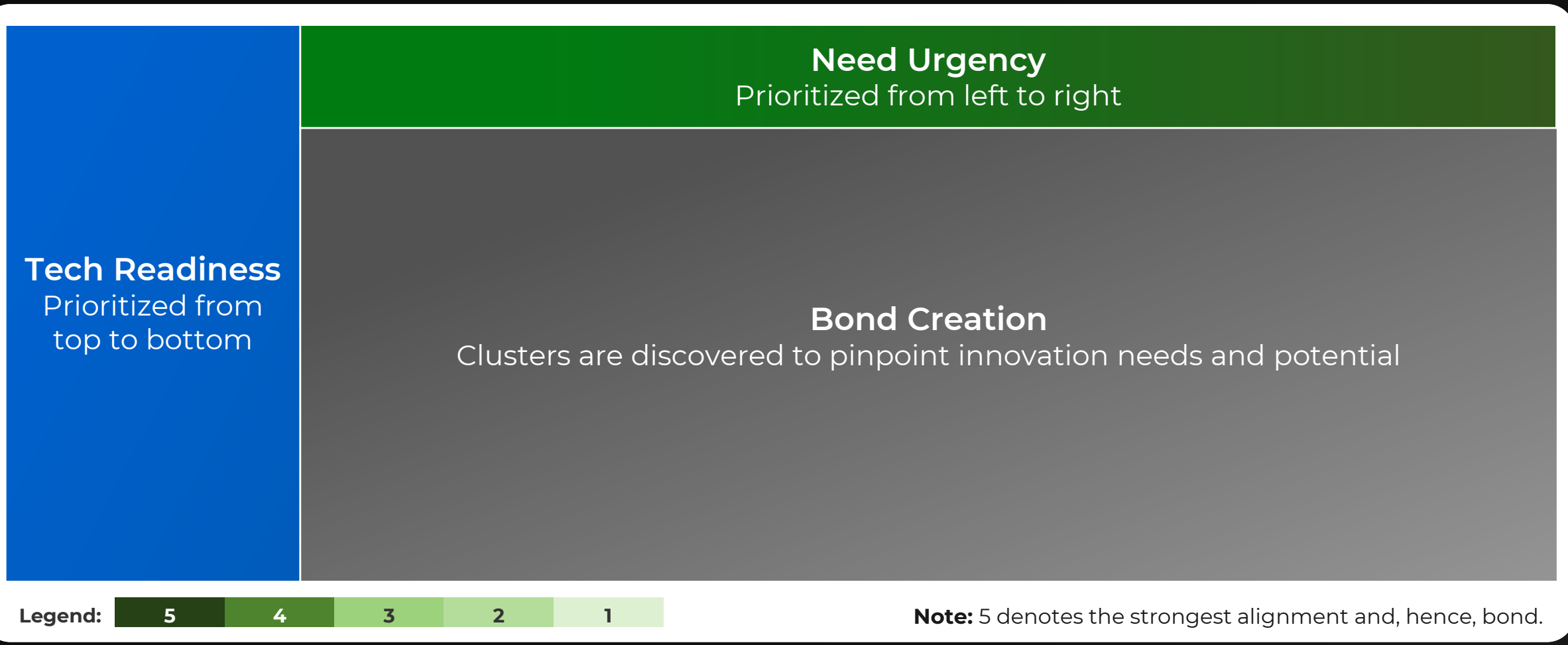


Values in boxes are the Tech Readiness Scores, which are the product of SOD, MC, and TTS scores. Values in boxes are the Tech Readiness Scores, which are the product of SOD, MC, and TTS scores.

STEP 3

Create the bonds

Step 3. Create the bonds



Step 3. Create the bonds

	Enhancing flavor	Digestive comfort	Enhancing texture	Nutritional integrity	Allergen/ pathogen free	Portion control and eating behavior	Food freshness and waste reduction	Avoiding processed oils	**Tech Totals**
Fibers and prebiotics	3	5	4	4	1	5	4	1	27
Controlled release systems	5	3	2	5	1	1	5	1	23
Sugar reduction	4	4	2	4	1	4	3	1	23
Nutrient density	1	4	3	5	1	5	3	1	23
Process traceability	1	1	2	2	5	3	5	4	23
Minimal impact processing	2	1	5	5	5	1	5	1	25
Clean label food colors	2	1	1	2	1	1	2	1	11
Salt reduction	5	1	2	4	2	2	1	1	18
Biopreservatives	3	2	2	3	5	1	5	2	23
Digital food classification tools	4	2	1	4	3	4	2	4	24
Unmet Need Totals	30	24	24	38	25	27	35	17	

Insights: Technologies exist, but companies must prove consistent health outcomes

	Enhancing flavor	Digestive comfort	Enhancing texture	Nutritional integrity	Allergen/ pathogen free	Portion control and eating behavior	Food freshness and waste reduction	Avoiding processed oils	**Tech Totals**
Fibers and prebiotics	3	5	4	4	1	5	4	1	27
Controlled release systems	5	3	2	5	1	1	5	1	23
Sugar reduction	4	4	2	4	1	4	3	1	23
Nutrient Density	1	4	3	5	1	5	3	1	23
Process traceability	1	1	2	2	5	3	5	4	23
Minimal impact processing	2	1	5	5	5	1	5	1	25
Clean label food colors	2	1	1	2					11
Salt reduction	5	1	2	4					18
Biopreservatives	3	2	2	3					23
Digital food classification tools	4	2	1	4					24
Unmet Need Totals	30	24	24	38					

Anchor nutritional integrity through ingredients and enabling technologies

R&D: Innovation clusters highlight a clear area of alignment and an innovation epicenter

	Enhancing flavor	Digestive comfort	Enhancing texture	Nutritional integrity	Allergen/ pathogen free	Portion control and eating behavior	Food freshness and waste reduction	Avoiding processed oils	**Tech Totals**
Fibers and prebiotics	3	5	4	4	1	5	4	1	27
Controlled release systems	5	3	2	5	1	1	5	1	23
Sugar reduction	4	4	2	4	1	4	3	1	23
Nutrient density	1	4	3	5	1	5	3	1	23
Process traceability					5	3	5	4	23
Minimal impact processing					5	1	5	1	25
Clean label food colors					1	1	2	1	11
Salt reduction					2	2	1	1	18
Biopreservatives					5	1	5	2	23
Digital food classification tool					3	4	2	4	24
Unmet Need Totals	30	24	24	38	25	27	35	17	

Establish fiber, prebiotics, and sugar-reduction solutions that can be enhanced with controlled-release systems

Executives: Emerging unmet needs must become a part of the portfolio strategy

	Enhancing flavor	Digestive comfort	Enhancing texture	Nutritional integrity	Allergen/ pathogen free	Portion control and eating behaviour	Food freshness and waste reduction	Avoiding processed oils	**Tech Totals**
Fibers and prebiotics	3	5	4	4	1	5	4	1	27
Controlled release systems	5	3	2	5	1	1	5	1	23
Sugar reduction	4	4	2	4	1	4	3	1	23
Nutrient Density						5	3	1	23
Process traceability						3	5	4	23
Minimal impact processing						1	5	1	25
Clean label food colors						1	2	1	11
Salt reduction						2	1	1	18
Biopreservatives						1	5	2	23
Digital food classification tools						4	2	4	24
Unmet Need Totals						27	35	17	

Danone aligns dairy to “GLP-1 friendly” portfolio

Portion control and food freshness will become innovation targets in the short-term.

Dairy aligns to sugar reduction and nutrient density, but, in this case, process traceability is not prized.

Sugar reduction and nutrient density also align to other more urgent needs.

LUX TAKE

Danone has recalibrated its existing dairy capabilities to deliver improved nutrient density and low sugar to align with emerging GLP-1-driven eating behavior.

Innovation Cluster

	Portion control and eating behavior	Food freshness and waste reduction
Sugar reduction	4	3
Nutrient density	5	3
Process traceability	3	5

*Oikos is in NOVA group 4 UPF classification.

You’re here to know where YOUR innovation will land — and when

Executives

Dilemma:

Strategic paralysis

The Lux Innovation Helix:
Cuts through noise to reveal where growth will land.

R&D & Technology

Dilemma:

Staying relevant

The Lux Innovation Helix:
Aligns pipelines with urgent consumer needs.

Consumer Insights

Dilemma:

Too far from innovation

The Lux Innovation Helix:
Translates human signals into bonds that shape what gets built.

How to use the Lux Innovation Helix

New Product Creation

Purpose:
Solves unmet consumer needs with ready-now tech

Example:
Digital food classification tools

Product Enhancement

Purpose:
Targets consumer needs with highest urgency

Example:
Enhancing nutritional profile of packaged food

Repositioning Capabilities

Purpose:
Aligns underused R&D assets with emerging needs

Example:
Minimal impact processing, biopreservatives

Discovering Adjacencies

Purpose:
Applies proven tech from one sector to another

Example:
Controlled release systems → improved nutrient absorption

Portfolio Prioritization

Purpose:
Focuses resources where adoption likelihood is highest

Example:
Prioritize clean-label food colors

Foresight

Purpose:
Anticipates market disruptions and shifts before anyone else

Example:
Time your innovation and new product launches

Technology-centric roadmaps are over.

The future of innovation starts with human insight.

Key Takeaways

1

Evaluate overlap between longstanding and emerging unmet needs.

2

Invest in platform technologies that solve multiple unmet needs.

3

Portfolios succeed where satiety, nutrition, and convenience intersect.

Lux Client Action Items

1 **Engage with the Lux Innovation Helix.**

Uncover where human needs and technological capabilities reinforce each other — the intersections where innovation has both market pull and technical feasibility.

2 **Set clear priorities.**

Decide where to act immediately, where to invest for long-term growth, and where to adjust direction — turning scattered possibilities into focused, evidence-based action.

3 **Align teams around a common framework.**

Unite executives, R&D, and consumer insights under one shared language — a genetic code for growth that ensures every decision draws from the same foundation.

4 **Measure, learn, and evolve.**

Use Helix cycles to track outcomes, validate assumptions, and feed new insights back into the model — making your innovation strategy not just aligned, but adaptive and resilient.

Thank you

VISIT

www.luxresearchinc.com

FOLLOW

@LuxResearch

CONNECT

LuxResearch

READ

http://www.luxresearchinc.com/blog/

CONTACT

questions@luxresearchinc.com

About Lux

Lux Research fuels innovators to not only imagine what's possible in the future but also operationalize innovation success in the near term. We deliver research and advisory services to inspire, illuminate, and ignite innovative thinking that reshapes and grows businesses. Using quality data derived from primary research, fact-based analysis, and opinions that challenge traditional thinking, our experts focus on finding truly disruptive innovations that are also realistic and make good business sense.

The "Lux Take" is trusted by innovation leaders around the world, many of whom seek our advice directly before placing a bet on a startup or partner — our clients rely on Lux insights to make decisions that generate fantastic business outcomes. We pride ourselves on taking a rigorous, scientific approach to avoid the hype and generate unique perspectives and insights that innovation leaders can't live without.

VISIT

www.luxresearchinc.com

FOLLOW

@LuxResearch

CONNECT

LuxResearch

READ

http://www.luxresearchinc.com/blog/

CONTACT

questions@luxresearchinc.com