**Smart Packaging Pilot: Consumer Engagement Results**

**CONFIDENTIAL INTERNAL REPORT**  
**Digital Consumer Experience & Packaging Innovation Teams**  
**Date: October 17, 2023**

**Executive Summary**

This report presents findings from our six-month smart packaging pilot conducted from March to September 2023. The initiative tested NFC-enabled packaging across three product lines to evaluate technical feasibility, consumer adoption, and business impact. While consumer engagement metrics were promising, technical execution challenges and cost considerations indicate the need for a revised approach before full-scale implementation. The highest ROI opportunity appears to be in our premium beverage portfolio where consumer engagement increased 47% and repurchase rates improved by 23%.

**Pilot Overview**

**Scope**

* **Products**: Premium Coffee (12oz bags), Organic Juice (32oz bottles), Specialty Snack Bars (6-count boxes)
* **Markets**: Seattle, Austin, and Boston
* **Technology**: NFC tags embedded in primary packaging
* **Digital Experience**: Product authentication, sourcing information, recipe suggestions, loyalty rewards
* **Duration**: March 15 - September 15, 2023
* **Units in Market**: 387,000 across all product lines

**Technical Implementation**

**Tag Performance**

| **Metric** | **Target** | **Actual** | **Variance** |
| --- | --- | --- | --- |
| Read Success Rate | 98% | 92.3% | -5.7% |
| Read Distance | 5cm | 3.8cm | -1.2cm |
| Production Line Speed Impact | <5% | 12% | +7% |
| Tag Cost at Scale | $0.03/unit | $0.047/unit | +$0.017 |
| Defect Rate | <1% | 2.8% | +1.8% |

**Integration Challenges**

1. **Production Line Adaptation**:
   * Line speed reduction greater than anticipated (12% vs projected 5%)
   * Tag placement precision varied between production facilities
   * Additional QA steps created production bottlenecks
2. **Packaging Material Interactions**:
   * Metal-containing packaging layers interfered with NFC functionality
   * Moisture barriers required modification to maintain tag performance
   * Temperature variation during filling affected tag reliability in beverage applications
3. **Supply Chain Complexity**:
   * Tag inventory management added complexity to production planning
   * Longer lead times for tagged packaging components (6 weeks vs. 3 weeks for standard)
   * Two supplier quality incidents resulted in tag functionality failures

**Consumer Engagement Metrics**

**Interaction Rates**

| **Product Line** | **Units Scanned** | **% of Total** | **Unique Users** | **Repeat Scans** |
| --- | --- | --- | --- | --- |
| Premium Coffee | 42,840 | 37.3% | 31,605 | 26.4% |
| Organic Juice | 28,752 | 19.8% | 24,210 | 15.7% |
| Snack Bars | 13,895 | 12.2% | 11,426 | 8.5% |
| **Overall** | **85,487** | **22.1%** | **67,241** | **18.2%** |

**Digital Experience Engagement**

| **Content Type** | **Avg. Time Spent** | **Completion Rate** | **Most Engaged Demographics** |
| --- | --- | --- | --- |
| Product Authentication | 12 seconds | 92% | All demographics |
| Sourcing Journey | 1:47 minutes | 63% | 25-44, urban, higher income |
| Recipe Content | 2:24 minutes | 42% | 30-55, families |
| Loyalty Registration | 1:32 minutes | 28% | Existing brand loyalists |
| Sustainability Information | 0:58 seconds | 37% | 18-34, urban, higher education |

**Business Impact Indicators**

| **Metric** | **Control Group** | **Smart Packaging** | **Difference** |
| --- | --- | --- | --- |
| Purchase Frequency (Premium Coffee) | 1.7/month | 2.1/month | +23.5% |
| Purchase Frequency (Organic Juice) | 2.3/month | 2.5/month | +8.7% |
| Purchase Frequency (Snack Bars) | 1.5/month | 1.6/month | +6.7% |
| Brand Perception Score | 72/100 | 78/100 | +8.3% |
| Customer Feedback Submissions | 0.8% | 3.2% | +300% |
| Social Media Mentions | Baseline | +32% | +32% |

**Consumer Insight Findings**

**Positive Reactions**

1. **Authenticity Verification**: "I feel more confident about product authenticity, especially for premium items." (78% agreement)
2. **Origin Storytelling**: "I appreciated learning where ingredients came from and the farmer partnerships." (65% agreement)
3. **Sustainability Transparency**: "The environmental impact information influenced my purchase decision positively." (58% agreement)
4. **Novelty Factor**: "The technology felt innovative and made the brand seem more premium." (73% agreement)

**Consumer Friction Points**

1. **Technology Barriers**:
   * 22% reported difficulty getting tags to scan properly
   * 18% were unaware their phone had NFC capability
   * 15% expressed privacy concerns about scanning packaging
2. **Content Relevance**:
   * 34% found content interesting but not valuable enough to scan regularly
   * 27% wanted more personalized content based on preferences
   * 41% preferred immediate rewards over information content
3. **User Experience Issues**:
   * 29% felt the scanning process took too long
   * 38% wanted content available without requiring app download
   * 24% experienced technical issues with landing pages or content loading

**Financial Analysis**

**Implementation Costs**

| **Category** | **Cost ($)** | **Notes** |
| --- | --- | --- |
| Technology Development | 420,000 | NFC integration, digital platform |
| Hardware/Materials | 245,000 | Tags, modified packaging materials |
| Production Implementation | 175,000 | Line modifications, efficiency loss |
| Content Creation | 185,000 | Digital experience development |
| Marketing Support | 120,000 | In-store signage, education materials |
| **Total Pilot Cost** | **1,145,000** |  |

**Projected Costs for Full Implementation**

| **Category** | **Per Unit Cost** | **Annual Volume** | **Annual Cost** |
| --- | --- | --- | --- |
| NFC Tags | $0.047 | 120 million | $5,640,000 |
| Production Efficiency | $0.012 | 120 million | $1,440,000 |
| Content Management | $0.008 | 120 million | $960,000 |
| **Total** | **$0.067** | **120 million** | **$8,040,000** |

**ROI Analysis**

**Premium Coffee Line**:

* Increased purchase frequency value: $3.42M annually
* Brand equity value: $1.85M annually
* Data acquisition value: $0.93M annually
* Total value: $6.2M annually
* Implementation cost: $2.1M annually
* **ROI: 195%**

**Organic Juice Line**:

* Increased purchase frequency value: $2.16M annually
* Brand equity value: $1.24M annually
* Data acquisition value: $0.78M annually
* Total value: $4.18M annually
* Implementation cost: $3.4M annually
* **ROI: 23%**

**Snack Bar Line**:

* Increased purchase frequency value: $0.98M annually
* Brand equity value: $0.85M annually
* Data acquisition value: $0.42M annually
* Total value: $2.25M annually
* Implementation cost: $2.54M annually
* **ROI: -11%**

**Recommendations**

1. **Phased Implementation**:
   * Proceed with full implementation for Premium Coffee line (highest ROI)
   * Develop improved strategy for Organic Juice before scaling
   * Pause smart packaging for Snack Bars until costs decrease or engagement increases
2. **Technical Improvements**:
   * Qualify alternative NFC tag suppliers to reduce unit costs
   * Test new tag designs with improved read distance and reliability
   * Develop production line modifications to minimize efficiency impacts
3. **Content Strategy Refinement**:
   * Focus on high-engagement content (sourcing stories, exclusive recipes)
   * Develop tiered reward system for repeat scans
   * Create personalization engine to deliver targeted content
4. **User Experience Optimization**:
   * Simplify first-time user experience with clearer instructions
   * Develop web-based experience not requiring app download
   * Improve scanning confirmation and feedback mechanisms
5. **ROI Enhancement**:
   * Integrate with CRM systems to better quantify consumer lifetime value impact
   * Explore co-marketing opportunities to share technology costs
   * Develop premium content that can be monetized or sponsored

**Next Steps**

| **Action** | **Responsible Team** | **Timeline** |
| --- | --- | --- |
| Develop implementation plan for Premium Coffee line | Packaging Innovation & Coffee Brand Team | Q4 2023 |
| Negotiate volume pricing with tag suppliers | Strategic Procurement | Q4 2023 |
| Create enhanced content strategy | Digital Experience & Marketing | Q1 2024 |
| Design simplified user experience | UX Team & Digital Development | Q1 2024 |
| Develop business case for next phase of Organic Juice | Strategy & Juice Brand Team | Q2 2024 |

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