

# **A Structured Diagnostic for Predicting Customer Lessons Learned Outcomes in Low-Frequency Review Environments <sup>1</sup>**

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## **Abstract**

Customer satisfaction in healthcare new product introduction (NPI) projects is notoriously difficult to measure and even harder to improve. Lessons Learned (LL) sessions provide only rare, point-in-time scores and often suffer from low sample sizes and subjective interpretation. This manuscript introduces a repeatable, practice-tested project delivery diagnostic that project managers can apply throughout the lifecycle, not just during annual LL reviews. The diagnostic uses a four-level Outcomes-Driven Experience Architecture (*What we do* → *How we do* → *What we present* → *How we present*) and a structured questionnaire to predict and improve LL-based customer experience scores.

**Keywords:** Customer satisfaction; Healthcare NPI; Lessons Learned; CDMO; Knowledge transfer; Project Management; Empowerment; Architecture model.

## **1. Introduction**

In modern healthcare innovation, customer expectations rise faster than organizations can update their operating models. Companies developing novel therapeutics, diagnostics, devices, or biologics must demonstrate not only technical competence but also predictability, clarity, and confidence in project delivery.

Healthcare new product introduction (NPI) projects operate under scientific uncertainty, rigorous regulatory constraints, and high expectations for reliability and transparency. Customer satisfaction is a critical predictor of relationship continuity and follow-on work, yet the primary feedback mechanism, as Lessons Learned (LL) sessions, occurs infrequently and often produces small-sample, context-dependent data. Such environments limit the usefulness of traditional satisfaction measurement models that rely on frequent, large-N datasets.

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In these constrained conditions, project managers often over-emphasize interpersonal factors in LL outcomes rather than systematic delivery practices. Research shows that meaningful learning, disciplined governance, and evident communication improve project outcomes far more predictably than informal interaction or team charisma. PMI's '*Pulse of the Profession*' indicates that one in three unsuccessful projects was negatively affected by untimely or inaccurate knowledge transfer, and organizations that «excel at knowledge transfer improve project outcomes by ~35%» (Project Management Institute [PMI], 2015). This is strong evidence that the path to better satisfaction is driven by consistent learning practices, not charisma.

Nowadays, customers increasingly use AI tools to analyze a vendor's performance and set expectations. As a result, traditional investments in customer acquisition turn out to be unpredictable in many ways. With that, the frequently overlooked post-acquisition customer experience (CX) becomes a key opportunity to build loyalty and influence follow-up work (McKinsey & Company, 2023; Gartner, 2023). Yet, a persistent gap remains between “the experiences organizations think they provide versus the experiences their clients actually have” (Hanover Research, 2022). This is another reason to focus on closing the loop from lessons learned to CX improvement.

In the NPI context, LL sessions are typically annual or aligned to major milestones and therefore can only offer infrequent signals of sponsor opinion. With limited data points, teams may overlook regular delivery behaviors that actually drive satisfaction. What is needed is a repeatable, theory-anchored diagnostic that project managers can apply throughout the lifecycle to anticipate LL results and take targeted actions early enough to influence outcomes.

This manuscript introduces the Outcomes-Driven Experience Architecture (ODEA), a four-level, cumulative operating architecture that links day-to-day project behaviors to predictable changes in LL outcomes. ODEA proposes that specific behaviors and artifacts produce predictable increases in LL outcomes across the following consecutive levels: *What we do* (Deliver) → *How we do* (Operate) → *What we present* (Showcase) → *How we present* (Elevate). The model is designed for healthcare NPI and contract development and manufacturing organization (CDMO) environments where projects are long, regulated, and highly evidence-based. ODEA reframes LL from a retrospective review into an actionable system for guiding work, supported by practices that can be implemented in daily work to reduce variability. This angle is consistent with evidence that effective knowledge transfer significantly improves project results. The model is intended to guide empirical investigation and inform practice.

The paper contributes by (1) synthesizing Expectancy Disconfirmation Theory (EDT) (Oliver, 1997), American Customer Satisfaction Index (ACSI) (Fornell et al., 1996), Service Quality (SERVQUAL) (Parasuraman et al., 1988), and Kano (Kano et al., 1984) into a PM-specific

architecture; (2) providing suggestions that connect project team behaviors and ODEA with LL outcomes; (3) integrating components from knowledge-transfer and team empowerment studies (PMI, 2015; Hellinghausen & Douglas, 1999); and (4) outlining a validation path suitable to low-frequency satisfaction data typical of NPI projects.

## **2. Theoretical Background**

### **2.1. Expectancy-Disconfirmation and ACSI**

Expectancy Disconfirmation Theory (EDT) explains satisfaction as the comparison between pre-project expectations and actual performance; positive disconfirmation results in satisfaction, while negative disconfirmation results in dissatisfaction (Oliver, 1997). By clarifying “done-ness” and basing progress on it, project teams can actively shape the disconfirmation mechanism. The American Customer Satisfaction Index (ACSI) tradition reinforces related determinants, such as perceived quality and perceived value, which include pricing assumptions, and links satisfaction to loyalty and complaints (Fornell, 1996). ODEA integrates ACSI principles by placing operational discipline and communication clarity at the center of its design.

### **2.2 Service Quality (SERVQUAL/RATER) and Kano**

The SERVQUAL/RATER method is known for translating expectations into observable service behaviors: reliability (R), assurance (A), tangibles (T), empathy (E), and responsiveness (R) (Parasuraman et al., 1988). In project settings, these behaviors are related to governance cadence and risk reviews (reliability); audit-ready deliverables and expert preparedness (assurance); professional packaging and traceability (tangibles); an audience-oriented approach (empathy); and timely status updates or escalations (responsiveness). The Kano framework distinguishes must-be basics, performance attributes, and excitement (delighter) features (Kano et al., 1984). ODEA uses Kano principles to sequence improvements: basics and performance define earlier levels (Deliver, Operate), while delighters are reserved for later stages (Elevate), preventing premature investment in “excitement” features before fundamentals are stable.

### **2.3 Scope Alignment (Needs vs. Wants)**

In complex projects, shifting or unmet expectations often reflect needs vs. wants gaps. Disciplined scope definition, clearly articulated deliverables, explicit trade-offs, and regular expectation reviews reduce late-phase disconfirmation (Rowh, 2001).

## **2.4 Team Empowerment for Reliability**

Cross-functional team empowerment, transparent decision rights, and quality gates raise process reliability and customer confidence that are factors consistently associated with higher satisfaction (Hellinghausen & Douglas, 1999). ODEA incorporates these as organizational supports that help sustain the structured behavioral routines.

## **2.5 Knowledge Transfer and Project Performance**

Evidence shows that applying a disciplined knowledge-transfer practice (identify, capture, share, apply, and assess) leads to better results in schedule, cost, and goal performance metrics (PMI, 2015). ODEA integrates these insights in a format that project managers can apply monthly rather than only annually.

Overall, although project management research has examined performance and project success extensively, the integration of PM and CX theories remains limited. Key CX backgrounds (EDT, ACSI, SERVQUAL, and Kano) have been applied only partially or indirectly within the PM context, leaving a conceptual gap in understanding how project delivery behaviors shape customer satisfaction in complex, low-frequency environments. To address this limitation, this manuscript focuses on the following questions:

- (1) How can customer satisfaction in low-frequency NPI projects be modeled as a function of observable project team behaviors and artifacts?
- (2) What architectural dependencies are needed for these behaviors to generate predictable improvements in LL outcomes?
- (3) Do sequential architectural levels provide incremental benefits in expected CX outcomes?

## **3. Methodology: Context and Measurement**

This work focuses on innovation-oriented healthcare organizations where NPI projects must navigate scientific ambiguity, regulatory constraints, and shifting customer priorities. These projects often run 6–18 months, and LL reviews are infrequent and aggregate multiple functional categories (at least 4-5) where each category rated on a 1-10 scale before being averaged into a single decimal LL score. As a result, LL outcomes serve as sparse proxy measures of customer satisfaction rather than rich, transactional datasets. To interpret these limited signals, LL reviews usually adopt CSAT banding logic (Fornell, 1996). In healthcare NPI context, a score of  $\geq 85\%$  is

generally considered strong and associated with recommendation and higher probability of business retention. Note that band thresholds vary by industry and organization.

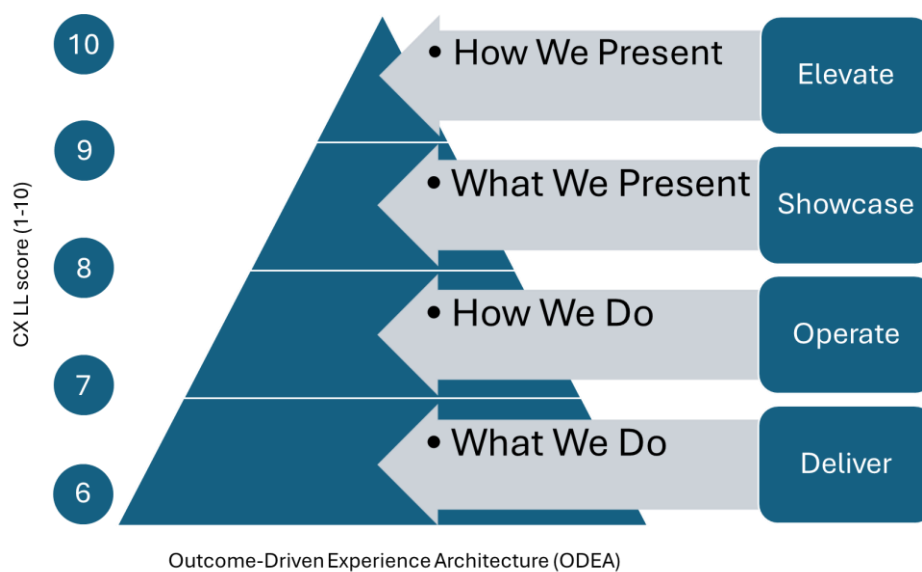
The ODEA model specifies the behaviors required to move from one LL score band to the next, defining:

- 9–10: Strong Experience Performance
- 8–8.9: Consistent Experience Delivery
- 7–7.9: Satisfactory but Variable Experience
- 6–6.9: At-Risk Experience
- <6: Unsatisfactory Experience Requiring Intervention

Despite the low-frequency customer satisfaction signals, these codified learning routines help keep outcomes measurable and improve performance, leading to better alignment with sponsor expectations.

#### 4. The Outcomes-Driven Experience Architecture (ODEA)

The proposed ODEA model is a cumulative, layered architecture consisting of four levels: *What we do* (Deliver) → *How we do* (Operate) → *What we present* (Showcase) → *How we present* (Elevate). This architecture translates customer satisfaction theory into project routines and artifacts suitable for low-frequency measurement environment.



**Figure 1. The Outcomes-Driven Experience Architecture (ODEA)**

ODEA considers LL scores as leading indicators of architectural maturity rather than endpoints. The diagnostic is designed for monthly use or for application at smaller milestone events, converting a single annual LL score into a predictable outcome of daily, codified behaviors.

#### **4.1 Level 1 — Deliver (*What we do*)**

Objective: Establish baseline reliability and expectation alignment.

Representative behaviors and artifacts:

- Explicit acceptance criteria and scope confirmation;
- Published decision rights and escalation pathways (e.g., concise RACI and escalation ladder);
- Refreshed SOPs/checklists;
- Restored communication cadence (e.g., weekly work-in-progress update, risk review on demand);
- Re-baseline for feasibility.

Theoretical mapping: Reduces negative disconfirmation (EDT) by aligning expectations and performance; strengthens SERVQUAL reliability and assurance (Oliver, 1997; Parasuraman et al., 1988).

#### **4.2 Level 2 — Operate (*How we do*)**

Objective: Make reliability routine and reduce variance.

Representative behaviors and artifacts:

- Risk mitigation with owner assignment and closure evidence;
- Single-owner actions with dates and documented proof;
- Visible work-in-progress and quality gates on critical pathways;
- Cross-functional consistency in practices.

Theoretical mapping: Increases perceived quality and value (ACSI); aligns with empowerment and knowledge-transfer enablers for consistent performance (Fornell et al., 1996; PMI, 2015; Hellinghausen & Douglas, 1999).

#### **4.3 Level 3 — Showcase (*What we present*)**

Objective: Make excellence explicit and verifiable.

Representative behaviors and artifacts:

- Readiness checklists and peer review before sponsor delivery;
- Cross-functional message aligned prior to sponsor meetings;
- Status reports anchored by acceptance criteria;
- Evidence traceability and supporting documentation.

Theoretical mapping: Strengthens SERVQUAL assurance, tangibles, and responsiveness; refines EDT by clarifying perceived performance relative to expectations (Parasuraman et al., 1988; Oliver, 1997).

#### **4.4 Level 4 — Elevate (*How we present*)**

Objective: Communicate as a trusted partner to support decisions.

Representative behaviors and artifacts:

- Explicit commitments and tracked follow-up;
- Rehearsed demos with anticipated Q&A;
- Converts performance into decision confidence;
- Selective “delighter” features (targeted value-added elements).

Theoretical mapping: Live confirmation of understanding (decisions, owners, timelines) applies delighters after basics and performance attributes are stable (Kano et al., 1984).

**Cumulativity principle:** Higher levels do **not** compensate for gaps in lower ones. For example, polished narratives (Elevate) cannot compensate unaligned acceptance criteria (Deliver) or missing evidence (Showcase). This architectural dependency is central to ODEA’s explanatory logic.

## **5. Internal Diagnostic Application**

Table 1 presents a conceptual self-assessment instrument based on the ODEA model. Project managers can use this diagnostic tool for internal team assessment and for evaluating sponsor-facing communications throughout the project lifecycle. Its purpose is to (a) determine the current architectural level, (b) identify blockers that prevent progression to the next level, and (c) focus improvement efforts where the impact will be highest.

To locate the current level, ask yourself and answer objectively as possible which core diagnostic question dominates the team’s focus: *What we do?* *How we do?* *What we present?* or *How we present?* Then use a level specific questionnaire to calibrate and plan actions.

**Table 1. Internal Assessment of ODEA Maturity Level.**

Current & Target LL Score	Strategy & Architecture Level	Core Diagnostic Question	Illustrative Focal Behaviors & Artifacts (aligned with PMI Talent Triangle)
6 → 7	Deliver	What we do?	<p><b>Ways of Working:</b> establish foundational reliability; define Definition of Ready/Done; tighten acceptance criteria; follow change control discipline; map the critical path and key dependencies; update SOPs and checklists; restore a predictable governance cadence.</p> <p><b>Power Skills:</b> clarify decision rights and escalation ladder; practice disciplined meeting routine (purpose, prep, outcomes); apply assertive communication to protect scope and manage trade-offs.</p> <p><b>Business Acumen:</b> assess customer impact and compliance requirements early; prioritize work based on value; align activities to KPIs and intended business outcomes</p>
7 → 8	Operate	How we do it?	<p><b>Ways of Working:</b> strengthen incident and problem management; improve risk mitigation practices; ensure timely quality assessment with traceable decision records; standardize work instructions; maintain timely, efficient, cross team communication.</p> <p><b>Power Skills:</b> assign a single accountable owner for each action, with due date and evidence of completion; reinforce cross functional alignment; cultivate communities of practice; create psychological safety to share risks early.</p> <p><b>Business Acumen:</b> improve capacity planning; manage vendors proactively; align operational decisions with the sponsor’s risk appetite</p>
8 → 9	Showcase	What we present?	<p><b>Ways of Working:</b> anchor status reporting in acceptance criteria; apply consistent templates; use checklists for decks and demos across departments; prevent risks proactively; maintain visual dashboards for progress/risks; run focused forums with clearly defined objectives, decisions, and next steps.</p> <p><b>Power Skills:</b> pre-align cross-functional stakeholders before client or executive meetings; prepare structured Q&amp;A; conduct blameless postmortems with action tracking to closure.</p> <p><b>Business Acumen:</b> connect reporting to KPIs and benefit realization; highlight customer value delivered;</p>

			communicate financial impact; ensure roadmap alignment to organization strategy
9 → 10	Elevate	How we present it?	<p><b>Ways of Working:</b> apply scenario planning and sensitivity analysis; maintain a portfolio-level dependency and critical-risk map; strengthen governance; use cross-functionally peer-reviewed decks and demos; present options, trade-offs, risks, and recommendations clearly; provide concise pre-reads; follow up promptly.</p> <p><b>Power Skills:</b> craft a compelling narrative; coach team spokespeople; run rehearsals; apply active listening and mirroring; conduct proactive stakeholder mapping and analysis; influence without authority; confidently handle challenging questions; effectively manage sponsors.</p> <p><b>Business Acumen:</b> differentiate outcomes vs. outputs; apply financial model sensitivity; align decisions to portfolio priorities and risk appetite; provide strategic framing; forecast adoption and change management implications</p>

It is important to remember that the proposed questions are illustrative and can be adapted to the needs of a specific industry or project. The core diagnostic questions should be used to elaborate the focal behaviors and artifacts most relevant to standard project management practices within the organization’s PMO.

Note: For more accurate assessment, each focal behavior can be rated on evidence-sufficiency scales (e.g., 0–3: missing, partial, consistent, exemplary). Achievement of a given level can be defined as all items scoring  $\geq 2$  for that level.

To perform regular self-evaluation is essential for any customer-facing project manager committed to continuous improvement and high customer satisfaction. Listening objectively to cross-functional communication, observing team interactions from the perspective of an external stakeholder, and reviewing deliverables as a customer would – all contribute to stronger diagnostic accuracy.

## 6. Customer-Facing Diagnostic

Table 2 proposes a low-friction calibration instrument for PM-to-PM interactions between LL sessions. Each question is linked to an ODEA level and is designed to obtain decision-useful feedback. Such PM-to-PM check-ins can help calibrate expectations, reduce surprises, and detect misalignment early.

**Table 2. Customer-Facing Questions for Assessing ODEA Levels.**

<b>Current &amp; Target LL Score</b>	<b>Strategy &amp; Architecture Level</b>	<b>Customer feedback questions you could ask</b>
6 → 7	Deliver	Did we deliver the outcomes you expected?
7 → 8	Operate	Were our processes and ways of working smooth and predictable?
8 → 9	Showcase	Were updates clear, relevant, and actionable?
9 → 10	Elevate	Did we present information in ways that enabled timely, confident decisions?

This approach uses low-frequency customer satisfaction data while strengthening internal validity through repeated measures and level-specific scoring. The cumulativity principle is important here as well: when a lower level question receives a negative response, progress on an upper level question will yield only slight improvement rather than a meaningful shift in overall LL outcomes.

## 7. Discussion

The proposed ODEA model aims to contribute to project management theory and practice by clarifying the link between day-to-day behaviors and sparse CX outcomes. The model extends EDT by creating effective pathways that reduce negative disconfirmation (Deliver), aligns with ACSI by raising perceived quality and value (Operate), implements SERVQUAL through evidence-linked and acceptance criteria based communications (Showcase), and applies Kano by using delighters thoughtfully once fundamentals are in place (Elevate).

This architecture-based modeling of customer satisfaction highlights the increasing dependencies among experience-shaping behaviors in project delivery. The testable ODEA framework provides explicit schematics and a methodological pathway for empirical validation in low-frequency outcome environment. The cumulativity principle clarifies why surface-level “polish” cannot compensate for foundational gaps and helps explain recurrent dissatisfaction patterns in NPI contexts. The architecture also recognizes the importance of knowledge transfer and team empowerment as conditions for sustained performance. In short, ODEA offers a theory-anchored approach to designing sponsor experience as a predictable asset of the project system.

For PMOs, ODEA provides a common language for aligning governance reviews with CX outcomes, and its diagnostic can be incorporated into monthly routines combined with quality audits. For project managers, ODEA clarifies what must be stabilized first (Deliver), how to ensure

reliability (Operate), and how to translate performance into decision-useful communication (Showcase), before applying Elevate practices selectively.

### **Limitations and Future Research**

The architecture was designed for low-frequency LL outcome; extrapolation to high-frequency, transactional data settings would require adaptation. Future research should explore cross-industry samples, cultural moderators (e.g., communication norms), and AI-assisted digital systems that may strengthen the Showcase and Elevate levels. Additional work could also examine portfolio-level effects of ODEA when adopted organization-wide.

## **8. Conclusion**

Customer satisfaction in healthcare NPI cannot rely on personalities or momentary impressions. With LL occurring rarely, program managers need a structured diagnostic to predict and improve satisfaction outcomes. This paper advances a theory-based, practice-ready architecture for predicting and shaping customer satisfaction in healthcare NPI projects. By integrating EDT/ACSI, SERVQUAL, and Kano with organizational behaviors and artifacts, the Outcomes-Driven Experience Architecture (ODEA) provides a strengthening pathway from Deliver to Elevate that can be evaluated with low-frequency LL data. The proposed method outlined here an approach to empirical validation and for refining our understanding of how project systems can produce predictable sponsor experience in regulated environments. In summary, the ODEA converts subjective annual feedback into a continuous, evidence-driven management system.

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