

# Product Roadmapping in Pharmacy Benefit Management: Aligning Stakeholder Needs with Data-Driven Priorities

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**Abstract:** *Pharmacy Benefit Management (PBM) organizations face the complex challenge of balancing competing stakeholder interests while developing products that deliver measurable value across the healthcare ecosystem. This article examines the strategic framework for product roadmapping in PBM environments, focusing on the integration of payer cost-containment objectives, provider workflow efficiency requirements, and member health outcome expectations. Through analysis of stakeholder prioritization models, data-driven decision frameworks, and agile backlog management techniques, this research presents a comprehensive approach to PBM product development that addresses the tripartite stakeholder structure inherent to healthcare technology. The findings demonstrate that successful PBM product roadmaps require sophisticated mechanisms for stakeholder engagement, quantitative prioritization metrics, and adaptive planning processes that respond to regulatory changes and market dynamics. This work contributes to the healthcare technology management literature by providing empirical insights into multi-stakeholder product development in regulated environments and offers practical frameworks for PBM product leaders navigating competing organizational priorities.*

**Keywords:** Pharmacy Benefit Management, Product roadmapping, Stakeholder Alignment, Healthcare Technology, Agile Product Development, Value-Based Care

## 1. Introduction

Pharmacy Benefit Management organizations occupy a critical intermediary position in the United States healthcare system, processing over 4 billion prescriptions annually and managing pharmaceutical benefits for more than 270 million Americans (PCMA, 2023). As technology-enabled service providers, PBMs must continuously develop and enhance digital products that serve three distinct stakeholder groups: health insurance payers seeking cost containment and regulatory compliance, healthcare providers requiring efficient clinical workflows, and plan members demanding accessible, affordable medication management. This tripartite stakeholder structure creates inherent tensions in product development, as the priorities of these groups frequently diverge and occasionally conflict directly.

The challenge of aligning stakeholder needs with product priorities becomes particularly acute in the current healthcare environment, characterized by increasing regulatory scrutiny, evolving reimbursement models, and rapid technological advancement. Product leaders in PBM organizations must navigate value-based care initiatives, prior authorization requirements, specialty medication management, and digital health integration while maintaining operational efficiency and competitive positioning. Unlike traditional software product development, where user needs may be relatively homogeneous, PBM product roadmapping requires sophisticated frameworks for balancing competing interests, quantifying value across diverse metrics, and adapting to frequent policy changes.

This article examines the theoretical foundations and practical applications of product roadmapping in PBM environments, with particular emphasis on stakeholder alignment mechanisms and data-driven prioritization methodologies. The research addresses a gap in the healthcare technology

management literature, which has predominantly focused on electronic health record systems and patient-facing applications while giving limited attention to the unique characteristics of benefit administration platforms. By analyzing stakeholder engagement models, prioritization frameworks, and backlog management techniques specific to PBM contexts, this work provides both theoretical contributions to healthcare technology management and actionable insights for product development practitioners.

## 2. Literature Review

### *Stakeholder Theory in Healthcare Technology*

Freeman's (1984) seminal stakeholder theory posits that organizational success depends on managing relationships with all groups that can affect or are affected by organizational objectives. In healthcare contexts, Mitchell, Agle, and Wood (1997) extend this framework by introducing stakeholder salience theory, which categorizes stakeholders based on power, legitimacy, and urgency attributes. PBM organizations exemplify the complex stakeholder landscapes described in this literature, with payers possessing contractual power, providers holding clinical legitimacy, and members presenting urgent health needs.

Recent healthcare technology research has emphasized the necessity of multi-stakeholder engagement in product development. Greenhalgh et al. (2017) demonstrate that health information technology implementations fail when they inadequately address the distinct workflows and incentive structures of different user groups. Similarly, Ross, Stevenson, Lau, and Murray (2016) find that successful healthcare technology adoption requires explicit mechanisms for stakeholder input throughout the development lifecycle, not merely at initial requirements gathering or final deployment stages.

**Product Roadmapping Frameworks**

Product roadmapping literature has evolved from simple feature lists to strategic planning tools that communicate vision, prioritize initiatives, and align organizational resources (Kittlaus & Clough, 2009). The framework proposed by Groenveld (1997) established roadmapping as a time-based chart linking product features to market needs and technological capabilities. More recent work by Suomalainen, Salo, Abrahamsson, and Similä (2011) emphasizes the adaptive nature of roadmaps in agile development environments, where frequent reprioritization responds to changing market conditions and stakeholder feedback.

In regulated industries, Phaal, Farrukh, and Probert (2004) identify additional roadmapping complexities related to compliance requirements, extended planning horizons, and the need for cross-functional coordination. Healthcare technology roadmapping inherits these characteristics while adding stakeholder diversity and outcome measurement challenges. McElroy (2003) proposes that healthcare product roadmaps must explicitly incorporate clinical evidence requirements and quality metrics alongside traditional business value considerations.

**PBM-Specific Considerations**

The limited literature specifically addressing PBM technology highlights the sector's unique operational constraints. Conti, Nikpay, and Buntin (2014) describe how PBM business models create competing incentives between medication utilization management and member satisfaction. Fein (2013) documents the technical complexity of PBM platforms, which must integrate formulary management, claims adjudication, prior authorization workflows, and clinical decision support while maintaining sub-second transaction response times.

Recent policy developments have intensified PBM product development challenges. The Consolidated Appropriations Act of 2021 introduced new transparency requirements affecting data reporting capabilities (Fein, 2021). Additionally, the shift toward value-based pharmacy models documented by Watanabe et al. (2018) requires PBM systems to support outcomes-based contracting and medication therapy management programs, expanding product scope beyond traditional claims processing functions.

**Theoretical Framework**

This research employs a multi-theoretical framework combining stakeholder salience theory, value-based product management principles, and agile development methodologies to explain effective product roadmapping in PBM environments. The framework posits that successful PBM product development requires three integrated components: stakeholder identification and engagement mechanisms, quantitative value assessment models, and adaptive planning processes.

**Stakeholder Identification and Engagement**

Building on Mitchell et al. (1997), we categorize PBM stakeholders across three dimensions. Payers (health plans, employers, government programs) possess high power through contractual relationships and high legitimacy through

regulatory authority, positioning them as definitive stakeholders requiring immediate attention. Providers (prescribers, pharmacists, hospitals) hold high legitimacy through clinical expertise and moderate urgency when workflow inefficiencies impact patient care, classifying them as dominant stakeholders. Members (plan enrollees, patients) exhibit high urgency through health needs but often lack direct power over PBM product decisions, categorizing them as dependent stakeholders.

This stakeholder typology suggests differentiated engagement strategies. Payers require formal governance structures including quarterly business reviews and contract-specified deliverables. Providers benefit from clinical advisory boards and workflow analysis sessions that capture domain expertise. Members need advocacy representation through consumer groups, user research programs, and satisfaction surveys that amplify their voice despite limited direct influence.

**Value Assessment and Prioritization**

The framework incorporates multi-criteria decision analysis to evaluate product features across stakeholder-specific value dimensions. For payers, value metrics include projected cost savings, regulatory compliance risk reduction, and competitive differentiation. Provider value centers on time savings per transaction, clinical decision support accuracy, and system integration capabilities. Member value encompasses out-of-pocket cost reduction, access to preferred medications, and service convenience measures.

Rather than attempting to create a single composite score that obscures stakeholder tradeoffs, the framework maintains separate value calculations for each stakeholder group. This approach, aligned with Keeney and Raiffa's (1993) work on multi-objective decision making, makes explicit the prioritization choices product leaders must navigate. A feature reducing payer costs through restrictive formularies may score high on payer value but low on member value, revealing the inherent tensions that product roadmaps must address.

**Adaptive Planning and Agile Integration**

The framework embraces agile product development principles adapted for PBM's regulatory environment. Following Schwaber and Sutherland's (2020) Scrum framework, product backlogs serve as dynamic repositories of features, enhancements, and technical debt items. However, PBM contexts require modifications to standard agile practices. Regulatory compliance features may bypass normal prioritization processes, entering development immediately upon policy announcement. Clinical safety issues demand rapid response capabilities outside typical sprint planning cycles.

The framework incorporates rolling wave planning, maintaining detailed specifications for near-term releases (0-3 months) while keeping longer-term initiatives (3-12 months) at higher levels of abstraction. This approach balances the agility needed to respond to stakeholder feedback and market changes with the forward visibility required for resource planning, vendor negotiations, and stakeholder communication.

### 3. Methodology

#### *Research Design*

This research employs a qualitative case study methodology examining product roadmapping practices across three PBM organizations of varying sizes: a national PBM serving over 100 million lives, a regional PBM managing benefits for 15 million members, and a specialty PBM focused on high-cost medication management. Case study methodology is appropriate given the exploratory nature of the research questions and the need to understand complex organizational processes in their natural context (Yin, 2018).

Data collection occurred over an 18-month period and included semi-structured interviews with product leaders, observation of roadmap planning sessions, and document analysis of product strategies, stakeholder communications, and prioritization frameworks. A total of 42 interviews were conducted with product managers, product owners, clinical leaders, and executive stakeholders. Each interview lasted 60-90 minutes and followed a protocol covering stakeholder engagement practices, prioritization methodologies, and roadmap development processes.

#### *Data Analysis*

Interview transcripts and observational notes underwent thematic analysis following Braun and Clarke's (2006) six-phase approach. Initial coding identified stakeholder categories, value metrics, and decision processes mentioned by participants. Focused coding grouped these into higher-order themes related to engagement mechanisms, prioritization frameworks, and planning practices. Theoretical coding connected themes to the multi-theoretical framework, examining how stakeholder salience influenced engagement strategies and how value assessment models shaped prioritization decisions.

Document analysis complemented interview data by providing examples of roadmap artifacts, prioritization scorecards, and stakeholder communication materials. These documents illustrated how organizations operationalized the concepts discussed in interviews and revealed variations in practice across the three case sites. Cross-case analysis identified common patterns as well as organizational factors that explained differences in approach.

### 4. Findings

#### *Stakeholder Engagement Mechanisms*

Analysis revealed three distinct engagement models aligned with stakeholder categories. For payers, all three organizations employed formal governance structures with contractual foundations. These included quarterly business reviews where product roadmaps were presented and client-specific enhancement requests were evaluated. One national PBM maintained a client advisory council comprising representatives from their largest accounts, meeting biannually to review strategic initiatives and provide input on emerging capabilities.

Provider engagement took more varied forms across cases. The national PBM operated a clinical advisory board of pharmacists and physicians who reviewed proposed

utilization management changes and prior authorization requirements. The regional PBM conducted quarterly workflow analysis sessions where product teams observed providers using systems in live clinical settings, identifying friction points and efficiency opportunities. The specialty PBM relied heavily on one-on-one relationships between account managers and high-volume prescribers, using these interactions to gather feature requests and usability feedback.

Member engagement proved most challenging across all cases, as direct interaction with plan enrollees was typically mediated through payer relationships. All three organizations conducted annual member satisfaction surveys, but product leaders expressed frustration with the limited actionable insights these provided. The national PBM had recently established a member experience research program, recruiting volunteers for usability testing of digital tools and gathering feedback through online communities. This program represented an attempt to amplify member voice in product decisions despite their limited direct power.

#### *Prioritization Frameworks and Value Metrics*

Organizations employed scoring models to evaluate and rank product backlog items, though specific metrics varied. All three used weighted scoring across multiple criteria, with payer value consistently receiving the highest weights. The national PBM's framework allocated 50% of the total score to payer metrics (projected cost savings, client retention risk, competitive positioning), 30% to operational efficiency (claims processing cost, system maintainability, regulatory compliance), and 20% to member/provider experience (workflow impact, satisfaction scores, access improvement). These weightings reflect the power dynamics inherent in PBM business models, where revenue derives from payer contracts and member/provider preferences exert influence primarily through their impact on payer satisfaction. As one product director explained, 'We would love to prioritize more member-facing features, but at the end of the day, our clients are the health plans, and they're the ones who renew or don't renew contracts. Member satisfaction matters because it affects our clients' satisfaction with us.'

Despite this structural bias toward payer priorities, product leaders recognized the long-term risks of inadequate attention to provider and member needs. The specialty PBM deliberately overweighted clinical workflow features in their scoring model, reasoning that prescriber frustration with prior authorization processes could lead to therapy abandonment and worse patient outcomes. This represented a strategic decision to prioritize provider experience even when immediate payer value was limited, based on the belief that clinical outcomes ultimately drive payer satisfaction.

#### *Data-Driven Decision Support*

All three organizations emphasized the importance of data in roadmap decisions, but their approaches to data collection and analysis differed significantly. The national PBM maintained a dedicated product analytics team that provided data on feature usage, workflow completion rates, and process efficiency metrics. This team produced quarterly reports showing which capabilities were underutilized, where users encountered difficulties, and what business value features were delivering.

The regional PBM took a more ad hoc approach, pulling usage data in response to specific questions rather than maintaining ongoing dashboards. Product managers described this as frustrating, noting that roadmap discussions often involved anecdotal evidence and stakeholder opinions rather than objective metrics. The organization had recently invested in analytics infrastructure specifically to support more data-driven product decisions, recognizing this as a capability gap relative to larger competitors.

Beyond usage analytics, organizations struggled to quantify some value dimensions, particularly those related to member satisfaction and clinical outcomes. While payer cost savings could be calculated precisely based on formulary changes and generic utilization rates, measuring medication adherence improvement or quality of life benefits proved more elusive. This asymmetry in measurement capabilities potentially biased roadmaps toward features with easily quantifiable payer value at the expense of harder-to-measure member benefits.

#### *Agile Adaptation and Regulatory Responsiveness*

Organizations employed varying degrees of agile methodology, with smaller organizations generally exhibiting more flexibility and larger organizations facing more process overhead. The regional PBM operated two-week sprints with quarterly planning cycles, closely following standard Scrum practices. Product owners maintained groomed backlogs, sprint planning involved collaborative estimation, and retrospectives drove continuous process improvement.

The national PBM's process bore less resemblance to textbook agile, reflecting the complexities of coordinating development across multiple product lines and geographic regions. They operated six-week release cycles with annual strategic planning and quarterly adjustments. Product managers described extensive coordination requirements across teams, with feature dependencies often causing delays when one team's delivery slipped. Despite using agile terminology, the organization's planning processes retained characteristics of waterfall development, with detailed specifications created well in advance of development.

All organizations maintained mechanisms for rapid response to regulatory changes, operating outside normal prioritization processes. When new transparency requirements were announced, the national PBM created a dedicated strike team that developed required reporting capabilities on an accelerated timeline. This team received priority access to development resources and operated with minimal process overhead, delivering the compliance solution within three months of policy finalization.

## 5. Discussion

#### *Theoretical Implications*

The findings extend stakeholder theory by demonstrating how power asymmetries manifest in product development contexts. Mitchell et al.'s (1997) stakeholder salience framework predicts that definitive stakeholders (those with power, legitimacy, and urgency) receive immediate attention, while dependent stakeholders (those with legitimacy and urgency but lacking power) risk neglect. PBM product

roadmaps confirm this prediction, with payer priorities consistently receiving highest weights in prioritization models despite recognition that member and provider satisfaction ultimately drive long-term success.

This creates a principal-agent problem in healthcare technology development. Payers act as paying customers and thus principals in the traditional sense, while members are the end users whose welfare should theoretically drive product decisions. Product managers serve as agents attempting to balance these interests, but contractual incentives and revenue dependencies bias their decisions toward payer preferences. This misalignment may explain persistent member satisfaction challenges in PBM contexts and suggests that market structure itself creates barriers to member-centric product development.

The research also contributes to product road-mapping literature by illuminating how regulated environments constrain agile practices. Standard agile methodologies assume product teams have autonomy to prioritize work based on customer feedback and business value. In PBM contexts, regulatory compliance creates non-negotiable requirements that must be addressed regardless of value scores or stakeholder input. This challenges the assumption that product backlogs should be continuously reprioritized based on changing circumstances, as some items have fixed deadlines imposed by external policy makers.

#### *Practical Implications*

For PBM product leaders, the findings suggest several actionable strategies for improving stakeholder alignment and decision quality. First, organizations should establish formal member advocacy mechanisms that counterbalance the natural prioritization bias toward payer needs. This might include dedicated member experience researchers, consumer advisory boards, or explicit set-asides in development capacity for member-facing features. Without structural interventions to amplify member voice, their interests will remain systematically underweighted in roadmap decisions.

Second, product organizations should invest in multi-dimensional analytics capabilities that quantify value across all stakeholder groups. The asymmetry in measurement capabilities—where payer cost savings can be calculated precisely but member satisfaction improvements remain fuzzy—creates biases in prioritization. Developing better metrics for clinical outcomes, provider efficiency, and member experience would enable more balanced roadmap decisions. Organizations might partner with health services researchers to design studies measuring the impact of product features on health outcomes and quality of life.

Third, organizations operating at scale should resist the temptation to impose excessive process structure in pursuit of coordination. The national PBM's annual strategic planning and quarterly adjustment cycles represented a significant retreat from agile principles, creating rigidity that limited responsiveness to stakeholder feedback. While coordination requirements increase with organizational size, this should be addressed through better modular architecture and clear interface definitions rather than reverting to waterfall planning processes.

## 6. Limitations and Future Research

This research has several limitations that suggest directions for future investigation. The case study methodology provides rich contextual detail but limits generalizability to the broader PBM industry. The three organizations studied may not be representative of the full range of PBM business models, particularly newer entrants focused on transparency or value-based models. Future research should examine a larger sample of PBMs to identify whether the patterns observed here hold across the industry.

The research also lacks quantitative measurement of roadmap effectiveness. While we document how organizations make roadmap decisions, we do not assess whether their approaches lead to better business outcomes, stakeholder satisfaction, or health results. Future studies could develop metrics for roadmap quality and correlate these with organizational performance. This might include measuring the alignment between stated priorities and actual development work, the stability of roadmaps over time, or stakeholder satisfaction with product direction.

Finally, the regulatory environment continues evolving rapidly, with recent policy proposals potentially restructuring PBM business models. Legislation eliminating spread pricing or requiring pass-through pricing models would fundamentally alter PBM incentive structures and potentially shift power dynamics among stakeholders. Research examining how such regulatory changes affect product development priorities would provide valuable insights into the relationship between business models and stakeholder alignment.

## 7. Conclusion

Product roadmapping in PBM environments represents a complex exercise in multi-stakeholder management, requiring sophisticated frameworks for engagement, prioritization, and adaptive planning. The research demonstrates that successful PBM product development must explicitly address the tensions inherent in serving payers, providers, and members with divergent and sometimes conflicting interests. Organizations that employ formal stakeholder engagement mechanisms, multi-dimensional value assessment models, and appropriately adapted agile processes are better positioned to develop products that deliver value across the healthcare ecosystem.

The findings reveal structural challenges in achieving stakeholder alignment, as power asymmetries and measurement asymmetries create systematic biases toward payer priorities. Product leaders must consciously counteract these biases through advocacy mechanisms for less powerful stakeholders and investments in comprehensive value measurement. As healthcare delivery continues evolving toward value-based models emphasizing outcomes over volume, PBM product development must similarly evolve to balance short-term payer cost savings with long-term member health and provider sustainability.

This research contributes to healthcare technology management literature by examining a critical but

understudied sector of health IT. It provides both theoretical insights into multi-stakeholder product development in regulated environments and practical frameworks for practitioners navigating the complexities of PBM product management. As pharmacy benefits represent an increasingly important component of healthcare delivery and costs, continued investigation of effective product development practices in this domain will serve the broader goal of creating technologies that improve health outcomes while enhancing system efficiency.

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