

REVIEW

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Digital Subscription Business Models and Customer Retention Management: A Critical Review of Recurring Revenue, Churn Control, and Value Renewal

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Abstract

Subscription-based digital services have become a central business model across software, streaming, membership platforms, curated commerce, replenishment services, and digitally mediated retail. Their appeal rests on replacing irregular transactions with continuing customer relationships that generate recurring revenue, richer behavioural data, and stronger possibilities for long-term engagement. Despite this growth, the literature on digital subscriptions remains fragmented. Studies often examine subscription architecture, customer lifetime value, churn prediction, or engagement separately, which limits understanding of how revenue generation, retention management, and value renewal interact as a connected system. The review shows that subscription performance cannot be understood through acquisition growth or churn reduction alone. Sustainable subscription management depends on aligning revenue metrics, customer experience, predictive retention systems, and ongoing value creation across the subscriber lifecycle. The article argues for an integrated view of digital subscription strategy. Future research must connect financial logic with behavioural retention and value renewal, while managers must move beyond reactive churn control toward proactive lifecycle governance.

Keywords Critical review, Digital subscription, Recurring revenue, Churn control, Customer retention, Value renewal

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Introduction

Digital subscription business models have expanded rapidly because they offer firms a way to convert episodic transactions into continuing revenue relationships. The movement from ownership to access is visible in software-as-a-service, streaming platforms, subscription boxes, digital memberships, replenishment systems, and online services that rely on repeated billing rather than one-time sales [1]. This shift is not merely a pricing innovation; it changes how firms design value propositions, interpret customer behaviour, and evaluate performance over time [2]. However, the same continuity that makes subscriptions

attractive also exposes firms to persistent risks of disengagement, cancellation, and value erosion.

A central problem in the literature is that subscription economics, churn management, and engagement are frequently studied as separate domains. Research on valuing subscription-based firms has clarified the importance of customer-level data and retention assumptions for estimating firm value [3], while churn studies have developed increasingly sophisticated prediction models [4, 5]. At the same time, engagement research has shown that digital customer relationships evolve through technological interaction, participation, and

perceived service value [6, 7]. Yet these streams are rarely integrated into a single explanation of how recurring revenue is created, defended, and renewed.

This fragmentation matters because subscription performance is systemic rather than isolated. A firm may increase monthly recurring revenue through acquisition incentives, but weak engagement can later produce churn, low customer lifetime value, and reduced profitability [8]. Similarly, predictive churn modelling may identify customers at risk, but if the underlying subscription proposition is stale or poorly differentiated, retention interventions may only delay cancellation rather than rebuild commitment [9]. The critical issue is therefore not whether subscription firms can measure revenue, predict churn, or stimulate engagement, but whether they can coordinate these activities into a coherent lifecycle strategy.

This review addresses that problem by critically examining three connected pillars of digital subscription management: recurring revenue logic, churn control, and value renewal. It draws on subscription commerce, customer retention, digital transformation, churn analytics, and engagement research to ask how subscription models generate revenue, why customers leave, and how firms can continuously renew value to sustain long-term relationships [10–12]. The review is conceptual and critical rather than empirical; it does not present new data but synthesises existing evidence to identify contradictions, gaps, and a forward-looking agenda. Its structure moves from business model architecture to revenue economics, churn control, value renewal, research gaps, and future implications.

To synthesise the fragmented literature and guide the structure of this review, **Figure 1** presents an integrated lifecycle framework showing how recurring revenue logic, churn control mechanisms, and value renewal capabilities interact to influence long-term subscription performance

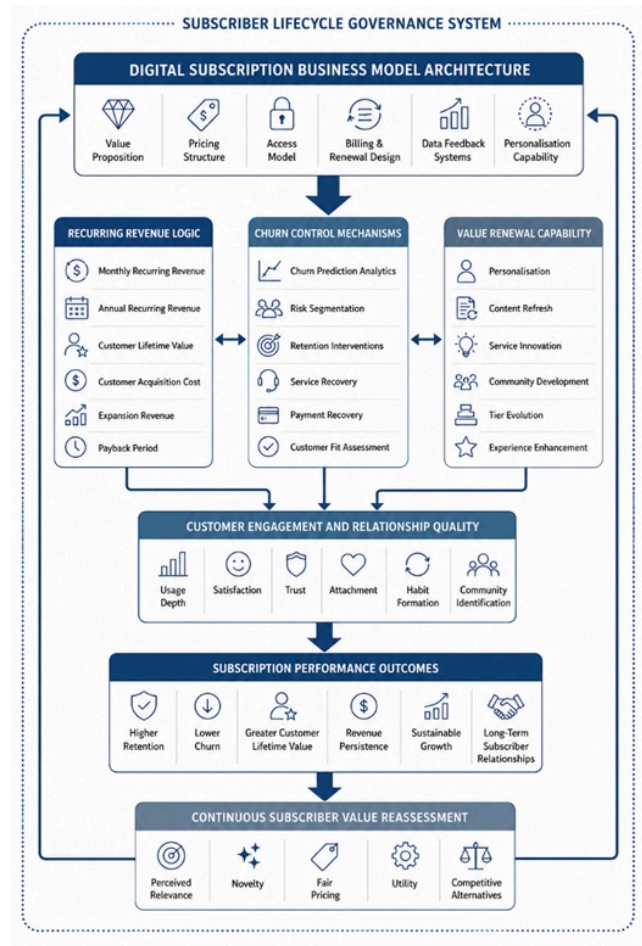


Figure 1. Integrated Lifecycle Framework of Digital Subscription Performance: Interactions Among Recurring Revenue Logic, Churn Control, and Value Renewal

Digital Subscription Business Models

Digital subscription business models are defined by ongoing access, recurring payment, and repeated value delivery rather than discrete ownership transfer. In SaaS and other digital services, this changes the firm's strategic task from selling a product to maintaining a relationship in which customers continually reassess whether the subscription remains worthwhile [3]. Curated subscription commerce extends this logic by combining convenience, discovery, and personalisation into a repeated service encounter [1]. The subscription model therefore makes value provisional: the customer does not simply buy once but repeatedly decides whether continued access deserves continued payment.

The subscription landscape includes several distinct model types, each with different value propositions and retention problems. Subscription boxes rely on surprise, curation, and emotional attachment, but they may also suffer when novelty declines or accumulated products reduce perceived need [2, 13]. Replenishment subscriptions emphasise convenience and habit formation, yet their dependence on predictable consumption makes them vulnerable when customer routines change [14]. Digital content and streaming subscriptions offer access and variety, but their value depends on continuous refresh, personalisation, and the customer's perception that the service remains relevant [15].

A critical distinction is that subscription models do not automatically create loyalty. Attachment theory suggests that repeated subscription encounters can strengthen emotional bonds when customers perceive relevance, reliability, and symbolic fit [16], but repeated billing can also heighten scrutiny when customers feel they are paying for unused or declining value. Beauty and lifestyle subscription research illustrates this duality: customers may enjoy discovery and curated experience, yet cancellation becomes likely when product relevance, personalisation, or perceived uniqueness weakens [17]. Thus, the subscription model creates opportunities for relational depth but also intensifies the need for continuous justification.

Digital subscription models should therefore be understood as architectures of repeated exchange rather than simple revenue formats. Their core components include the value proposition, billing mechanism, renewal cadence, data feedback loop, and switching conditions that shape customer commitment over time [10]. **Table 1** categorises the main types of digital subscription business models and their defining characteristics. This typology shows that subscription strategy varies not only by sector but also by the kind of value customers expect to be renewed.

Table 1. Typology of Digital Subscription Business Models: Value Propositions, Revenue Mechanisms, and Key Examples

Subscription model type	Core value proposition	Revenue mechanism	Main retention logic
Software-as-a-service subscription	Continuous access to digital functionality,	Monthly or annual recurring	Work integration, switching

	updates, and support	fees, often tiered by users or features	usage and perceived product value
Streaming and digital content subscription	Ongoing access to content libraries, recommendations, and new releases	Flat-rate, tiered, or ad-supported recurring access fees	Continuous refresh, personalisation, and perceived entertainment value
Curated subscription commerce	Discovery, surprise, personal relevance, and convenience	Recurring product-box payments, often monthly	Curated quality, emotional attachment, and perceived uniqueness
Replenishment subscription	Automated replacement of frequently consumed goods	Scheduled recurring payments linked to consumption cycles	Convenience, reliability, and reduced cost per routine consumption
Membership subscription	Belonging, exclusive access, community, or premium service privileges	Recurring membership fees or premium access charges	Identity, privacy, community, and status
Pet, lifestyle, and niche subscription services	Specialised recurring value for specific customer needs or interests	Recurring service or product payments	Personal relevance, service quality, and perceived care/expertise

Recurring Revenue Logic

Recurring revenue logic is the financial foundation of subscription business models, but it is often misunderstood as revenue stability alone. In reality, subscription revenue is conditional on acquisition cost, retention duration, customer lifetime value, expansion revenue, downgrades, pauses, and cancellation behaviour [3]. Valuing subscription-based businesses therefore requires more than counting subscribers; it requires estimating the durability and

profitability of customer relationships over time [21]. This is why customer-level data have become strategically important in subscription firms, because small changes in retention assumptions can substantially alter lifetime value projections.

The recurring revenue model creates a powerful managerial temptation to prioritise growth over profitability. Firms may celebrate rising subscriber numbers or monthly recurring revenue while ignoring whether newly acquired customers are costly, low-engagement, or likely to churn [8]. Customer lifetime value research warns that high-risk customers are not always worth targeting, because retention spending can be ineffective when customers have already disengaged or lack future value potential [9]. Consequently, subscription economics must distinguish between revenue volume, revenue quality, and revenue persistence.

Measurement is also problematic because subscription metrics can conceal rather than clarify performance. Monthly recurring revenue may increase even when customer cohorts weaken, especially if acquisition offsets cancellation in aggregate [3]. Churn rates may appear acceptable while high-value customers quietly downgrade, reduce usage, or disengage psychologically before formal cancellation [11]. Similarly, customer engagement metrics can imply relationship strength, but engagement does not always translate into profitable retention if the firm relies on costly incentives, excessive discounts, or unsustainable content spending [6].

A critical recurring revenue perspective must therefore integrate financial, behavioural, and strategic indicators. Metrics such as customer lifetime value, retention rate, churn rate, expansion revenue, and payback period are useful only when interpreted together rather than as isolated dashboard items [21]. **Table 2** summarises the core metrics and economic logic underpinning recurring revenue models. The central implication is that recurring revenue is not a passive outcome of subscription billing but an actively managed system of acquisition quality, retention durability, and renewed value delivery.

Table 2. Recurring Revenue Logic: Key Metrics, Financial Dynamics, and Strategic Trade-Offs

Metric or economic	What it captures	Strategic usefulness	Main limitation c
Retention rate	Share of subscribers	Measures continuity of	Does not reveal

element			trade-off
Monthly recurring revenue	Predictable revenue expected from active subscribers during a month	Shows current subscription revenue scale and short-term revenue momentum	Can hide weak cohorts, discount dependence, downgrades, and future churn risk
Annual recurring revenue	Annualised value of recurring subscription contracts	Useful for long-term planning, valuation, and investor communication	May overstate durability if renewal probability is not critically assessed
Customer lifetime value	Expected net value of a customer relationship over time	Connects retention, margin, and future revenue potential	Highly sensitive to assumption about churn discounting and customer heterogeneity
Customer acquisition cost	Cost required to acquire a new subscriber	Helps evaluate whether growth is economically sustainable	Low acquisition cost may still be poor if customers churn quickly or require heavy incentives
Churn rate	Share of subscribers who cancel or fail to renew	Provides a visible indicator of relationship leakage	Aggregate churn may obscure voluntary versus involuntary churn, customer value differences, and downgrade
Retention rate	Share of subscribers	Measures continuity of	Does not reveal

	continuing across a period	the recurring relationship	whether retained customers remain engaged, profitable, and satisfied
Expansion revenue	Additional revenue from upgrades, add-ons, or higher tiers	Indicates capacity to grow value within existing relationships	Can create customer fatigue if upselling exceeds perceived value
Payback period	Time required to recover acquisition cost from subscription margins	Evaluates growth discipline and cash-flow pressure	Short payback may discourage investment in long-term engagement and service quality
Revenue concentration	Dependence on specific customer cohorts, segments, or high-value accounts	Highlights vulnerability in the revenue base	Overreliance on high-value customers may increase strategic exposure if they churn
Discount dependence	Extent to which acquisition or retention relies on price reductions	Shows whether demand is value-driven or incentive-driven	Discounts may improve short-term retention while weakening perceived value and profitability

cancel. In digital subscriptions, churn can be voluntary, when customers actively leave because of price, dissatisfaction, fatigue, or better alternatives, or involuntary, when payment failure, card expiry, or administrative friction interrupts the relationship [11]. Predictive churn research has responded by building models that identify customers at risk before cancellation occurs [4, 5]. Yet the practical challenge is that prediction alone does not explain whether a customer can be profitably retained.

Machine learning studies show that churn prediction can be improved through better feature selection, resampling, temporal modelling, and hybrid classification methods. SaaS research demonstrates the relevance of usage behaviour, customer history, contract characteristics, and interaction patterns for predicting cancellation [4, 5]. Studies in e-commerce, credit card services, and digital retail similarly show that churn is shaped by behavioural frequency, purchase recency, monetary value, and customer profile variables [22–24]. However, these models often prioritise predictive accuracy over managerial interpretability, which can limit their usefulness for designing retention interventions.

A key limitation of much churn research is its reactive orientation. Retention systems often wait until customers display warning signals, even though disengagement may begin much earlier as perceived value weakens, service relevance declines, or alternatives become more attractive [18]. Research on retention futility is especially important because it challenges the assumption that high-risk customers should automatically receive retention offers [8]. If customers are unlikely to respond or have low future value, aggressive retention spending may reduce profitability rather than improve subscription performance.

Retention should therefore be treated as a selective and evidence-based managerial process. Firms need to distinguish between customers worth saving, customers who require value renewal, and customers whose cancellation reflects poor initial fit [9]. **Table 3** synthesises churn drivers, predictive factors, and retention intervention strategies. The table highlights that effective churn control requires linking prediction with diagnosis and action, rather than treating churn scores as sufficient managerial knowledge.

Table 3. Churn Control and Customer Retention: Churn Drivers, Predictive Modelling, and Evidence-Based Retention Levers

Churn Control and Customer Retention

Churn control has become one of the most developed areas of subscription research because recurring revenue depends on the customer’s repeated decision not to

Churn dimension	Typical indicators	Predictive modelling relevance	Retention interventions
Price-related churn	Complaints about cost, downgrade behaviour, comparison with cheaper alternatives	Pricing sensitivity and payment behaviour can signal cancellation risk	Targeted discounts, restructuring temporary protection
Usage decline	Lower login frequency, reduced streaming, fewer transactions, inactive periods	Strong behavioural predictor of disengagement across digital services	Re-engagement prompts, personalised recommendations, onboarding refreshers
Service-quality dissatisfaction	Complaints, poor satisfaction scores, unresolved support issues	Service interactions can improve prediction when integrated into churn models	Faster service recovery, improved service quality, account management
Content or value fatigue	Reduced interest, repeated skipping, low novelty perception, product accumulation	Harder to detect unless usage and preference data are analysed longitudinally	Content curation, improved features, mechanism
Poor customer fit	Low activation, weak onboarding, mismatch between expectations and delivered value	Early lifecycle data can identify low-fit subscribers	Better targeted expectations management, improved onboarding
Competitive switching	Search behaviour, reduced	Competitive signals are difficult to	Loyalty bundles, barriers

	commitment, comparison with rival services	observe directly but may appear through usage decline	differentiate value
Payment or administrative failure	Failed payments, expired cards, renewal interruptions	Payment data can identify involuntary churn risk	Payment reminders, alternative payment methods
Psychological disengagement	Low attachment, weak habit, reduced identity or community connection	Often undermeasured in behavioural churn models	Community building, personalised relationships, community engagement

Value Renewal and Long-Term Engagement

Value renewal is the proactive counterpart to churn control. Whereas churn management often asks how to prevent customers from leaving, value renewal asks how firms can make the subscription worth keeping before cancellation becomes likely [10]. This distinction is important because customers do not evaluate subscriptions only at the moment of renewal; they continuously compare price, use, relevance, novelty, and competing demands on attention [15]. Digital subscription firms therefore need renewal mechanisms that refresh perceived value across the relationship lifecycle.

Personalisation is one major route to value renewal, particularly in content, commerce, and digital service subscriptions. Curated subscription studies show that relevance, surprise, and perceived fit can strengthen customer attachment when the service continues to learn from customer preferences [1, 19]. However, personalisation is not automatically beneficial; if it becomes repetitive, intrusive, or overly narrow, it may reduce discovery and intensify subscription fatigue. The managerial challenge is to balance predictability with novelty so that customers feel both understood and continually stimulated.

Engagement research provides a broader foundation for understanding renewal because it frames customers as

active participants in value creation rather than passive payers. Service engagement studies emphasise interaction, participation, affective commitment, and evolving technological environments as sources of sustained relationship value [6, 7]. In subscription contexts, this means that value renewal can emerge through communities, usage rituals, service updates, premium tiers, and customer learning. Yet firms must avoid confusing platform activity with meaningful engagement, because frequent interaction may not indicate satisfaction or future profitability.

Subscription fatigue reveals the limits of assuming that access itself remains valuable indefinitely. As customers accumulate multiple subscriptions, they may experience cognitive overload, financial pressure, and reduced tolerance for underused services [15]. Studies of subscription boxes and recurring retail show that novelty can decline, stockpiling can occur, and the emotional appeal of surprise can weaken over time [13, 17]. Value renewal must therefore be treated as a strategic capability: firms must repeatedly redesign what customers receive, how they experience it, and why continued payment remains justified.

Critical Gaps in Current Research

The first major gap is theoretical fragmentation. Subscription business model studies often focus on typologies and value propositions, while churn analytics studies emphasise prediction and marketing studies examine engagement or retention separately [1, 9, 25]. This separation prevents researchers from explaining how business model design shapes churn risk, or how value renewal modifies customer lifetime value. A more integrated theory would treat subscriptions as dynamic systems linking revenue architecture, behavioural commitment, and continuous value delivery.

The second gap is methodological. Churn prediction research has advanced through machine learning, hybrid classifiers, imbalance correction, and temporal training approaches [26–29]. However, many studies remain cross-sectional, platform-specific, or focused on accuracy metrics without assessing whether predictions improve managerial decisions. Research comparing oversampling methods and classification techniques shows technical sophistication [30], but the literature still needs stronger links between

prediction quality, intervention design, and financial outcomes.

The third gap concerns customer heterogeneity and value asymmetry. Not all subscribers contribute equally to profitability, and not all churn is equally harmful [3, 8]. Some customers cancel because the offer no longer fits, while others leave because firms fail to renew value, and these mechanisms require different responses. **Table 4** consolidates the critical research gaps across recurring revenue, churn, and value renewal.

Table 4. Critical Gaps in Subscription Business Model Research: Theoretical, Methodological, and Empirical Deficits

Research gap	How it appears in the literature	Why it matters	Future research needs
Siloed treatment of revenue, churn, and engagement	Business model, CLV, churn, and engagement studies often develop separately	Prevents holistic understanding of subscription performance	Integrated models linking revenue metric, churn risk, and value renewal
Weak longitudinal evidence	Many studies rely on static snapshots or limited time windows	Subscription value unfolds over repeated renewal cycles	Cohort-based, panel, and lifecycle studies
Overemphasis on prediction accuracy	Churn models often prioritise algorithmic performance	High accuracy does not guarantee profitable retention action	Decision-oriented churn research connecting prediction to intervention outcomes
Limited theory of value renewal	Engagement and subscription studies discuss renewal indirectly	Firms need proactive strategies before churn risk emerges	Theory of renewal mechanisms, fatigue prevention, and

			perceived value reference
Insufficient customer heterogeneity	Aggregate churn and retention metrics hide segment differences	Retention investments may be wasted on low-value or poor-fit customers	Segment-specific churn causality and differentiated retention policies
Inconsistent churn measurement	Voluntary, involuntary, downgrade, and inactivity churn are often mixed	Measurement inconsistency weakens comparison across studies	Standardised churn definitions and multi-state subscription metrics
Neglect of psychological contracts	Research undermeasures expectations, fairness, trust, and perceived obligation	Subscription cancellation may reflect violated expectations, not only low usage	Behavioural and psychological models of commitment and cancellation
Limited B2B and SaaS depth	SaaS churn is growing but still less integrated with broader subscription theory	B2B subscriptions involve contracts, users, procurement, and organisational adoption	Multi-stakeholder B2B subscription retention models

A fourth gap is the limited treatment of subscription ethics and customer autonomy. Retention tactics can move from value-supportive to manipulative when firms use friction, dark patterns, opaque pricing, or excessive switching barriers to prevent cancellation [31]. Subscription research has not yet fully addressed the boundary between legitimate retention management and coercive lock-in. This is particularly important as digital transformation allows firms to use increasingly detailed behavioural data to personalise offers, predict vulnerability, and intervene before customers leave [12].

Future Research and Practice Agenda

Future research should build integrated models that connect business model architecture, recurring revenue metrics, churn mechanisms, and value renewal strategies. Such models should examine how pricing structure, contract length, service design, personalisation, and customer engagement jointly influence lifetime value and cancellation risk [3, 21]. Researchers should move beyond asking whether customers churn and instead ask why churn occurs, whether it is preventable, and whether retention is economically and ethically justified [8, 9]. This would reframe subscription performance as a lifecycle phenomenon rather than a short-term dashboard problem.

Methodologically, the field needs more longitudinal and multi-method research. Predictive modelling should be combined with qualitative research, experiments, and cohort analysis to explain the mechanisms behind observed churn patterns [26, 28]. Studies should also distinguish between voluntary cancellation, involuntary churn, downgrade behaviour, inactive retention, and psychological disengagement [11]. Without these distinctions, managers may mistake visible retention for genuine relationship health.

The practice agenda should prioritise balanced subscription dashboards. Managers should combine revenue indicators such as monthly recurring revenue and customer lifetime value with behavioural indicators such as activation, usage depth, engagement quality, complaint patterns, renewal sentiment, and downgrade behaviour [6, 18]. A balanced dashboard would help firms avoid the common error of celebrating growth while hidden churn risk accumulates. It would also support more disciplined decisions about when to invest in retention, when to redesign value, and when to stop acquiring poor-fit customers.

Finally, subscription firms should shift from reactive churn prevention to proactive value management. This means designing renewal routines through content refresh, personalised recommendations, tier evolution, service recovery, community mechanisms, and transparent pricing [10, 15, 20]. In B2B and SaaS contexts, it also means supporting organisational adoption, user training, feature utilisation, and measurable productivity gains [4, 5]. The ethical principle should be clear: the best retention strategy is not to make cancellation difficult, but to make continued subscription valuable.

Conclusion

Digital subscription business models have transformed the logic of digital commerce by replacing one-time transactions with continuing customer relationships. Yet this transformation creates a managerial challenge: recurring billing does not guarantee recurring value. Sustainable subscription performance depends on the continual alignment of revenue logic, customer retention, and value renewal.

This critical review has argued that the literature remains too fragmented across business model research, churn analytics, engagement theory, and subscription economics. Each stream offers useful insight, but none is sufficient alone. A holistic view is needed because revenue growth, churn control, and renewal mechanisms interact across the subscriber lifecycle.

Future scholarship should bridge these silos through integrated, longitudinal, and decision-oriented research. Managers should also adopt a lifecycle view that treats subscribers not as recurring payments to be protected, but as relationships that must be continuously justified through meaningful value. The long-term success of digital

subscription models will depend less on locking customers in and more on earning renewal repeatedly.

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