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Executive Briefing

WHY LEGACY BILLING RESTRICTS TELCO GROWTH

Legacy billing systems were built for legacy telco services and are too inflexible to deliver next-generation services. We explore how operators can modernise to unlock key benefits such as cost reduction, accelerated time to market and enhanced customer experience.

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Foreword

Methodology

This report presents insights from a recent research programme, where we conducted in-depth interviews with eleven senior decision-makers in CSPs and ran a focused survey with eleven individuals from CSPs worldwide. The aim was to understand the current state of their revenue management operations and their approach to transformation.

We have also evaluated the financial value through cost savings of transforming billing and charging across telcos' operations. This analysis was modelled for a 'typical Tier-1 operator' which we have defined as having annual revenues of US$25bn, of which US$5bn comes from mobile services.

Editorial independence

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Executive Summary

Operators face an opportunity to take on a new role with their customers and move beyond providing legacy core communications to drive sustained revenue growth. They continue to invest billions in new technologies such as 5G, edge and cloud, and seek to use this as a launchpad to diversify their portfolio and deliver new value-added services with partners.

However, to capitalise on this opportunity, operators must consider transformation beyond the network and technology. Overcoming obstacles that make it difficult for customers to buy and pay for these new services is crucial to achieve an acceptable return on investment. Traditional telco billing and charging systems were built for basic connectivity products served by a one-size-fits-all network. The business models for 5G services are fundamentally different by design and have different requirements that legacy billing and charging systems cannot fulfil.

Whilst many operators focus on consolidating legacy billing systems, operators should consider a new approach to monetisation, that seeks to transform rather than consolidate. Even if operators are able to significantly reduce the number of legacy systems, the inherent complexity of these systems will continue to pose operational challenges for operators and hinder their ability to innovate and provide a good customer experience. Instead, operators can seek to fundamentally change these processes to realise the value promised by their technological investments.

Based on our insights from a recent interview and survey programme with CSPs globally, we have assessed three key benefits and the potential value of a new approach to monetisation:

1. **Reduce billing operational costs.** Simpler monetisation systems can streamline operations by reducing the need for manual intervention and optimising core processes such as enacting price changes. Through greater configurability, operators can reduce overall maintenance and management costs. For a typical Tier-1 operator, STL estimates that shedding legacy can unlock 20% greater efficiency in billing operations and deliver up to $13 million in annual cost savings.

2. **Speed up time to market for new products and services.** Monetisation solutions that offer automated service provisioning accelerate product development processes and provide operators greater agility to innovate in the market. This will eliminate the need for a new BSS implementation for every service launch, such as for a new subscription based service – which can delay service introduction.

3. **Improve customer experience.** Greater digitalisation of back-end billing processes supports timely and accurate

For a typical Tier-1 telco, a new approach to monetisation can unlock several annual cost savings:

US$13m
from greater operational efficiency

US$53m
from reduced customer complaints

US$102m
from reduced customer churn

US$168m
in potential annual cost savings

1.96% uplift
in EBITDA

billing. Furthermore, monetisation systems that offer a 360-degree view of customer behaviour and usage enable greater personalisation in marketing outreach. Legacy systems that depend on manual interactions increase the risk of delayed and innacurate charges, resulting in bill shocks and customer complaints. STL estimates that a typical Tier-1 operator can unlock $53 million annually in customer care cost savings by reducing inbound enquiries relating to bills by 90%. New monetisation systems could enable operators to reduce customer churn by up to 20%, thereby generating up to $102 million in annual cost savings for a typical Tier-1 operator, in addition to the $53 million cost savings above.

Recommendations for operators

- **Focus on transformation not consolidation.** True transformation of legacy billing and charging systems should fundamentally change the core ways of working; consolidation will merely result in fewer of the same complicated processes. Therefore to achieve greater agility, operators must transform these processes beyond consolidation.

- **Adopt converged architectures.** Replacing hardwired legacy systems with converged charging systems that flex across different product types, offers telcos a unified view of customer interactions and reusable processes that are adaptable to evolving product portfolios; thus reducing duplicated maintenance costs. Having all plans and payment methods handled from one platform (usage, recurring, one-off, contract and subscriptions) simplifies operations and exemplifies this benefit.

- **Prioritise low-/no-code solutions**. To reduce operational complexity and cost, low-/no-code solutions empower non-IT teams to make changes to products and services in BSS systems, reducing dependence on specialised BSS engineers. This both increases operator autonomy and self-determination alongside reducing overall time-to-market.

- **Build the business case on cost savings.** The potential for reducing system management and maintenance operating expenses, as well lowering infrastructure capital expenditure, is significant and easier to quantify than calculating potential revenue uplift. For many of the operators interviewed, this was critical to emphasise in building the business case.

- **Adopt open and scalable architectures**. Telco BSS systems need to scale quickly, easily, and efficiently to handle the explosion in devices associated with 5G services. They must also be flexible enough to support operators' evolving service portfolio and business model.

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Laying the foundations for the new telco vision

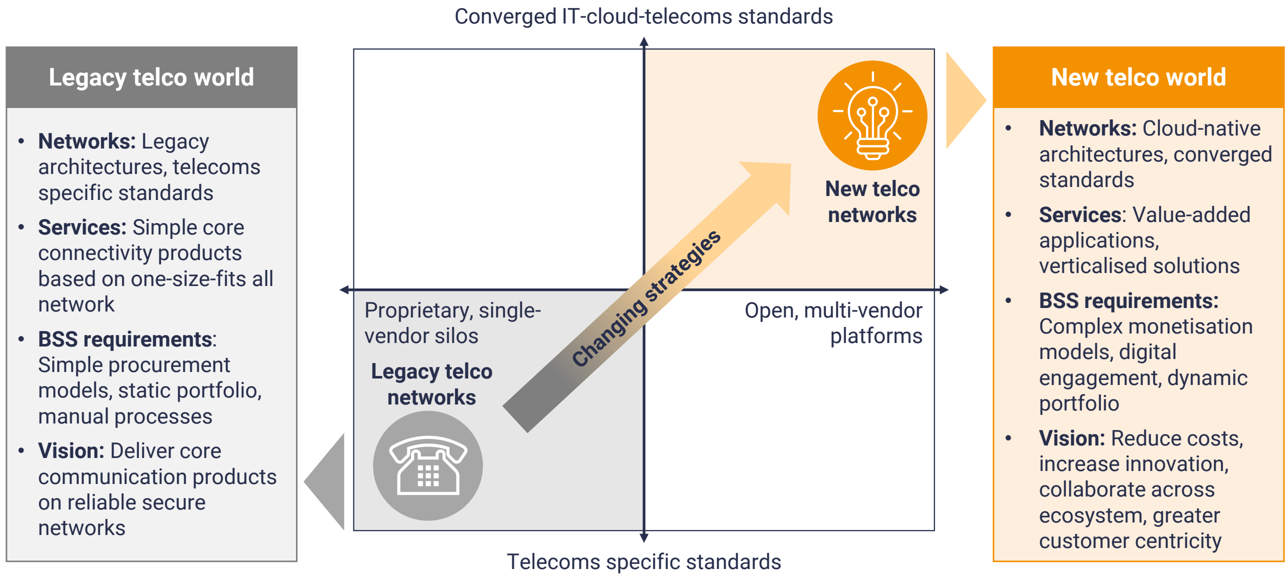
There is a crucial need for holistic transformation

Central BSS processes, such as billing, charging and revenue management, form the foundation of daily operations, delivering crucial interactions between operator and customer. Although the predominant focus is often on the network and technology, operators must apply equal focus to transforming these critical processes. Neglecting this transformation alongside the cloudification of network infrastructure will work against operators' efforts to differentiate themselves and monetise their investments.

To succeed in moving beyond legacy telco services, operators must embrace flexibility, agility, and collaboration, leveraging practices akin to technology companies (e.g. adopting a platform operating model, leveraging cloud technologies, providing digital experiences). This digital-first model will not only enable operators to collaborate across the ecosystem to deliver new services, but also meet rapidly changing consumer expectations, which are shaped by the simple and personalised interactions provided by digital giants like Amazon, Airbnb, and Uber. The substantial investment in 5G infrastructure to date underscores operators' commitment to this growth opportunity. Upgrading and cloudifying network infrastructure provides operators the capabilities to deliver and monetise next-generation applications in the B2C market, such as cloud gaming and integrated fixed, mobile and IoT services to the home. It also facilitates verticalised B2B offerings, such as network slicing and remote patient monitoring, fostering a shift towards B2B2X co-innovation models.

However, realising the growth potential of operators' technologies hinges on the transformation of fundamental IT support systems, such as billing and charging. Legacy revenue management systems were built to deliver batch billing processes and simple charging models, making them ill-equipped to deliver more complex services, support 5G-enabled business models and provide a high-quality customer experience.

Figure 1: As operators upgrade their networks, it is imperative to reassess the requirements of their new telco vision



Source: STL Partners

Revenue management systems must be fit to support increasingly complex services

To exploit the capabilities of their technology investments, there are several key capabilities that operators should consider when evolving their revenue management systems:

1. **Complex monetisation models:** As operators begin to deliver more complex B2B(2X) solutions with partners such as cloud gaming players, it becomes imperative to ensure monetisation systems are flexible to accommodate for different engagement models with partners and end-customers. These systems should offer customers with visibility into different solution components, enable seamless integration with partners' own billing systems, and provide end-consumers with a simplified user experience. In the new telco world, customer expectations will likely include real-time access to their bills (as opposed to traditional batch billing cycles).

2. **Flexible charging models**: Charging systems will need to accurately process the growing volume of network traffic generated by emerging 5G use cases. Operators must also ensure these systems can handle different charging models based on dynamic network capabilities, for example monetising a slice according to latency or quality of service (QoS) or optimising cloud gaming delivery from a local edge site based on a consumer's geo-location.

3. **Automated service provisioning and delivery:** To leverage the flexibility of 5G networks, operators need BSS systems that support swift service deployment. For instance, real-time creation of API-driven network slices should be supported, demanding accurate and prompt functionality from rating, charging, and billing systems.

4. **Partner management across diverse B2B2X ecosystems:** Operators must collaborate in a diverse partner ecosystem for efficient 5G service delivery. Their BSS should provide ample flexibility to support partner-led business models. Prioritising open, standardised interfaces is crucial for seamless integration across partner systems with varying architectures, ensuring a smooth experience for both partners and customers.

5. **Customer-centric user experience:** With the enhanced customisation offered by 5G, enterprise customers will seek to purchase and configure solutions themselves. BSS systems must support this, offering flexibility and control for partners and end-users.

6. **Real-time insights through digital channels:** Digital consumers want simplicity, transparency and accuracy as a given in the commercial relationship with telcos. This is more than a simple app with information about the customer's latest bill. Digital channels should provide real-time and accurate insights across subscriptions, usage, recurring and one-off purchases and balances.

Legacy billing and telco growth: an oxymoron?

The complexity of legacy billing systems is a significant cost burden for operators and restricts their ability to innovate

> "The main thing in IT is that we were not fast enough; we couldn't accelerate because we were hindered by our legacy systems."
>
> *Director, IT Mass Market, Tier-2 operator, EMEA*

Operators bear a significant cost burden due to the inherent complexity of legacy billing systems and the resulting challenges of maintaining, operating, and integrating these systems. STL Partners estimates that for a typical Tier-1 operator[1], average spend on mobile billing and charging systems is up to $66 million annually. Managing these legacy billing systems is an arduous task for operators which in turn inhibits their ability to innovate. This complexity boils down to:

- **The vast number of siloed systems:** Historically, each time an operator launched a new service they would build a dedicated billing and charging solution. Over time operations became more complex, with different customer segments, networks, payment methods, and lines of business, leading to a proliferation of overlapping billing and charging systems. This was often compounded by acquisitions in which the acquired company brought yet more duplicate solutions. Configuring revenue management activities becomes challenging, as it requires alignment across the vast number of billing, charging and rating systems across the product portfolio.

Issue: One Tier-1 operator has 70 different billing systems which is difficult to manage due to the integration across different interfaces and platforms

Issue: One Tier-1 operator had four overarching billing systems and 140 different BSS systems integrating into this, alongside additional systems such as CRM.

- **The highly customised nature of legacy systems**: Because legacy systems are hardwired for a specific customer type, service and payment method, any changes or product launches require building or buying (often costly) customisations with vendors. Even simple changes require a cumbersome back and forth between product and IT teams and third-party vendors.

> "We have a legacy billing solution and it's customised like crazy. Any changes take forever and it's integrated into a big landscape monster."
>
> *Director, IT Mass Market, Tier-2 operator, EMEA*

> "Billing & charging comprises 50% of product development time. This is because all the configurations are done manually on the billing & charging systems.
>
> *Billing & Charging Operations, Tier-1 operator, EMEA*

[1] We have modelled for a "typical Tier-1 operator" with $25 billion annual revenues across fixed and mobile services.

To realise growth and eliminate complexity, operators need a fundamentally new approach to monetisation

Telcos are recognising the limitations of their legacy systems and undergoing billing transformation. Over 80% of the operators we surveyed confirmed that they are currently seeking to transform legacy billing systems, citing reduced time to market, improved customer experience, and lower operational costs as key drivers.

Many operators are focused only on system consolidation and virtualisation…

For many telcos, existing heavy investment and the inherent complexity of legacy billing encourages them to simplify, consolidate and virtualise existing systems. 80% of surveyed operators are looking to reduce billing costs through consolidation of current platforms. However, while consolidation does reduce complexity to some extent, it doesn't eliminate the fundamental challenges that legacy billing presents. Operators will still grapple with heavy customisation and lack of configurability, resulting in further issues such as siloed product catalogues, high customer complaints and a need for manual workarounds. Therefore, consolidation can only be thought of as a short-term fix, one that will not ultimately empower operators for future service and business model innovation.

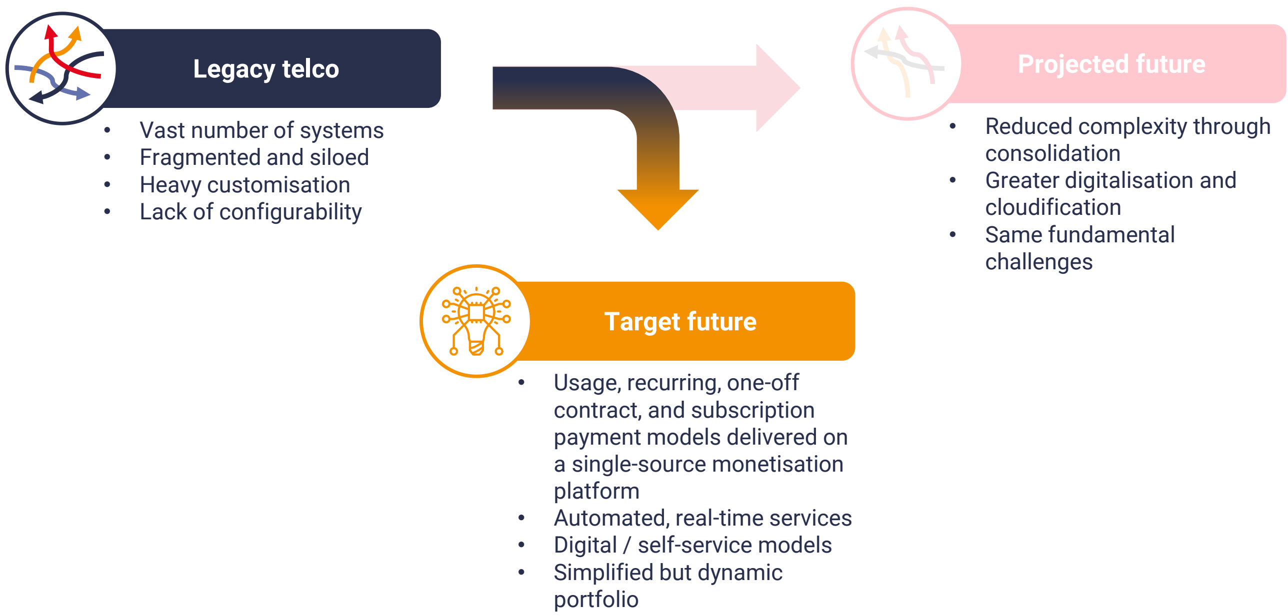
…but there is a need to completely transform billing and charging

Many of these operators consider their system consolidation to be 'transformational', however doing less of the same does not address the root cause of their challenges. Effective transformation should not merely seek change that enables a telco to work more efficiently, rather it should seek to enable a telco to innovate and respond to inevitable change within the market. Moving beyond core connectivity, for example towards the B2B2X opportunity, is not confined to one specific use case. Operators must therefore ensure that they have the capabilities to innovate and experiment with their partners across different solutions.

> "We originally wanted to do a best of breed transformation, but the old mainframe was too bespoke… To truly become digital, we had to transform everything."
>
> *CTO, Tier-2 operator, EMEA*

With this complexity, consolidated systems will remain a bottleneck rather than an enabler for growth. Only by fundamentally transforming legacy billing and charging processes, can operators unlock a simpler revenue generation process which offers them greater flexibility and agility to respond to customer demand and monetise their evolving product portfolios.

Figure 2: To succeed with future innovation telcos must adopt a new approach to monetisation



Source: STL Partners

Redefining charging and billing to support the 21st century agile operator

If operators consider a new approach to monetisation by transforming billing and charging systems beyond consolidation, they will be able to realise three core benefits:

1. **Reduce billing operational costs**
2. **Speed up time to market for new products and services**
3. **Improve customer experience**

Based on our research, we have also evaluated the financial value through cost savings of transforming billing and charging across telcos' operations. This analysis was modelled for a 'typical Tier-1 operator'.

1. Reduce billing operational costs

> "It's the complexity of doing operations from the whole number of systems we have – billing and rating platforms – that make it highly inefficient in how we operate."
>
> *Technology and Innovation Manager, Tier-1 operator, EMEA*

Operating and managing legacy billing systems is a significant cost burden on telcos due to the vast number of systems and their highly customised nature. Operators are aware of the excessive spend on billing systems and therefore have ambitious targets to cut costs: the average target to reduce costs was 40%[2].

Throughout our interview programme, two key issues rooting from this complexity were consistently highlighted:

- **It is a difficult and lengthy process to make service changes.** Routine changes, such as price adjustments, require extensive integration with billing, CRM and other interfacing IT systems, followed by a lengthy process to test the changes implemented. Less routine changes (e.g. to VAT) can take even longer. Streamlining this process is a primary focus for operators, with 75% of survey respondents having set targets around this (see Figure 3).

> **Issue:** For a Tier-2 operator, a simple configurational change (e.g. changing free calling from zone 1 to zone 1 & 2), takes 1 - 2 days to configure and an additional 3 weeks to test.

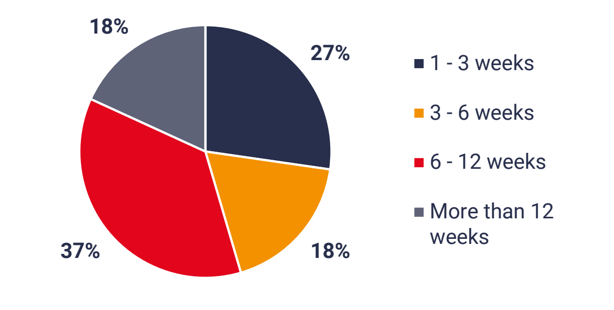
> **Issue:** For a Tier-1 operator, implementing a VAT change in their legacy systems took 6 months overall: 3 months to analyse and develop a solution and an additional 3 months to implement.

[2] STL Partners survey, July 2023, n=11

Figure 3: 75% of operators have targets to reduce time taken to implement service changes

The complexity of legacy billing results in difficulty making even simple changes…

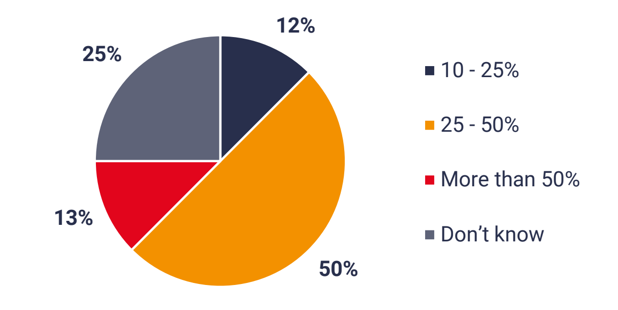
How long does it currently take you to implement a service change in your current billing systems?



Source: STL Partners survey 2023, n=11

Therefore, driving greater efficiency is a key focus for operators

Does your company have a current operational target to reduce the time taken to implement service changes?



Source: STL Partners survey 2023, n=8

Source: STL Partners

Management and maintenance are critically dependent on manual workarounds. Core tasks, such as producing consolidated invoices, require individuals to manually retrieve data across fragmented systems. Fixes or changes also need manual handling by specialised BSS engineers due to the lack of configurability. This often results in the development of new APIs or microservices, further complicating the legacy BSS landscape.

> "One goal is to enable business teams to launch products on their own, so that they are not dependent on IT to request configuration for product launches."
>
> *Enterprise Architect, Tier-1 operator, EMEA*

Issue: One Tier-1 operator cited the need to manually retrieve data to produce a consolidated enterprise invoice due to fragmented billing system siloes.

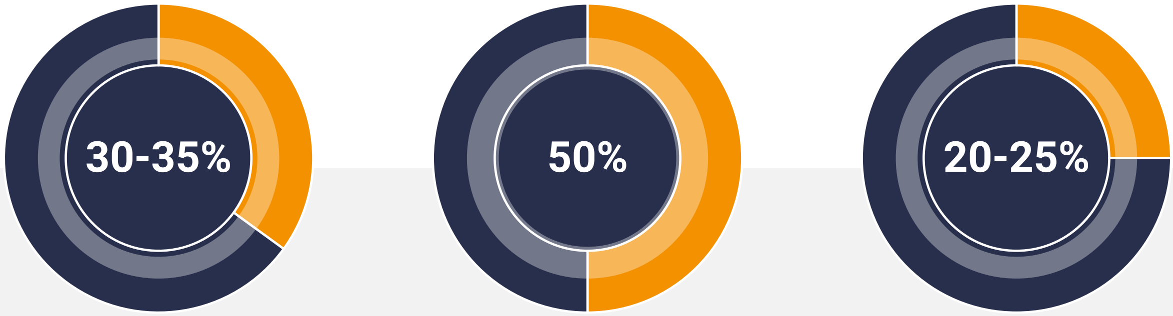
Issue: For a Tier-1 operator implementing the 6-month VAT change, alongside the team deploying the permanent solution they also had a team developing a temporary workaround solution.

Overhauling legacy billing to streamline operations can have a substantial impact on operators' bottom lines: we estimate that a typical Tier-1 operator can unlock 20% greater efficiency in billing and charging processes which would deliver $13 million in annual cost savings.

Benefit: For a Tier-2 operator, a tax change used to take 6 months but now it can be done in days (even 24 hours).

With this new transformational approach to revenue management, operators can reduce overall maintenance and management costs due to greater operational efficiency.

Figure 4: Operators who are more mature in their transformation of legacy IT/billing have seen the benefits



Cost savings in BSS

From Tier-2 operator's digital transformation

Reduction in IT costs

From Tier-1 operator's IT transformation, due to reduced costs of running legacy infrastructure and improved productivity

Reduced application & maintenance costs

From Tier-1 operator's consolidation of legacy IT systems and vendors

Source: STL Partners interview programme, July 2023

2. Speed up time to market for new products and services

As operators diversify their portfolios with more innovative and complex B2B2X solutions, they will need flexibility and agility to experiment with new services and business models. Configuring these in a timely manner will be key to capturing market share and maintaining valuable partnerships with players across the ecosystem.

> "If the catalogue is bad it takes 6-12 months [to take a product to market], a price change takes a month. By this point you've lost a lot of momentum."
>
> *Principal Transformation Office, Tier-1 operator, EMEA*

> "Long lead times make it hard to compete in a market…you need to be quick to meet other competitors."
>
> *CTO, Tier-2 operator, EMEA*

When relying on legacy billing systems, operators are often required to establish a new BSS implementation for each new service launch. The result is a lengthy product development time, of which a substantial amount is dedicated to billing and charging. One study revealed that over 65% of product initiatives have been delayed or had their scope limited due to inflexible legacy billing systems.[3] Extended product development times can even lead to the decision not to launch the product at all, once the opportunity is deemed to have been missed.

Issue: For a Tier-1 operator, lengthy billing system configuration has prevented them from meeting critical commercial deadlines, leading to the decision to not launch the product altogether on several occasions.

[3] https://www.forbes.com/sites/mgiresearch/2014/03/18/agile-billing-the-new-essential-for-business-innovation/

Streamlined revenue management activities, characterised by simplified architecture and configuration, significantly reduce operators' time to market. Studies indicate that such efficiency improvements can result in a 30% faster development time.[4] This will allow operators to respond to customer demand dynamically and capture market share effectively. Research reveals that organisations lose out on 33% profits when they launch a product 6 months late, in comparison with only a 3.5% loss when delivered on-time but 50% over budget.[5]

> "Improving BSS could improve 50% of whole time to market, or I imagine it should be more…"
>
> *Principal Transformation Office, Tier-1 operator, EMEA*

Benefit: A Tier-2 operator found that its transformation has reduced time to market from 3 months, to under an hour.

Benefit: A Tier-1 operator found that 50% of product development time is dedicated to set up of billing and charging. A leaner billing model should reduce this time by 50%, from an average of 3 months to 3 weeks.

3. Improve customer experience

Providing optimal customer experience remains at the heart of operators' transformation journeys, as highlighted by all of the telcos interviewed. As customer expectations evolve, telcos must keep up with increasing demands - for 24/7 accessibility, transparent pricing, and effortless customer service through intuitive interfaces and self-service options. This all comes amid a trend for declining customer loyalty.

Since issues with billing and charging comprise 40% of the complaints operators receive today, there is a clear need to overhaul legacy billing systems to achieve the outstanding customer experience that operators aspire to. Many of the complaints faced today stem from the fact that legacy systems struggle to accurately handle complex pricing models and produce error-free consolidated bills without manual intervention. They also lack the flexibility for real-time adjustments, resulting in delayed corrections and compounding charging inaccuracies.

> "For a typical telco, at least 40% of customer calls are billing related – most of the time it's the number one issue they complain about."
>
> *Principal Transformation Office, Tier-1 operator, EMEA*

Issue: For a Tier-2 operator, the primary driver for transformation is the recognition that legacy billing systems were the root of most customer service challenges leading to poor customer experience and a low digital conversion rate.

Issue: A Tier-1 operator felt that unexpected charges to customers due to delays in processing CDRs (Customer Data Records) are likely to be a major driver of churn.

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[4] https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-next-telco-battleground-network-experience-and-competitiveness
[5] https://hbr.org/1991/01/the-return-map-tracking-product-teams

This is not a challenge that can be addressed solely by transforming front-end customer service (e.g. through automated chat bots). Telcos must address the root cause by eliminating the back-end complexity from which the poor customer experience stems. Through greater digitalisation of back-end billing processes, operators can:

- **Reduce bill shock, inaccuracies, data disputes, and the associated customer complaints** by reducing reliance on manual interactions and minimising risk of delayed and inaccurate charges.
- **Increase digital engagement and offer real-time visibility to their customers** through unified portals and self-service models. These will empower customers to manage their accounts, access real-time information on spending and resolve issues without the need for direct assistance.
- **Offer data-driven personalisation by unlocking a 360-degree view of customer behaviour** and usage, enabling operators to leverage AI tools to personalise experiences and campaigns for specific customer segments. This will enable operators to identify previously underexplored cross-sell and upsell opportunities.

> "Having real-time data means we can be more proactive with our customers: not just how we handle marketing personalisation but also for customer care."
>
> *CTO, Tier-2 operator, EMEA*

We estimate that reduction in bill shocks could in turn reduce customer complaints related to billing and charging by 90%. As a result, operators can alleviate the resource required for customer support agents, which would generate $53 million in annual cost savings for a typical Tier-1 operator. This will also unlock greater efficiency in their operating models, allowing them to reinvest the same resource in other areas of the business.

> "Before I wouldn't be surprised if 50-60% of calls were billing related, but now everything is transparent, so we never have complaints about this. It's a gamechanger."
>
> *Principal Transformation Office, Tier-1 operator, EMEA*

Benefit: A Tier-2 operator has invested in preventing bill shocks and making bills easy to understand, which has reduced complaints to their call centre and costs associated with handling these calls.

Benefit: A Tier-1 wholesale operator has been able to redeploy people into new roles due to greater automation implemented for their service delivery across the customer engagement journey, which includes billing.

There would also be a broader uplift in the quality of customer experience through the combination of the above factors, which would lead to decreased churn. Although it is hard to assign a decrease in churn to one specific cause, our analysis shows that a reduction in churn of 20% would generate up to $102 million in annual cost savings for a typical Tier-1 operator.

Benefit: A Tier-1 operator has optimised their customer support operations by providing more enriched customer data to their support agents. This achieved a reduction in dispute resolution time and improved their episodic NPS.

Conclusion

Operators have an opportunity to move beyond providing only core communication services to unlock new revenue streams. Whilst investment in 5G infrastructure promises to unlock this new growth, operators will struggle to monetise this strategy without robust BSS capabilities and charging mechanisms for these new services and business models.

For operators to successfully exploit their new technological capabilities and monetise their investments, they must look to transform their revenue management systems. Despite the sunk cost of legacy billing systems, operators must consider the benefits and financial value of adopting a new approach.

Recommendations for operators

- **Focus on transformation not consolidation.** Consolidation will only be a short-term fix for operators: it does not effectively address the problems facing operators, merely reduces their impact. A more radical approach to transformation will future-proof operators' billing and charging operations and facilitate greater innovation as they evolve their product portfolio.

- **Adopt converged architectures.** Replacing hardwired legacy systems with converged charging systems that flex across different product types, offers telcos a unified view of customer interactions and reusable processes that are adaptable to evolving product portfolios; thus reducing duplicated maintenance costs. Having all plans and payment methods handled from one platform (usage, recurring, one-off, contract and subscriptions) simplifies operations and exemplifies this benefit.

- **Prioritise low-/no-code solutions.** Manual and complex customisation reduces flexibility and is expensive for operators to manage. Low-/no-code solutions empower non-IT teams to configure rather than customise, freeing them to make changes to products and services without depending on specialised BSS engineers.

- **Build the business case based on cost savings**. The potential for reducing system management and maintenance operating expenses, as well lowering infrastructure capital expenditure, is significant and easier to quantify than calculating potential revenue uplift. For many of the operators interviewed, this was critical to emphasise in building the business case.

- **Adopt open and scalable architectures.** Telco BSS systems need to scale quickly, easily, and efficiently to handle the explosion in devices associated with 5G services. They must also be flexible enough to support operators' evolving service portfolio and business model.

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