# Operational Efficiency through Service Integration: Insights from Platform-Based Business Models

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**Abstract**

Today's organizations are grappling with pressing issues related to efficiency. The public sector is innovating, adopting strategies and practices used by the private sector in its relentless quest for a delicate balance between costs and innovation. The private sector, on the other hand, has been challenged to generate profitable growth by questioning the conventional operating income equation of increased revenues less increased expenses, exploring how revenue lines can be enhanced without linearly increasing the corresponding expenses. This exploration is being escalated by the advances in digital technologies. I discuss these issues in the context of service provision, drawing insights from platform-based business models. I propose the concept of "service integration" to characterize the unique capabilities these business models create and apply in the service provider's advantage - enhanced selection and curation of services on offer; seamless on-demand aggregation and integration of complementary services; omnipresent use of service-related data to provide personalized, predictable and pre-emptive service experiences; establishment of trust through providing and demanding quality commitments from servitized businesses and increased scope for accelerators which boost the returns from services, especially in the case of businesses which are "servitized" using platform-based business models. By asking the question, "How well can a business integrate services that consumers or companies need?", I establish a framework to interpret a business' ability to maximize service integration en-cashable consumer value. I conclude with a look at the broader implications and challenges of service integration.

## 1. Introduction

Operational efficiency has always been a critical aspect of value creation for all companies in all industries around the globe. It is primarily derived through optimizing supply chain effectiveness and resource utilization. However, consumer-oriented services are inherently unlike manufacturing, and face management challenges quite different from those that have been tackled in the context of various manufacturing operations. The advances in information technology and communications

infrastructure have contributed to the rise of the internet economy and the advent of platform-based business models. This shift has created a new paradigm for both the financial and operational performance of organizations in traditional service industries. Leading platform-based businesses have demonstrated very high levels of performance and significantly enhanced consumer experience by creatively attempting to integrate various services on their digital platform.

What is also noteworthy is that companies who successfully operate through platforms are creating new markets and entirely new services that did not exist before. Firms offer seemingly simple services on their platforms that allow them to integrate a number of different services, including logistics, payment processing, sales, building trust, customer service, safety, quality control and other activities, which were normally separately provided by well-established specialist firms. What these platform-based companies have demonstrated is that efficient operations that deliver a seamless consumer experience are essential not just for service-based firms, but for all such firms, irrespective of the nature of the core product. However, contrary to intuition, this does not mean that they should follow the platform route.We explore the theme of operational efficiency through service integration in the remainder of the paper. In the next section, we discuss the integration of services on digital platforms that has led to high consumer satisfaction levels among users of these platforms. We further discuss the implications of this idea for the service industry in section 3, and delve into potential avenues for future research in section 4. We conclude with a few remarks in section 5.

## 2. Understanding Platform-Based Business Models

Business Models (BMs) have multiple definitions, and we cannot attempt to summarize all of them. However, and for the purpose of our analysis, we adopt the definition to describe the Business Model as "a structural template of how a firm conducts business with its customers, partners and vendors". The conceptualization of the Business Model was popularized paving the way for a theoretical stream that, even today, produces a large amount of research. One of the "inspirations" for the Business Model idea is the Value Chain concept. The architecture of Value Chains could inspire the BMs architecture that highlights, as stated, "the way value is created by a firm and how that created value is then used to derive economic benefits".
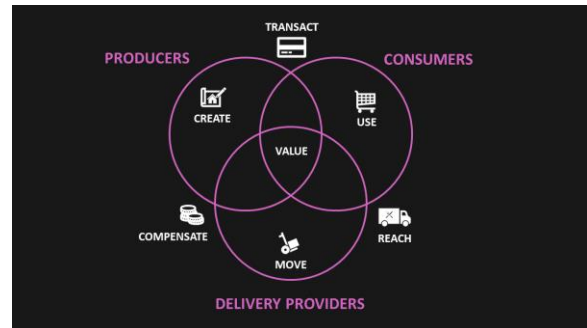


**Fig 1 : Delivery providers**

Both BMs and Value Chain have given fruitful insights into understanding the innovative ways firms deliver value and conduct business. However, there is a growing consensus in the literature that goes beyond the contents, artifacts, and stakeholders that populate the traditional understanding of Business Models. A pivotal argument is that Business Models are not only descriptive devices; Business Models are "actionable". Having a Business Model means having a template that allows the firm to execute a strategy successfully, and in this sense, it should be possible to replicate it. On the other hand, it is accepted that BMs are not a "one-size-fits-all" concept; what is observed today is the cohabitation of many different BMs.

The concepts of hybridization and innovation are crucial to the discussion and analysis of Business Models. Hybridization has led to the creation of diverse BMs through the adoption of features that are associated with different concepts of BMs, as e-commerce, Freemium models, advertising-supported content, and donation-based. Business Model innovation highlights the need for organizations to rethink the way they do business.

In a dynamic environment characterized by uncertainty, rapid changes, and globalization, Business Model innovation reflects the response of organizations. Distinct ways of creating and capturing value accrue increasingly less from innovation in products or services and increasingly more from innovation in the way those products or services are made available to customers.

## 2.1. Definition and Characteristics

Over the past two decades, platforms have evolved from enabling information sharing into complex utilities that are transforming commerce, work, communication, and entertainment around the world. In this chapter, we deepen our understanding of platform-based business models. We define platform-based business models and comment on their characteristics. We present insights about platform types, markets, and related trends. To achieve the objective of this chapter, we utilize various expert views published in deep research articles that are seminal and authoritative on the subject.

In everyday language, we probably think of a platform as a physical structure. In a business context, the term platform typically seems to refer to a specific software system that enables other companies to develop new uses or applications. Certainly, a business platform can be a valuable piece of technology. However, in general, it seems that a platform is something broader than a single technology. One question to consider is whether we would really think of two companies as using the same platform if they were using two different versions of a hotel reservation system - yet they would be using the same physical structure and possibly very similar systems of algorithms and code. One answer to this question would be that although we normally think of a platform as something a little broader than a specific technology, we can usually only make detailed comparisons of individual companies that are using actual platforms - systems of technology and services - at work.

**Eqn 1 : Resilience Index (RI)**

$$RI = \frac{\int_{t_0}^{t_1} P(t)\,dt}{(t_1 - t_0) \cdot P_0}$$

Where:

- $P(t)$: Performance at time $t$
- $P_0$: Pre-event performance level
- $t_0$ to $t_1$: Disruption and recovery period

## 2.2. Types of Platform Models

The diversity of platforms is generally classified according to how they create value, the content's functions, and/or the kind of platform supporting the exchanges. Services offered are the most important platforms' characteristics since they determine the demand available. Platforms can be divided into three main types according to the way they create value: technology platforms, an aggregator of sources of content and/or value, and a facilitator of value exchange or matchmaking.



**Fig 2 : What is a Data Product Platform**

Following this line of reasoning, service integration is the main function of the two-sided platforms classified as facilitators, while developers create values and own content on the opposite side from the content created by the owner, which is the only interaction between the two sides. A hybrid

platform is one for which the two sides of an industry produce in collaboration the output of that industry and use the same technology to fulfill their functions, sharing the investment and the risk of entry into a market. This classification results in platform models that are technology developers, matching facilitators, content-neutral aggregators, hybrids, or owned-content.

These are schematic representations which only intend to clarify their organization. It is important to point out that the match facilitators add value by enabling a synergy among the participants in the business process and are integrated with the other model types. They react and enrich content provided by other types of platform; and they can be involved in the real processes of production and delivery by partly outsourcing them to content developers, which are external players to the matchmaking platform but important to assure the noninfluence and credibility of the matchmaking function.

## 2.3. Market Dynamics and Trends

Companies around the globe are increasingly going digital. It was estimated that in 2021, 60% of GDP was generated by digital companies in G20 countries. As a way of booming, the economy is dominated by technology factors and companies like Apple, Microsoft, and Alphabet get huge benefits from the change and have the largest values across the world. Meanwhile, on the podium of traditional industries, companies like Wells Fargo, JP Morgan, and Berkshire Hathaway also earn ranking from their volumes and historical empires. They all put the focus on customers and engage with them through their services to expect their loyalty. However, in the age of Subscription Economy, customers' loyalty is easily broken down. People tend to compare and find the better deals across the market —switching cost gets affordable. Moreover, as the permission is influenced by data networks, consumers will be served by relevant brands in the market who utilize the same platform with other brands. Unlike closed, traditional

models, brands are assigned with a role of collaborating, interacting, and obtaining a share of consumers' attention on platform-based customer journeys. Consequently, they need to integrate their services to keep the audience engaged along the path.

Also, the rise of digital platforms is calling traditional companies to transform towards service-based platform models. As tech factors drive the platform route, new digital service platforms with a focus on sharing economy, marketplace, and tech-driven collaborative operations provide a chance for any industry to reduce costs, improve efficiency, and create sustainable growth. By closing the gap between digital natives and traditional manufacturers –reducing or eliminating the rhythm-, brands can balance the supply-demand interaction, improve customers' experience, and add values through these tech-driven models.

## 3. Service Integration Framework

In this chapter, we propose a service integration framework for digital platforms that captures the notion of integration identified in our preceding analysis of the service integration function of digital platform ecosystems. To be applicable across different contexts and to facilitate practical implementation, our framework builds largely on a general purpose conceptualization of a platform. A platform is a digital archetype that connects two or more market sides, facilitates resource exchange, and promotes reciprocal and unique value through direct and indirect networking effects. This conceptual architecture accommodates the varied characteristics and purposes of different platforms, and subsequently offers universal insights into the design and management of all types of platforms. A set of tools or application programming interfaces enable developers to integrate external services into a platform. In addition, self-service tools enable developers to integrate their own services into a platform, thereby facilitating the porting of external services onto and off of a platform and the entire operation of such services. By offering

comprehensive self-service tools on the service side, a platform allows its ecosystem to support the porting of external services, to indirectly operate external services or functions on behalf of customers, to directly operate those services, or all three.

**Eqn 2 : Service Composition Performance**

$$T_{\text{total}} = \sum_{i=1}^{n} T_i + \sum_{i=1}^{n-1} D_i$$

Where:

- $T_i$: Execution time of each service $i$
- $D_i$: Data transfer or integration delay between service $i$ and $i+1$

Moreover, we argue that certain platform functions have to be established, or at least considered, in the project design to allow or facilitate service integration. In addition to APIs, other functions include the platform's user base and value offer; the internalizing of an important part of the existing product offer included in the value proposition; the management of service interdependencies, especially the dealing with workflows crossing service boundaries; the definition of a transactional mechanism allowing for pricing and provisioning policies among services involving end users interacting with these services; the description of services, including definition of roles of services such as providing, consuming or both; branding policies to create a platform identity; and user experience management over and above UI/UX management at single service level.

## 3.1. Conceptual Framework

One of the main challenges companies face today is overcoming barriers to service and product integration in order to create a sustainable competitive advantage. This is particularly true for manufacturing multinationals, who have seen their traditional differentiators, i.e. product innovation and high quality level, losing their power to attract and retain customers. In the pursuit of greater differentiation in markets crowded with commodities, these companies have started to introduce service as an integral part of their value proposition, thus moving from a product centric to a service centric business model. The relevance of service has enormously grown, pressurising manufacturing companies to transform their product oriented strategies. Still, as service delivery relies on different skills, capabilities, management rules and processes, business model transformation is no easy task for manufacturing companies. In this perspective, service integration provides a new lens through which to explore how service can play a key role in transforming traditional manufacturing multinationals towards a service centric business model. In fact, using resources available in a service provider ecosystem, along with an array of technologies, manufacturers can overcome the intrinsic difficulty of service delivery, optimising order execution and service fulfilment.

This section presents a conceptual framework identifying the components of service integration, the activities involved in integrating services with the manufacturer's operations and the supporting factors as well as the expected outcomes. A detailed understanding of the elements of service integration can support manufacturing companies in bridging the gap between the introduction of service and its actual implementation. In fact, as the overextension of service delivery processes and the poor management of services can have negative effects on a company's bottom line, defining the conditions that warrant a truly integrated service delivery may help manufacturing companies to better manage the effects of service provision on multi-channel operations. This paper structure has also been followed to guide the description of the construct, which starts hereafter with a conceptual framework diagram, followed by a high-level description of its components.

## 3.2. Key Components of Service Integration

The SI conceptual framework is built upon three key components: service structure, process, and supporting object, with touchpoint or modular elaboration as options. These components are

considered as enablers of service efficiency through SI. A service structure captures the nature of the overall service. Each service consists of a bundle of service elements or lower order services. The nature of services is exchanged protocols, with implicit or explicit rules governing customer and employee behavior. Service structure is summative and cumulative at the service element level, with implicit or explicit rules governing service element sequencing or processing.

Service structure blurring pertains to SME preparation for SI. With more organizational couplings with service demand entities, there would be increased speculation about service structure blurring. If demand-side expectations and allocations support serviced-coupled service elements, then service providers would reasonably anticipate that customers would favor the actual or perceived benefits from serviced-coupled service elements, although there may be costs and trade-offs. Ceteris paribus, such demand-side attitudes favor demand service structure blurring. Therefore SI cannot be produced, but rather prepared for. Preparation for SI is cognizant of demand conditions/preferences regarding serviced-coupled element services.



**Fig 3 : Service Value System in ITIL**

Service design consistency enables targeted policy to reinforce both firm- and enterprise-level or micro and macro service design and SL objectives. There is symbiotic interaction between the service process and the supporting objects or business modules with SI performance, with SI performance, in turn, affecting market structure/operation. More specifically, business modules are service-embedded and affect the cost of service provision. There is also the idea of PSS for manufactured goods embedded in business modules affecting product architecture. PSS determines product architecture/design options for manufactured goods.

### 3.3. Benefits of Service Integration

Achieving operational efficiency through service integration can result in organizations having competitive advantages in ways that allow for the more effective use of organizational assets, inter-firm knowledge creation and replication, wider market appeal, speedier task performance, more consistent service output, elimination of redundancy, lower cost or expense in delivery, and/or better product or service quality or functionality. Service integration can result in operational efficiencies through consolidation, concentration, formalization, replication, specialization, or standardization. Such efficiencies can come from use of less labor for a given output; blending or overlapping different activities leading to reduced costs; shared investment programs to support joint service or operational requirements; commitment of more resources to a core service; or coordination of similar activities leading to process improvements. Operational efficiency can also arise from core competency or collaborative synergies, joint investments in supportive resources, economies of scale, specialized skill sets, standard procedures, staff expertise, or technology skills. Collaborating or collegial synergies can be created through use of assigned coordinators or integration staff, collaboration protocols, liaison personnel, suspension of discretion at particular decision points, or designated responsibility for integration planning. There are various dangers to the potential for achieving efficiencies through service integration, as there can be too much concentration that, for example, leads to loss of creativity, inefficiency from lack of specialization, negative reaction to excessive formalization, and ineffectiveness if there is not enough collaboration.

## 4. Operational Efficiency in Platform Models

Traditionally, resource productivity has served as the basis for determining operational efficiency. The goal has been to minimize non-value adding activity and to maximize the relationship between inputs and output. In information-intensive, service-oriented systems however, the nature of inputs and outputs is frequently significantly different. The required investment in skills for service employees, for example, can dwarf other expenses in any service transaction, and the service provider typically cannot exert any real influence over the capital costs involved in service delivery, so productivity metrics calculated on the basis of cost or value creation reciprocals are less than meaningful. Indeed, many consumers of service are unwilling to accept tightly defined policies since it is precisely the individuality of service that makes them attractive. Yet at the same time they are often drawn to self-service alternatives when they perceive that variables such as responsiveness or touch "have gone south".

Many companies have recognized the importance of balance. Attempting to optimize the asset involvement in service delivery quickly brings diminishing returns. It is more important to find the "sweet spot" in operational efficiency and then, whenever possible, to transcend the reductionism implicit in measuring a single "efficiency" ratio. Achieving a higher level of operational efficiency is generally seen to be a means to an end, rather than an end in itself. The means frequently employed to reduce complexity and drive operational efficiency include configuring more service assets to service a given level of demand, combining complementary services into bundles, leveraging information, technology or expertise into high volume-low touch offerings, or outsourcing.

## 4.1. Metrics for Operational Efficiency

Efficiency in the economic sense refers to the optimal production and allocation of resources given existing factors of production and existing technology. Operational efficiency is primarily a financial construct that is measured as the ratio of a relevant financial metric relative to another relevant financial metric such as gross profit of an organization relative to the total resources used up to achieve that gross profit. A simple definition of operational efficiency is that it involves using the fewest resources to produce the best possible results. Different stakeholders of business models are interested in different financial metrics, and the level of their prior investments helps determine the relevant financial metrics used for measuring the operational efficiency of the business model from their perspective.

**Eqn 3 : Signal-to-Noise Ratio (SNR)**

$$\text{SNR} = 10 \cdot \log_{10}\left(\frac{\mu^2}{\sigma^2}\right)$$

Where:

- $\mu$: Mean of process output

- $\sigma$: Standard deviation (noise)

Since platform-based business models help in enabling buyers and suppliers to fulfill their requirements more easily and cheaply by streamlining the integration of the associated underlying activities, the maximum efficiency from the demand side exists when the two matching parties perform the activities required for the transaction in the most efficient manner possible given their preferences, costs, and requirements. This state cannot be easily represented by a financial metric or ratio. It is easier to measure the operational efficiency of the business model used by the intermediary from the perspective of the buyers or suppliers through which the physical product or service passes. At the same time, many technology platforms have faced scalability and growth challenges due to occasional parties in their networks sub-optimally performing the integral activities of the business model without the help of the technology platform.

## 4.2. Case Studies of Successful Implementations

One of the best industry examples of successfully using a service integration platform for a paper's developing business ecosystem is that implemented by Amazon. Amazon has addressed customers' demand to add users' company information to the customer directory and to integrate their own applications with through a marketplace that integrates a selection of commercial software offered as a service-based model for use. For example, because of the rapid growth and demand for migration to the cloud, Amazon started offering services to help migrate a company's business applications to the cloud meeting concern about security. Another company also helps customers implement their cloud services and migrate from third-party data centers and other clouds with different migration offerings.

The organizational and service integration of Amazon services proved to be a viable approach for third-party developers to create their own custom-designed business solutions with an incremental low-cost investment. It is not surprising why Amazon has been identified as the fastest growing cloud service product worldwide.

Another company pioneered applications with a focus on policy-based platforms for delivering closed-core business applications and several organizational and customer generic services for third-party clients to leverage and customize their software extensions. Additionally, media aggregation activities on third-party public will also be made available. The company has continued its growth from the original customer relationship management solutions to the booming enterprise resource planning and more general platform as a service business solution ecosystem domain through the customer demand-driven integration concept.

The latest extension is known as the AppExchange, which is a requirement for any partners working to strengthen their businesses by creating applications that are integrated with. A specific interface will enable clients to build their functional enterprise integrated ecosystem. The platform provides these service integration levels, which include flexible connectivity, enterprise workflow, mobile services, and customer and channel management.

## 5. Challenges in Service Integration

Platforms increase operational efficiency, introduce economies of scope, and lower costs. By integrating activities throughout multiple stages of the value chain, they can reduce costs at the same or higher quality levels compared to processing each activity separately. Platform-based business models enable high levels of interaction between the parties involved, facilitating sophisticated supply chain and service distribution network integration across borders between sectors, between urban and rural areas, and with non-market providers of services. Despite these potential benefits, there remains a disturbing absence of examples of broad-scale service integration in practice, particularly in public service areas such as education and healthcare. The programmatic recommendation to undertake service integration encountered serious challenges in multiple member states. We argue that variations in the approaches to service integration across jurisdictions and the ambivalence of related conceptions of network governance are attributable to the inability or unwillingness to creatively resolve a small number of technical, organizational, and regulatory challenges. The seeming ease with which commercial platforms can physically integrate service supply chains or functionally integrate national or local services via technological solutions that expedite the creation and distribution of mobile applications conceals more serious difficulties around actual delivery, previously discussed in the literature. These are also well understood in sectors such as transport, where horizontal and vertical integration, in this case concerning the relationship between the platform being used and the businesses, have long been considered. Such conceptual clarity is less evident in the realm of public or, more usually described, social services, within which the idea of public service integration is not typically associated with a

clearly articulated definition or set of principles. This is a consequence of different regulatory regimes existing, often simultaneously, within a specific jurisdiction, whether those that govern the commercial or third-party services the public access via the platform or those demanding high specificity in the quality of service offered by public institutions and agencies, or their contractors.
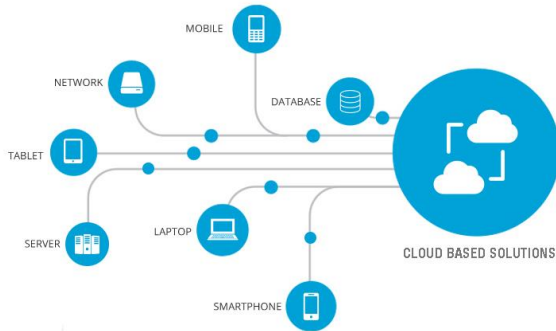


**Fig 4 : Cloud Based Solutions**

## 5.1. Technical Challenges

How to integrate diverse services with low effort and high performance is a key technical question in service integration. A first problem is how to map service-based on-demand provisions into the predefined fixed business processes of platform-based business models. The services in on-demand provisions are not focused in the sense that they do not belong to the same well-defined coherent business process, which means that service integration needs to separate these services into segments and attach different segments into different fixed business processes on the platform. The segment correspondence between the services in on-demand propositions and business processes on the platform creates different business models.

The service-integration technology is particularly relevant to two segments that can be distinctly identified. One segment is high frequency, or low unit value, leveraged assets. Assets in this segment appear on-demand in large enough numbers so that neglected short-term service use is eliminated via coordination and the logistics cost is thus decreased in relative terms. The other segment is high asset, unit value, distinct, personalized services. Services in this segment, typically provided by small high-

quality provider firms, appear on-demand in smaller enough numbers so that being neglected is acceptable for customers, or these services have distinct creation logistics and thus cater to distinct customer types with value created via logistics. Integration coherency for these segments defines different types of service integration supported by the platform business model. However, the platform business model is built on the service logistics unique to the platform's assets and thus needs coherence between service provision and service logistics in order to avoid loss of its competitive edge.

## 5.2. Organizational Barriers

As we have seen in the previous sections, services that are integrated with a platform may be performed by a single service actor in a staged process, though usually a large number of actors is involved in service completion and service completion may cut across various service types in a disorganized manner. The resulting multi-actor completion of service design and delivery may run across periods of time and space, where different actors complete and deliver various elements of the service. In this regard, consider again the example of dental and prevention services discussed in earlier sections, where customer treatment stays, and dentists providing surgical treatments are only present for a short period of a multi-year timeframe. For the random-access services that actors provide, coordination challenges will emerge.

The providers of these potentially disintegrated service elements are independent actors: dentists, or hygienists in the case of prevention services, who work on their own for private practices, or for dental specialized service firms in their related fields, often pulling together heterogeneous resources. They may consider the opponent's actions, like special treatment offers, 'competition' and act on a competitive basis, rather than in a service community-share responsibility manner. In such a scenario, collaboration within primary service delivery, or within related service processes,

is difficult due to asymmetric and bilateralism-based incentives. Both problems thus inhibit the alignment of resource and asset logic variables across patient-centered service portfolios among the players involved in the processes.

In the ideal arena, the performer of the primary service is in charge of all related activities, such as the tasks posted in relation to service outsourcing through duration. In reality, however, for resource and asset logic reasons, the management of all relevant activities is usually assigned to different residents of the area, defined as a synchronized 'service integration' by the service customers during the specified duration. The result is a lack of efficiency in the performance-based, outcome-efficiency concept from the customers' point of view. In order to induce service actors to collaborate, benefit-sharing and incentive problems should therefore be solved.

## 5.3. Regulatory Considerations

The service platform literature has primarily focused on economic considerations; operationalizing established platform principles in a regulated environment is less well-understood. The early movers in platform business models mostly happened to be low-regulated industries such as e-commerce and accommodation. These grew so big - due to huge network effects - that regulation had to run after their growth, lobbying from traditional service providers or affected residents carried the day. In addition, several countries initiated privatization of public services, dismantling monopolies or licensing market entry. During such periods of major upheaval, platform-based business models were allowed to thrive, as no one had any vested interests in the established situation.

This is usually not the case in industries such as transportation or healthcare, where safety and quality are paramount to protect society - and these industries are usually heavily regulated. Previously, this has limited the applicability of platform-based business models to only some small sections of those industries. But with growing digitalization,

regulatory considerations do not need to stop the trend to service integration. In addition, implementing service integration through digitalization neither serves quality nor safety concerns. The question then becomes how major regulatory challenges can be overcome. The roadmap developed on how to a) identify and b) manage regulatory roadblocks may support innovative initiatives in other heavily regulated industries.

## 6. Strategies for Enhancing Operational Efficiency

Operational efficiency is central to every firm's success. Companies will invest considerable resources to make themselves more efficient and, from the demand side, customers are increasingly demanding lower cost service bundles. Reducing the cost of service provision without compromising on service quality is a goal for every service provider. Service bundling and integration is one of the best practices used by service producers to achieve this. Service bundling can reduce cost through economies of scale in service provision, economies of scope from sharing costs in different service areas, savings in customer acquisition, utilization optimization, and use of platform providers to achieve higher service productivity. In addition, some service products have a 'sticky' feature, making customers of one service less likely to substitute for competitive products in another service area.



**Fig 5 : AI Transform Business Intelligence**

Since not all providers have the opportunity to become platform service producers, technology enabled efficiency improvements are fundamental to all service producers. This includes reducing labor costs associated with service production, either through labor substitution or by improving service worker utilization and productivity through better scheduling and matching systems. While some technologies are far removed from the service interface with the customer, particularly robotic and AI systems, the more common applications embed IT systems into the customer experience. The future of trust and reliability in business operations points to an increasing use of technology embedded in the customer experience. Customer opinion and brand image will increasingly determine the level of invisible service technology employed in firms.

Customer service systems are the visible face of any organization. These are generally the strongest visible contacts with customers. What satisfies customers in demand is that their requirements are met, in a trustworthy way, consistently, including subsequent support - no 'sour grapes' on quality after the sale. Company reputations are made and broken by how well service employees perform visible service market interfaces. No matter how efficient internal operations are, if visible service interface employees create customer dissatisfaction through poor service, the firm may suffer financially. The best practice in managing operational and service integration efficiency is social capital or relational capital - reputations for honesty, reliability, and personal service going beyond the contract drawn on the firm.

## 6.1. Best Practices in Service Integration

The first strategy is familiar to many yet rarely formally recognized: cross-utilization of resources can enhance efficiency.
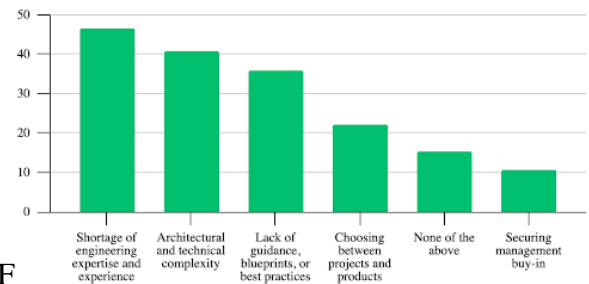


**Fig : Service Meshes Are on the Rise**

For example, many service providers realize that they can allocate existing field technicians to perform security inspections in addition to their central business of providing utility services. Such cross utilization can come from employee insights recognizing business synergy that emerges especially when employees are transitioning from one project to another; if such ideas are recognized and rewarded through company policies, many such initiatives can be aligned with developing processes to enhance efficiency, at a relatively low additional cost. Second, services integrated at the customer point of contact or interface can be delivered through solutions such as multi-services kiosks, IT portals, SMS messages, or call centers. Automated visits to the service point or service interfaces allow the collection of information to enhance the service experience in a sustainable manner, through reduced avoidance and waiting time costs for experts and customers during business hours. The queue solution helps to inform customers and rely on the self-service approach to allocate visits while optimizing the service time metric. Airlines, hotels, and restaurants have adopted customer self-management measures to customize the service delivery for years. Third, the outsourcing of service activities, including non-core and off-peak support functions, typically allows a business to take advantage of vendors that specialize in those service areas and have expertise or asset starvation to decrease delivery costs, as well as increase efficiency from scale economy sharing, while allowing businesses to focus on core areas that matter more for marketing.

## 6.2. Leveraging Technology for Efficiency

Technological innovations can act as a good enabler for enhancing operational efficiency. The world is increasingly embracing advanced technologies. Digitalization, automation, self-service, artificial intelligence, and robotics constitute major trends impacting organizations. Service industries which have witnessed substantive advancements in these technologies are information technology, telecommunication, transportation, and hospitality. These verticals are increasingly deploying seamless and integrated technology-based service solutions that meet the multidimensional needs of customers. From the customer perspective, digital technology enables the easy handling of service processes, information access, and real-time monitoring. For example in hotel services, guests can now perform numerous activities by using digital kiosks or hotel websites and mobile applications, such as choosing rooms, booking and paying, checking in and out, and performing special housekeeping functions like laundry and dry-cleaning service. From the supplier perspective, digital technology not only helps reduce costs but also allows faster service delivery times, a reduction in non-productive service personnel, lower resource wastage, and a faster service recovery process in case of failure. In essence, technology empowers customers to play a greater role in process co-creation and ultimately drive operational efficiency gains.

However, such technology advancements also come with potential drawbacks. Our analysis also reveals that technology as an enabler does not totally remove the role that person-to-person interaction plays in enhancing the customer experience. By facilitating access to more efficient standard services, technology opens up new areas for people to people interactions that most serve to differentiate the service provider from the competition. High-profile examples include the emotional support for customers overcoming trauma or life changing experiences, as in health care or education; and the special links that enrich customer satisfaction as in restaurant or entertainment services.

## 6.3. Collaboration and Partnerships

Collaboration and partnerships are key strategies for enhancing operational efficiency by leveraging service integration capabilities in light of the service-based platform operating model. The recognized benefits of investment in collaborative technical solutions include increased job satisfaction, reduced long-term costs associated with training and recruitment, and improved services and better client relationships. A key driver of platform-based business models is the explicitly agreed operational and financial business rules between network partners. The organizations in the ecosystem need to agree to collaborate to enhance their contribution to service delivery, achieve related efficiencies, and increase the competitive advantage of the service. The strategic value of collaboration and distribution networks for gaining market access can be realized by creating new channels and market demand, reducing delivery costs, reducing market entry barriers, and outsourcing non-core functions. These partnerships ensure goal alignment; develop joint processes to ensure efficient interface management and service support to one another; invest in service network components to enhance performance; and exchange knowledge of best practices. Such partners have structured collaborative alliances that may range from tactical agreements to joint ventures and may involve vertical as well as horizontal industry. These strategic collaborative arrangements can lead to creation of new core services and help organizations retain customers and clients by: enhancing integrated solutions delivery; providing wider geographic spread; taking accountable notice for delivery of business components in the service solution; investing in quality processes to reassure clients; ensuring that functional objectives are integrated and consistent; agreeing on service and solution quality levels; establishing regular communication; and removing disruptive elements from operations.

These partnerships may also include industry work groups to establish common network protocols and standards that enhance product development collaborations and joint platform programs that provide advantages for all participants. There may also be informal partnerships with clients that develop sensitive relationships with customers. For example, by utilizing information collected over long-time interactions, companies can differentiate service and merchandise offerings tailored to better serve targeted market segments. They will require consensus and mutual commitment over time.

## 7. Future Trends in Platform-Based Business Models

Future trends in platform-based business models are likely to be heavily influenced by emerging technologies: Artificial Intelligence in systems and service design, Deep Learning in predicting consumer behavior, the Metaverse in social interaction and immersive experiences, Blockchain and Smart Contracts in executing commercial transactions, Cryptocurrencies and Tokens in monetizing services, Digital twins in creating a digital representation of physical objects for testing and optimization, the Internet of Things in interconnecting products and generating feedback, Automation in deploying robots for taking on activities traditionally performed by people, Augmented Reality in enhancing reality with digital elements, which will shift consumer organizer behavior, and 3D Printing, which will broaden delivery possibilities to consumers.

In addition, unforeseen events impacted consumer routines, accelerating the process of value delivery through platform-based business models. Consumers have become more demanding during these processes, expecting companies to be more responsible in offering solutions that contribute positively to socialization and problem-solving, guiding their behavior via educational marketing, focusing not only on their personal needs, but also on the community's needs, including the community in solutions offered, whether via digital interaction or at a physical venue. Companies, on the other hand, need to extend service delivery to microgroups, which requires a financial and operational effort that is not suitable for the whole economy. In offering solutions for broader macrogroups, companies are likely to innovate in terms of product design, service delivery processes, and design-expense profit parameters. However, the challenge primarily lies in consumers, who should embrace shared responsibility and collaborate with company-led innovations that consider their behavior and the environment's. Thus, a shift is expected in the linear conception of taking from nature, producing for profit, and dumping back into the planet. Instead, the exhaustion of our natural resources will shift behavior towards the circular model of taking from the planet to reuse for more profit while reducing the negative impact on nature, people, and the community.

### 7.1. Emerging Technologies

Considerable attention has been devoted towards the exciting opportunities offered by rapidly evolving technologies, such as advanced big data analytics, robotics, geo-location, Internet of Things, or 3D printing, and how these technologies can be explored to create new types of value propositions through new platform-based business models. In this light, industry experts have suggested that, across many sectors, we are seeing the blurring of the traditional distinctions between goods and services. So-called servitized offerings combine both product and service components and explicitly showcase a service logic value proposition, whose core focus is solving a customer job through a seamless consumption experience that includes integrated product and service elements. Such value propositions elevate the customer-consumer experience by expertly refining the product-service bundle to match personal preferences and individual requirements.

Because of this convergence between products and services, platforms are increasingly being deployed to create shared intermediaries that connect

suppliers with consumers in new ways. Such platforms allow third party suppliers to develop and deliver tailored services and service packages that leverage and enrich an underlying product offering connected to the platform. Content publishing platforms exemplify that the product and service are interdependent. The content being delivered through the platform channel is entirely determined by the underlying product and the underlying product may not have any value without the platform content-as-service itself. Consequently, the convergence of products and services into a seamless customer delivery experience can give rise to a flourishing ecosystem of third-party suppliers eager to enrich a platform's value creation offering.

## 7.2. Consumer Behavior Shifts

The last decade has seen an enormous increase in e-commerce with online marketplaces. These e-commerce platform services rely heavily on gaming motivation to compel users to repeatedly utilize the platform and affect others to participate. Thus, our rationale is that two separate behaviors of consumers — habitual buying and word-of-mouth effects — play an important role in the growth of relevant platform-based business models. Moreover, with the emergence of new ICT, mobile devices, and cloud services are becoming cheaper and easier to rely on. These factors combined stimulate the rapid increase of O2O and app-based models. In particular, the sharing economy and mini-program are the revolutionized thoughts within the light asset sharing. At last, the boundary of B2B and B2C is ambiguous by merging Online2Offline with To-Eat mini-program, and the intersection of Sharing and O2O consumption behavior. Faced with these disruptive business models, incumbent companies commonly conduct digitalization strategy to protect their market share.

In order to cope with the rise of business model, the explanation of consumer behavior within this new hybrid ecosystem is imperative. The reasons for consumers to accept mini-programs instead of using Apps remains unclear. Moreover, the discussion of

habit-forming habits of consumers in light-asset and high-frequency business model is especially scarce. Consequently, this study provides several theoretical insights for future research. First, we provide an action-based model to explain consumer habitual usage within the business model conditions — proprietary experience and experiential consumption. Second, we extend the explanation by investigating the impact of users' word-of-mouth and external use context. Third, we extend the concept of habit back to the communication field by explaining the motivations why habitual users affect others to use the new contactless consumption tool. Fourth, we visually illustrate the action–motivation relationship through the In-depth framework. Finally, our study provides guidance for new models to retain customers and branches for incumbent companies to combat business.

## 7.3. Sustainability Considerations

In the past few years, the business atmosphere has been driven by spontaneous human-induced climate and environmental disasters. The rising effects and heightening occurrence of pollution and shortage catastrophes are converting environmental changes into an elevated risk. Numerous local and global firms have made it a must to carry out long-standing environmental policies in order to mitigate negative effects, set up cost-efficient business processes, and, lastly, augment their financial achievements by maximizing their capital market value and asset productivity. These needs have been especially overt for platform firms. The platform diverse organization designs, management processes, and the consideration and opinions of external and internal stakeholders are mainly unintentionally making platform firms vulnerable to public pressure. These sustainability needs, which have emerged from a combination of government rules and taxation policies, ethical and logical transformations of consumers and team members, as well as demands for joint responsibility and transparency, are at the heart of demands for the

authentic development of platform-centric business models.

Consequently, throughout the operationalization of model demands and the deployment of model portions of value creation and value capture, platform firms need to place added focus on greater social responsibility by making donations, seeking resource-saving options to influence the effect of operational functions and efficiency, and addressing issues such as the thrashing of central capital. The latter entails drawing or liquidating central position side value that is contingent on the exhausted holding open of real-estate components tied to the use and utilization of scarce resources as well as the induced delays along closed-loop asset production and distribution networks.

## 8. Conclusion

Platform-based business models are increasingly present in various economic sectors. This work discusses service integration strategies in platform business models, specifically horizontal and vertical service integration strategies. Service integration strategies impact directly the cost structure of the firms, helping to achieve operational efficiency. Strategic decisions related to service integration are taken in general by top management or business unit management. However, as the platform-based model becomes more present in a specific economic sector, impacting directly other firms in this sector, collective decisions are taken by the Board of Directors or management in order to make business rules that align the services offered through the platform.

This conclusion is supported primarily by the analysis of the delivery of contents and entertainment services through technological platforms and platforms that offer services through a vertical infrastructure. Our analysis is based on the case studies of three actual platforms, involving service integration strategies both horizontally and vertically. We found evidence supporting the role of service integration on data and transaction cost structure. Integration horizontally affects data costs primarily since the platform captures the data from the users of its services. Integration vertically affects transaction costs since the platform smooths the transactions between demand and supply by setting business relationships rules and sending information to the users involved, demand and supply. Management should define its service integration strategies considering its costs structures. Specifically, platforms that wish to optimize their contribution margins should consider the degree of service integration, both horizontally and vertically.

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