Pricing of digital products and services in the manufacturing ecosystem

From cost-based to value-based pricing
Digital products and services are becoming increasingly important for discrete manufacturers looking to complement their core business, stabilize profits and generate new revenue streams. Today’s industrial companies already generate 20–30 percent of their profits in the after sales and service business, and the trend is toward more digital solutions. To exploit the value derived from digitalized products and services, manufacturing companies need to understand what makes digital products and services unique and how the market dynamics are changing in the new, platform-driven manufacturing ecosystem.

Digital products and services differ fundamentally from traditional industrial products, mainly in terms of their cost structures and the customer’s willingness to pay. On the one hand, this requires us to rethink pricing strategies based on traditional economic theories that are no longer valid. On the other hand, it allows industrial companies to implement innovative pricing strategies and models, such as pay-per-use, subscriptions or freemium, which are already well established in the B2C context and can be adapted for the B2B environment as well.

In addition to specific product characteristics, the changing roles and rulesets within the ecosystem are important factors for manufacturing companies to consider. They need to focus on the underlying market dynamics of the ecosystem and their specific role within the network in a broader sense rather than relying solely on internal supply chains when it comes to pricing and positioning their digital products and services in the market.

This white paper addresses these challenges, focusing on the pricing of digital goods and services in discrete manufacturing. The objective is to help manufacturing companies better understand the pricing mechanisms in a digital ecosystem and to identify potential pricing scenarios for their digital business:

1. How do pricing mechanisms work in a digital ecosystem and why are traditional pricing approaches no longer feasible?

2. What are the common pricing strategies and models for digital services and what special role do platforms play in this context?

3. What are the key considerations for strategic pricing decisions and how can manufacturers identify the right pricing strategies and models for their business?
A traditional vs. digital approach to pricing

Digital technologies are giving manufacturing companies the power to transform traditional products into digital products and to launch innovative offerings by digitalizing their products and services.

Cutting-edge technologies are unlocking huge potential for manufacturing companies, whether it is efficient process designs at the shop-floor level, continuous monitoring of complex supply chains or the innovative market offerings that result from the digitalization of products and services. The latter is particularly promising for discrete manufacturing companies facing higher cost pressure from the demand side and lower margins in their core business. That makes digital products and services an important business for manufacturers to complement their core business, stabilize profits and generate new revenue streams. Today's industrial companies already generate 20–30 percent of their profits in the after sales and service business, and the trend is toward more digital service offerings.

By now, most companies are well aware that digital products and services have huge potential, and more and more companies are making the transformation from pure manufacturer into integrated service provider a key element of their competitive strategies. And yet many manufacturing companies still find it difficult to design and position their digital offerings in the market. Why is it so difficult for manufacturing companies to realize their potential in the digital age?
**Challenging competitive landscape**

Evolving from pure manufacturer to integrated services provider involves new types of competition, and handling this more complex competitive landscape is a major challenge for companies within the ecosystem. In addition to competition from other manufacturers, new players such as independent service providers, platform providers and software companies are becoming more relevant. This is a particularly important factor when it comes to positioning your own digital products and services in the market. Innovative pricing strategies and models can help to prevent competition from becoming too intense and to achieve greater differentiation in the market.

**Changing roles and rulesets in the manufacturing ecosystem**

Compared to linear customer-supplier relationships, modern manufacturing companies operate within a broader network – the manufacturing ecosystem. We define an ecosystem as a complex system involving different players that interact with each other within a network. Each player fulfils a specific role within these ecosystems and contributes to the overall value of the network. Ecosystems are complex due to varying business and operating models, the convergence of OT and IT and the increasing importance of digital manufacturing solutions such as smart products, digital monitoring solutions, digital field services (repair, maintenance and support) and cyber security. Fig. 1 shows the relevant players in a typical manufacturing ecosystem that need to be considered when pricing digitalized products and services in the market.

There are various mechanisms that play an important role when pricing digital products and services in this broader manufacturing ecosystem. On the one hand, you have to rethink pricing strategies based on traditional economic theories that are no longer valid and adapt them to the changing roles and rulesets within the ecosystem. On the other hand, you have to implement innovative pricing strategies and models, such as pay-per-use, subscriptions or freemium pricing, which are already well established in the B2C context and can be adapted for the B2B environment as well.

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**Fig. 1 – Players in a typical manufacturing ecosystem**

- Technology providers
- Partners/Alliances
- Platform providers
- Retailers
- Data service providers
- Government
- Regulations
- Legal
- Material vendors
- Manufacturers
- Warehouse/Logistics
- Maintenance & service
- Software vendors
- Cloud
- Payment
- Security
- Energy
The traditional approach to pricing

Manufacturing companies typically choose one of three pricing strategies (see Fig. 2). However, what looks quite simple in theory is often not as trivial in practice, so firms need to weigh the advantages and disadvantages of each pricing strategy by considering multiple market, product and customer-related factors.

Cost-based pricing

A cost-based pricing approach, especially the most common form, cost-plus pricing, is a very simple system. You calculate the marginal costs of a product and add the markup that is typical for the industry, which is quite easy to implement and ensures that your costs are covered even if sales volume is low. What a cost-based pricing strategy lacks, however, is a consideration of the customer and competitor dimensions. This prevents companies from extracting additional surplus from customer groups that exhibit differences in their willingness to pay.

Competitive-based pricing

A competitive-based approach to pricing is much more complex and calls on firms to consider the value of its brands as well as product quality and differentiation.

Depending on these factors, companies can choose a strategy of pricing below the competition or above the competition (premium pricing) and decide to either focus on selling higher volumes at lower margins or generating higher margins at lower volumes.

Value-based pricing

The value-based approach to pricing has a strong customer orientation and is based on an assessment of the particular costs and benefits of a specific market offering. We define customer value as any technical, economic or social benefit that derives from purchasing a product or service. A value-based pricing approach allows companies to become more customer-centric and adapt their prices and products to align more closely with customer needs. In order to succeed with a value-based pricing strategy, however, firms need deep insight into customer perceptions of price, value, opportunity and risk when buying a product and a clear understanding of how much specific customer groups are willing to pay for a product or service.

Pricing in discrete manufacturing

Even though there are quite tangible advantages to a value-based pricing approach, cost-based pricing is still widespread among discrete manufacturing companies. Current developments in industrial manufacturing, from price wars due to intensive competition to high pricing pressure from the demand side, have prompted many manufacturing companies to place even more focus on internal supply chains. It is only reasonable as a result that these companies would also focus their pricing strategies on internal supply chains to ensure their production costs are covered – even if this means they neglect the customer’s perspective and the true value of a product or service.
Pricing of digital products and services in the manufacturing ecosystem | From cost-based to value-based pricing

Fig. 2 – Generic pricing strategies

1. Cost-based pricing
   A cost-based pricing approach involves adding a percentage markup to the costs.
   • Full-cost pricing takes into consideration the total costs, including fixed and variable costs
   • Direct-cost pricing or cost plus pricing only takes into consideration the marginal costs

2. Competitive-based pricing
   A competitive-based pricing approach determines the price by considering the prices of competitors.
   • Price below competition to increase sales volume (at lower margin)
   • Price above competition or premium pricing to increase margins (at lower sales volume)
   • Price matching and focusing on added value

3. Value-based pricing
   A value-based pricing approach considers the customer demand and the perceived value to determine the price.
   • Value-based pricing can include different methods, e.g., price skimming, price penetration, price discrimination and dynamic pricing
   • The price is determined by considering multiple factors, e.g., costs, competition, market maturity and level of differentiation the marginal costs

“Value-based pricing is not only about higher profits, it is also about a better understanding of the value of products and services, competitive differentiation and customer relationships.”

Marcel Mehdianpour
Senior Manager | Industrial Products & Construction
**The digital approach to pricing**

In order to unlock the potential of the digital age, companies will also have to adapt their pricing strategies to the new digital ecosystem. Pricing mechanisms that worked well for traditional industrial products in the past are no longer valid in an ecosystem with digital products and services. They differ fundamentally from traditional products, especially in terms of their cost structure and the difficulty of assessing the true customer value of digital product and service offerings. In contrast to traditional markets, the complexity of the digital ecosystem means we have to factor new mechanisms and economic principles into our strategic pricing decisions.

**Cost structure**

Digital products and services are costly to produce but cheap to reproduce; in other words, companies may incur high fixed or even sunk costs for digital products and services, mainly in terms of development efforts, but the marginal cost of production will remain low. This allows companies to scale digital offerings to a broad customer base at almost zero cost for each additional customer. By contrast, traditional goods in discrete manufacturing industries generate high unit costs – and these costs are essential for direct cost/cost-plus pricing strategies. What does this mean for strategic pricing decisions? With negligible production costs per unit in the digital environment, the cost-based pricing approach is no longer feasible. Digital products and services have to be priced according to their value and each individual customer’s willingness to pay.

**Customer value**

While traditional goods and services have quite a tangible customer value, it is much more difficult to assess the customer value of digital products and service offerings. Digital products and services are being defined more as experience goods on today’s market, i.e., customers have to experience the product before they can determine the price they are willing to pay. This ex-post determination of value is quite common for digital services, especially when it comes to data-driven product solutions, where customers do not know what they will receive in return for the data until they receive it. As a result, manufacturers need to be in a position to understand and analyze the benefit variables customers are willing to pay for. They must also select a pricing method that enables customers to experience elements of the product as an incentive for purchase.

**Digital platforms**

Over the last few years, discrete manufacturing industries have experienced a shift from products to platforms, which has enabled them to transform from a pure manufacturer into an integrated service provider. Digital platforms have become increasingly important as a result and are now seen as the “business model of the future” when it comes to interaction with customers, industry partners and end users. We define these digital platforms as intermediaries that connect different parties within an ecosystem and allow them to complete transactions and interact with one another. Compared to a traditional supply chain in which the interactions are linear – from suppliers to customers – it is much more complex to manage a network and find your sweet spot within the ecosystem. You will have to factor in the new market dynamics, new players and new ways of interacting and conducting transactions in order to succeed.

Platforms are strongly impacted by network effects; in other words, the value of the platform for one side of the network depends on the number of users on the other side. Network effects in regular markets can lead to market failure, because the benefits (or costs) associated with them are independent of the market mechanisms. In a digital ecosystem, by contrast, network effects encourage a “winner-takes-it-all” dynamic and boost the market share of certain players while pushing other players out of the market. To be successful, companies within a platform ecosystem need to design their pricing in such a way that allows them to internalize the network externalities driving the overall value of a platform.

If companies consider the benefits derived from additional users in the network as it sets the prices for its products and services, these positive effects are no longer external and start working through market mechanisms. This also calls for a multi-sided pricing approach that accounts for distinct players within a network ecosystem and is crucial to reach critical mass with a platform.
Key takeaways

1. Digital products and services are costly to produce but cheap to reproduce. With this cost structure, traditional pricing approaches are no longer feasible and companies need to price their digital products and services according to their value, not their cost.

2. Digital products and services are seen as experience goods. To get the pricing right, companies must therefore understand the benefit variables customers are willing to pay for. They also need to choose a pricing method that allows customers to experience the product.

3. It is vital for companies to focus on the ecosystem in a broader sense rather than internal supply chains. They need to design their pricing in a way that allows them to internalize network effects that drive the overall value of a network.
Pricing strategies in a digital ecosystem

A value-based pricing approach relies on different pricing strategies and methods to help companies differentiate themselves from competitors and extract additional surplus from customers.

In the previous chapter, we outlined the changing roles and rulesets involved in the transition from a pure manufacturer to an integrated services provider within the ecosystem. But what does it mean to move from a cost-based approach to a value-based approach to pricing for digital products and services? And which pricing strategies and models in particular are aligned with this pricing objective?

From cost-based to value-based pricing
Fig. 3 compares the process of a cost-based and a value-based pricing approach. Following a cost-based approach starts with designing a product or service that has pre-defined features and a fixed scope. In the second and third step, we calculate the cost of this product and set the price by adding an industry-specific markup. In the fourth step, we present the product to the customer, who will weigh their perceived value of the product against the price. Provided the customer’s willingness to pay exceeds the product’s price, he or she will initiate a purchase and the product is delivered to the customer.

A value-based pricing approach, by contrast, puts the customer first by assessing and analyzing the specific needs and perceptions of specific customer groups. During the second and third step, the manufacturer sets the price by matching the customer’s perceived value. The company can then use that target price to calculate the maximum allowable production cost to secure a sufficient return on investment. At the end of this process, the manufacturer designs the product by prioritizing precisely the benefit features that the customer sees as highly valuable.

“Harnessing emerging technologies to digitalize products and services does not always guarantee success, because it doesn’t mean that customers are actually willing to pay for them.”

Florian Ploner
Partner | Industrial Products & Construction
What does this mean for discrete manufacturing companies that provide digital products and services? Providing value-added digital services helps manufacturing companies become more customer-centric. Compared to a linear supplier-customer relationship in pure B2B environment, broadening your scope to include the greater digital ecosystem means involving a particular set of players in the process from an early stage in the value chain. A value-based pricing approach allows manufacturing companies:

- to deploy their pricing strategies across a broader range of customers and markets while identifying high-value customers
- to establish long-term and more interactive relationships with extended product lifecycles
- to capture the maximum value of new and innovative product and service offerings, resulting in higher profits and more attractive market offerings
Pricing strategies
With a value-based pricing approach in mind, questions arise as to which pricing strategies and methods will make your value-based pricing approach more effective. The perceived value of products and services can vary considerably, especially as industrial systems and the requirements of individual customers become more complex. In order to determine the actual willingness to pay of diverse customers or customer groups, companies can deploy differential pricing strategies and innovative pricing methods to maximize profits and revenues.

Differential pricing
With differential pricing or price discrimination, companies will charge a different price for the same or at least a similar product, depending on the individual customer’s willingness to pay. We can distinguish between three different types of price discrimination:

• First-degree or perfect price discrimination refers to the case in which a seller charges a different price for each unit sold. The price is therefore equal to the demand price for that unit.

• Second-degree price discrimination refers to the case in which a seller charges different prices depending on the quantity of goods, scope of services or other characteristics, such as product quality and features, time and convenience.

• Third-degree price discrimination or multi-market price discrimination refers to the case in which a seller sets different prices for different customer groups, i.e., based on the market segment.

Though this may sound relatively easy in theory, the way you implement a differential pricing strategy will depend on a number of different requirements. For perfect price discrimination, sellers need to know the exact demand price for each unit. This will require access to detailed data about the customers’ individual benefit variables, which is often not feasible due to asymmetric information within the market or ecosystem. For third-degree price discrimination, companies must be able and willing to segment the market based on exogenous variables, which often disregards individual customer requirements.

There are, however, two special cases of second-degree price discrimination – versioning and bundling – which may help to overcome those problems. They are both also particularly relevant for the manufacturing industry, where it is possible to combine tangible products from the traditional core business with value-added and individualized digital services.

Versioning
Versioning is when a producer sells different versions of a similar product that vary in terms of quality or features at different prices. The idea behind versioning is to let customers sort themselves into groups, which each exhibit a systematically different willingness to pay for a specific product or special features of a product. This strategy enables companies to avoid the problems associated with first and third-degree price discrimination, e.g., determining the exact customer value for specific product characteristics or segmentation issues. To achieve an effective versioning strategy, however, companies must identify those product characteristics that are highly valuable for some customers but less important for others. Companies will be able to determine the surplus those high-value customers are willing to pay without disregarding low-value customers. Manufacturers can implement versioning across different dimensions, including delivery times, product quality, product features, the scope of services and maintenance as well as convenience.

Example: We can find an example of a typical versioning strategy in the Siemens industrial automation portfolio. Siemens offers different versions of automation systems and industrial control software depending on the complexity of the customer’s industrial supply chains and level of automation. This is also a good example of how digital offerings such as software solutions can complement the traditional core business of physical industrial components.¹
**Bundling**

Bundling is when a company sells multiple goods or services at a package price. We distinguish between “mixed bundling”, which involves selling goods and services in a bundle as well as individually, “pure bundling”, in which a particular set of goods and services can only be acquired as part of a package, and “customized bundling”, which allows customers to combine the particular set of products and services they need into a bundle.

In addition to economies of scale and reduced transaction costs, the main benefit of bundling is to reduce the disparity in the customer’s willingness to pay. The more goods that are bundled together, the more elastic the demand will be near the mean. The customers who would have previously only bought the specific products that they see as highly valuable might now consider purchasing a bundle with additional products and services as long the overall value of the bundle exceeds the price. Companies that follow this strategy are able to increase revenues and profits by selling additional goods and extracting additional surplus.

In manufacturing industries, bundling can be implemented in different ways:

- **Product bundling**: selling a set of multiple industrial goods or components in industrial systems.
- **Product and service bundling**: selling traditional industrial goods in combination with certain services. This also includes digital solutions that complement their core business.
- **Service bundling**: selling a set of (digital) services by offering a comprehensive service, monitoring and maintenance plan.

Bundling promises to become increasingly important for manufacturing industries, especially when we consider how the market and competitive landscape in the industry is changing. If you sell products and services individually (non-bundling), one of the following scenarios will generally emerge. First, customers will skip service intervals and avoid purchasing additional services, especially price-sensitive customers. Second, customers will provide their own service and maintenance infrastructure and handle services in house. Third, customers will turn to independent and often less-expensive service providers. The latter is especially important the more services go digital, because it allows non-manufacturing companies, in particular big technology players like Amazon and Google, to enter the market and provide technology and software solutions for industrial applications.

A pure bundling strategy, i.e., selling certain products and services solely as a package, reduces competition and enables companies to keep both products and services in a single hand. The unique nature of bundling means that even service-averse customers will want to leverage the additional value-added services as long their perceived value of the core products is high enough and exceeds the price of a bundle. In order to extract a surplus from different customer groups, which differ systematically in their demands for service and maintenance, companies can combine their bundling strategy with versioning strategies as well.

**Example**: ABB provides a good example of a successful bundling strategy that combines physical components with digital services. They offer digital solutions such as intelligent monitoring and diagnostics, cyber security, intelligent controls as well as digital field services for their industrial components.

However, the customers of many manufacturing industries find it more convenient to make specific and targeted purchases. That means companies need to pursue an intelligent bundling strategy with a clear idea of the market in which customers perceive product or service bundling as particularly valuable. One common way to overcome this issue is to pursue a mixed-bundling strategy that allows companies to tap into the additional willingness to pay of customers who want holistic product and service offerings, but without neglecting customers with specific demands.

**Dynamic pricing**

Dynamic pricing is when a producer charges different prices based on current market demand. In contrast to differential pricing, the prices do not vary between different customers or customer groups, but based on market dynamics, customer demand and/or time.

**Example**: Airline pricing is a prominent example of this strategy, in which the price of an airplane ticket depends on how many free seats are available in the aircraft. The manufacturing industry might also be able to rely on a dynamic pricing strategy to extract a surplus for industrial products in high demand.
In addition to the pricing strategies we have outlined in the previous section, companies must consider another key issue to make their value-based pricing approach as effective as possible – selecting the right pricing and payment model. What we are currently seeing in manufacturing industries is a shift from traditional pricing models, such as price lists and pay-per-instance based on time and material, to innovative pricing models from pay-per-use and pay-per-outcome to subscriptions and/or freemium pricing models. These pricing models, which we all know quite well from the B2C environment, have one thing in common – they are more flexible, scalable and convenient than traditional pricing models. Why shouldn’t companies that operate in a B2B environment capitalize on the benefits of innovative pricing and payment models as well?

**Pay-per use/pay-per-outcome**

A pay-per-use or pay-per-outcome approach charges the customer for the actual usage or outcome of a product or a service. This often involves leasing or renting products instead of purchasing them outright. A pay-per-use or pay-per-outcome approach is feasible as long as the OEM can effectively measure the product or service outcome and deploy remote technologies to maintain access to its product or services in the customer environment. The key benefit of a pay-per-use or pay-per-outcome approach is that this pricing model focuses on what is valuable for the customer. It also allows companies to turn their fixed costs into variable costs, thereby reducing their financial risk and increasing their scalability and flexibility.

*Example:* One successful example of a bundled pay-per-use model outside the consumer goods business is the “TotalCare” model of the turbine manufacturer Rolls Royce. In this model, Rolls Royce allows customers to use its aircraft turbines and also provides additional services such as maintenance, monitoring and repairs. The company still owns the turbines and charges the airlines only for the actual usage. Selling flight hours rather than aircraft turbines is a revolutionary approach to pricing that has multiple benefits for both sides. Rolls Royce, on the one hand, can increase its volume of customer services and avoid competition from independent providers in the high-margin service business. Airlines, on the other hand, can capitalize on this pricing model to monitor their exact costs per flight hour and shift their focus from capital expenses to operating expenses. As an extra bonus, this pricing model also offers great opportunities for OEMs to position additional digital services within the product bundle.3

**Subscriptions**

A subscription pricing model is when customers pay a fixed price in recurring intervals, e.g., on a weekly, monthly or yearly basis, in order to obtain access to a product or service. As is the case with the pay-per-use model, companies do not sell the product outright, but rather grant access to use a product or service. The difference between these two models is that a subscription model is based on a regular fixed fee that depends on the actual amount of use. Subscription pricing models are quite common in the area of digital services, because it is quite easy to grant or deny access to a digital solution, even for short payment periods (cancelable monthly).

*Example:* A typical example of this pricing model in the manufacturing industry is in the area of digital field services, e.g., predictive maintenance or remote monitoring, service and support. Customers buy a subscription along with an industrial product or solution from the core business. This is often combined with versioning in that manufacturing companies offer multiple packages that vary based on the scope of services, maintenance intervals or enhanced functionalities.
Freemium pricing/Tiered pricing
A freemium pricing model is when a producer offers a free version of a service and a premium version in exchange for a fee. This pricing model involves second-degree price discrimination as a type of versioning. Freemium is the right model for digital products and services or platform business models that want to avoid the typical problems facing experience goods and to reach a sufficient user base by utilizing network effects. While a freemium model only has two different versions, a tiered pricing model could offer multiple packages with different prices depending on the scope of services.

Example: The freemium model is often utilized by software vendors, offering a basic version with limited functionality and certain restrictions for free and charging a fee for the premium version with enhanced functionality and fewer restrictions. One possible application in the manufacturing industry could be digital monitoring solutions for industrial components, i.e., the OEM offers a limited number of dashboards for free as a fixed bundle with the core product and provides additional dashboards in the premium version.

Ecosystem pricing
A third dimension of a value-based pricing approach comes into play when you consider the increasing dominance of platform businesses within the ecosystem. These industry platforms bring together multiple groups of players, including manufacturers, technology and software vendors as well as independent service providers and end customers, offering customers a one-stop shop for industry-specific solutions. Platform providers can leverage this broad set of different players to increase the overall value of the platform and generate profits from multiple revenue streams. In order to unlock this potential, platform providers must implement a multi-sided pricing strategy that allows them to internalize the network effects driving the overall value of the platform. Pricing mechanisms work in a linear fashion in traditional markets, but there are several dependencies that need to be managed in the pricing mechanisms within a network. The pricing strategy for one customer group may affect the pricing strategy and value of another customer group, i.e., it might be more profitable to subsidize specific customers and generate a larger user base of other customers willing to pay higher prices.

Example: Imagine an IoT platform that enables interactions and transactions between digital service providers and end customers for a wide range of applications and/or smart products. As a platform provider, you might find that the best way to maximize profits is to subsidize one group of end users by charging a price below marginal costs in order to generate a larger user base. That will, in turn, attract service providers to the platform, who are willing to pay for and to compensate for those losses on the customer side by charging a much higher price from the supply side.

Key takeaways
1. A value-based pricing approach combines different pricing strategies and innovative payment models that focus on customer value rather than costs.
2. To price products and services in line with their value, manufacturing companies can leverage differential pricing strategies such as versioning and bundling to extract additional surplus.
3. Manufacturing companies move from traditional pricing models such as price lists to more flexible, scalable and convenient pricing models such as pay-per-use, subscriptions and/or freemium pricing models.
4. Platform providers need to implement a multi-sided pricing strategy that factors in potential network effects and interdependencies between different players in the ecosystem.
Key considerations for strategic pricing decisions

To identify the right combination of pricing strategies and pricing models, companies must consider the following set of factors related to the company, ecosystem and market environment.

Fig. 4 – Factors that affect strategic pricing decisions

- **Company**
  - Operating model
  - Product features/complexity
  - Cost structure
  - Business model
  - Degree of differentiation

- **Business ecosystem**
  - Competitor pricing strategies & models
  - Role and positioning within the network
  - Cooperation and collaboration
  - Platform providers/owners

- **Market environment**
  - Direct and indirect network effects
  - Market trends
  - External forces
  - Customer demand
  - Benefit variables
  - Customer value
  - Willingness to pay
  - External service providers
  - Competition outside ecosystem

Go to market → Integration → Value creation → Input
Price decision criteria
There are multiple factors affecting the strategic pricing decisions of manufacturing companies that operate in ecosystems (see Fig. 4). In the first dimension, companies have to consider their internal go-to market strategy and the ability of specific pricing strategies and models to support the company’s role within the ecosystem. In the second dimension, i.e., the business ecosystem, companies need to analyze how the company is integrated into the ecosystem and how they can improve the input-output ratio with the right pricing strategies and models to support the company’s role within the ecosystem. In the third dimension, i.e., the market environment, companies need to understand how the entire network creates value for customers and which market and customer-related forces affect its internal go-to market strategy and its positioning inside and outside the ecosystem.

Company-related factors
The company-related factors can relate to the product itself, e.g., the complexity, features and costs of a product, or to strategy and operations, e.g., the business and operating models or the competitive and differentiation strategies. The latter is particularly important when it comes to strategic pricing decisions. Competition drives prices and profits close to zero, especially in those markets that are highly commoditized, and companies cannot succeed without setting themselves apart from the competition either through product or price differentiation. This is why it is so important for manufacturing companies to understand how their own products differentiate from those of their competitors. Companies that are unable to differentiate their products or services have to find the right pricing strategy or model to compensate for this.

Ecosystem-related factors
To get the pricing right, companies need to align their pricing strategy with their specific role within the ecosystem. On the one hand, they need to think about their competitive position within the ecosystem. In a competitive environment, especially a market that is platform-driven and highly concentrated, companies perform better when they choose a different pricing model than their competitors, even if this means choosing a less than optimal pricing strategy. On the other hand, they need to analyze how they are integrated into the ecosystem and how they cooperate and collaborate with third parties. This latter point is even more important for manufacturing companies that not only sell digital goods and services but also own the platform. In this case, the company will have to manage the complexity of the network as well as the distinct groups of players within the network, which often requires a multi-sided pricing approach. It is particularly important for companies operating in an ecosystem with strong direct or indirect network effects to select a pricing strategy and model that enables them to unlock the potential of those external effects. The presence of network effects favors specific types of pricing models, such as freemium pricing or bundling. It is important to take these into account in the pricing model design, for example when determining the number of different versions.

Market-related factors
Market-related factors include current market trends, external market forces as well as competitors and service providers outside the ecosystem. Those factors are especially important when it comes to dynamic pricing models focused on extracting additional customer surplus based on market-related factors such as demand, availability or delivery times. If they want to capture that additional surplus, companies need to understand and monitor market dynamics in order to implement their pricing algorithms effectively. They also need to factor in the customer’s understanding of how the ecosystem works, i.e., how it creates value for them and what value they ascribe to the specific variables of a digital product or service. By identifying those benefit variables, companies can refine their role within the ecosystem and prioritize those high-value attributes that customers are actually willing to pay for.

Key takeaways
1. To get the pricing right, companies need to understand the interplay between company, ecosystem and market environment and the way they plan to deliver the value of a digital products and services to the customer.
2. An appropriate pricing strategy must be aligned with a company’s go-to market perspective and able to support its successful positioning within the ecosystem.
3. Companies need to understand their specific role as integrated service providers, platform providers and/or platform owners within the ecosystem. This will help them develop a successful pricing strategy that enables them to create value with the network and also internalize external effects.
4. To implement innovative strategies such as value-based or dynamic pricing, companies must have an in-depth understanding of – and the ability to monitor – external market dynamics and customer requirements.
Next step: How to get the pricing right?

To find the right pricing strategy, companies need to conduct a comprehensive pricing strategy assessment and commit to refining their strategy on a continuous basis.

As a multi-disciplinary, end-to-end provider of professional services, Deloitte can help your business identify and implement the right innovative pricing strategies. We combine our industry knowledge with technological expertise and deep insight into regulatory, tax, legal and risk factors to support your business transformation. To ensure that you get the pricing right, we recommend conducting a comprehensive assessment of your pricing strategies based on agile principles for strategy development. This will enable your business to achieve quick results and stay flexible in response to changing market dynamics.

Pricing strategy assessment
Our approach to pricing strategy assessment has three key elements – analysis, strategy and refinement (see Fig. 5). The objective of the first phase is to understand the broader manufacturing ecosystem, including market characteristics, key players, customers and products. In the second phase, strategy development, we focus on identifying and evaluating different pricing strategies and models based on the relevant pricing-related factors. The third phase, which we call refinement, focuses on price, product and portfolio reassessment to adapt pricing to the changing ecosystem, market and customer requirements on a continuous basis.

Understanding the manufacturing ecosystem
In the first phase on the way to a successful pricing strategy, you will acquire a deep understanding of your market, the broader ecosystem as well as the customer and product environment. This includes ...

• a market analysis to identify the trends and dynamics on your market that are relevant for strategic pricing decisions
• an ecosystem analysis to identify key players within the network along with their role, positioning, product portfolio, pricing strategy and business models
• a customer analysis to identify high-value customers and develop customer profiles that capture their precise requirements and benefit variables
• a product analysis to determine the degree to which your product attributes are aligned with customer requirements

Identify, evaluate and set pricing strategy
The second phase serves to identify and prioritize factors that will affect your pricing decisions in order to pinpoint, evaluate and implement the right pricing strategies. This includes ...

• identifying the factors related to your market, ecosystem, products and customers that impact pricing decisions
• prioritizing price-decision factors and product characteristics as you evaluate different pricing strategies and models; and then using the prioritized factors to identify the right pricing strategies
• creating a comprehensive report of the price strategy assessment that includes recommendations on short-listed strategies to enable further decision-making
• validating and designing the selected pricing strategies along with our proposed implementation roadmap
To ensure a pricing strategy succeeds, it is vital for companies to gain market transparency and monitor customer, product and price developments on an ongoing basis.

Fig. 5 – Pricing strategy assessment
Legal considerations

If companies want to achieve a successful, marketable digital business model, there are several legal issues they must consider related to pricing strategies and models as well as value chain considerations for digital products and services.

The implementation of successful and marketable digital business models gives rise to various legal issues. These are in part directly related to the pricing strategies and models themselves and in part to value chain considerations for digital products and services. There are also specific legal issues closely related to the relevant business models that must be assessed on a case-by-case basis.

The so-called Product and Service Development Compliance Process requires a legal analysis for every new product or service under development to ensure that all legal requirements are duly recognized and technically implemented at this early stage. This includes, for instance, conducting a risk assessment, in which the relevant company seeks to identify and analyze potential (future) events that may negatively impact its business model and businesses. From a legal point of view, the company must then make its decisions based on its ability to tolerate the risks identified in the risk assessment.

The concept of a Product and Service Development Compliance Process is provided for by law, for instance, in Data Protection law which expressly regulates the principles of Privacy by Design and Security by Design. Legislators have made it a legal requirement to observe data protection regulations in the development phase of a new product or service and to ensure that all relevant technical features are already implemented in this early stage to ensure compliance with Data Protection law.

We also need to consider another concept related to the changing mechanisms of digital value-added processes in this context. In many digital business models, companies are not only creating value through the price strategies and price models actually applied. Depending on the business model, companies can also create considerable value when customers pay in part for some of the services provided by sharing their personal data (more on this in more detail below). It should be noted here that establishing a so-called Data Warehouse can be a considerable asset for a company, which may – in the context of a Big Data analysis or similar – lead to new business areas and opportunities for added value. It is therefore of crucial importance for a company to clarify its rights related to all of the data it collects. The company must ensure that it owns all of the necessary rights to this data, that the data has been stored in the Data Warehouse without legal infringements and that the data can be used for comprehensive analyses and linked to other relevant data.

As part of a company’s analysis of its digital ecosystem and the subsequent development of business models and pricing systems, another issue of legal significance is the extent to which generating data is part of production, supply chain and customer relationships. After all, as we outlined above, the method of value creation by means of digital transformation is different to that with traditional products. From a legal point of view, therefore, the fact that a company can transfer (customer) data to its warehouse as part of the remuneration for a service or as a means of payment warrants a detailed analysis. The decisive legal issue here is whether there is an assumption that the customer’s service is against payment or free of charge. A customer providing his or her personal data can also be understood as a kind of service against payment. The legal implications of this would be, for example, that the company would have various disclosure obligations towards customers in a B2C rather than the B2B context.

These issues lead to further legal implications in connection with digital business models, pricing strategies and pricing models. Depending on the model in question, companies must adhere to the legal requirements regarding pricing and transparency. In particular, customers must obtain a transparent presentation of
all fee components so that they can make informed decisions. This is particularly true for the payment terms and fees for recurring services; Competition law can also set certain limitations for their design. There are also legal issues related to price adjustments during a contract period, in the case of subscriptions or continuous service relationships, for example, which are only possible under strict legal conditions. In this context, companies must also adhere to special requirements that apply to the way clauses are phrased in the Terms and Conditions (T&Cs), e.g., with regard to the company’s performance determination rights. This is because companies are subject to strict limits in terms of a unilateral change of services. The question also arises as to the transparency requirements and the ability to amend a service, for instance, in the event that products and/or services are bundled. Companies must conduct a thorough legal analysis if they intend to change the individual components of a service during the current contract term without changing the price.

Finally, companies are also subject to certain legal obligations related to the integration of payment services into a digital business model, both in terms of the internal relationship with an external payment service provider and in terms of the external relationship with a customer.
Conclusion

To get the pricing right, manufacturers need to align innovative pricing strategies for their digital products with the changing mechanisms in the broader manufacturing ecosystem.

The objective of this white paper is to help manufacturing companies better understand pricing mechanisms in the digital ecosystem and to provide an overview of potential pricing strategies and models for digital products and services that are aligned with the changing roles and rule-sets in the manufacturing ecosystem.

In the first section, we compared the traditional vs. digital approach to pricing. This highlights the difficulties associated with traditional pricing strategies when products and services are digitalized as well as the new market and pricing mechanisms in the manufacturing ecosystem.

01. Digital products and services are costly to produce but cheap to reproduce. A cost-based pricing approach is no longer feasible with this cost structure, so we have to price digital products and services according to their actual value.

02. If we define digital products and services as experience goods, two things are key for getting the pricing right. First, companies need to understand the benefit variables that customers are willing to pay for. Second, they need to select a pricing model that enables customers to experience the product.

03. Manufacturing companies are facing changing market dynamics as a result of the new, platform-driven ecosystem. This is a highly complex ecosystem, because of the larger number of players interacting with each other within the network and because of the presence of network effects. To get the pricing right and find their sweet-spot within the ecosystem, companies should focus more on the ecosystem in a broader sense than on their internal supply chains. In other words, they need to design their pricing in such a way that will enable them to internalize those network effects that drive the network’s overall value.

In the second section, we outlined potential pricing strategies and models that support a value-based approach and help align the digital products and services with the new mechanisms in the manufacturing ecosystem.

01. A value-based pricing approach can combine different pricing strategies and innovative payment models in order to shift the focus from cost to customer value.

02. To price products and services based on their value, manufacturing companies can leverage differential pricing strategies such as versioning and bundling to extract additional surplus.

03. Manufacturing companies should move from traditional pricing models such as price lists to more flexible, scalable and convenient pricing models such as pay-per-use, subscriptions and/or freemium pricing.

04. Implementing a multi-sided pricing strategy will enable platform providers to consider network effects and interdependencies between different players in an ecosystem.
In the third section, we considered various factors that can impact strategic pricing decisions. Companies need to consider a complex set of company-related, ecosystem-related and market-related factors in order to get the pricing right.

01. Manufacturing companies need to understand the interplay between company, ecosystem and market environment and determine how they plan to deliver the value of a digital product or service to the customer.

02. The right pricing strategy is one that is aligned with the company’s go-to market perspective and can help them successfully position themselves within the ecosystem.

03. Manufacturing companies need to understand their specific role as an integrated service provider, platform provider and/or platform owner within the ecosystem in order to develop a successful pricing strategy that enables them to create value with the network while also internalizing external effects.

04. To implement innovative pricing strategies such as value-based or dynamic pricing, companies need an in-depth understanding of – and the ability to monitor – external market dynamics and customer requirements.

In the fourth section, we presented our comprehensive pricing strategy assessment to help identify and implement appropriate pricing strategies in a digital, ecosystem-driven environment. Our approach to pricing strategy assessment has three key elements – analysis, strategy and refinement – and involves agile principles for strategy development. In this process, we combine Deloitte’s industry knowledge with our technological expertise and deep insight into regulatory, tax, legal, and risk factors to support your business transformation.

The white paper closes by considering legal aspects that are relevant when pricing digital products and services in the manufacturing ecosystem, including Product and Service Development Compliance, data protection, privacy and security as well as legal requirements regarding pricing, transparency and competition law.
Endnotes


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