



Two-sided markets and the utility of the future: how services and transactions can shape the utility platform

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ARTICLE INFO

Keywords:

Utility platform
Utility business models
Two-sided markets
Distributed energy resources (DERs)
Utility services
Utility of the future
Utility transactions

ABSTRACT

Platform business models are fundamentally different from traditional ‘linear’ business models in that they derive their revenues and profits primarily from intermediating transactions between buyers and sellers. In order for it to present a sustainable alternative to the traditional model, a utility platform will need to produce market growth, as benchmark platform businesses have. Getting there is a tall order for businesses that have focused on cost reduction as their primary value proposition.

1. Introduction

The coming of age of distributed energy resources (DERs) has introduced a degree of facilities-based competition into the retail electricity market, whereby small-scale resources (e.g., rooftop solar photovoltaics) can meet portions of local electricity demand. To make this work, these local resources need access to the electricity grid as well as a way to interact and settle accounts with customers. The infrastructure needed to facilitate the resulting transactions – involving electricity as well as energy-related services – has been referred to as the distribution or utility *platform*.

Recent articles and reports have chronicled the potential disruptive impact of these developments, particularly how it has consequences, perhaps significant, for system planning and utility revenue recovery. Some have gone so far as to suggest it places utilities in a financially untenable position. However, other analysts and some policymakers have centered their attention on the upside opportunities associated with platform business models. Specifically, they point to the profitability of notable platform businesses in the economy, and the possibility that a platform business, if operated by the utility, may be profitable enough to offset traditional utility revenue needs, in whole or in part. In other words, they suggest that the utility platform may present a proverbial “win-win” scenario: Greater access to the grid provides customers with choice, new services and, ideally, lower prices, while utilities, assuming that they are platform operators, will realize sizable revenue streams from facilitating peer-to-peer transactions.

Platform business models are fundamentally different from traditional “linear” business models that derive revenues and profits by

converting inputs into finished products that are worth more than the sum of the input costs. In contrast, platforms derive their revenues and profits primarily from enabling, or intermediating, transactions between buyers and, frequently but not always, unaffiliated sellers. Platform developers and operators, such as Amazon, eBay and credit cards, have been very successful in their intermediary role – that is, taking a small percentage fee for facilitating the transaction – because their platform has facilitated market growth. Growth has come either from their platform’s network effects – connecting more buyers with sellers (compared to the pre-platform portfolio of services) – or from flow-through from entirely new services, with innovation enabled, at least in part, by the access to customers and/or tools provided through the platform. A utility platform will likewise need to produce market growth in order for it to be financially viable and present a sustainable alternative to the traditional utility business model.

2. Platform basics

“Platform,” as it is used in everyday parlance, typically refers to a set of systems and/or processes over which services can be provided. For example, it is not uncommon to hear about a platform that enables you to easily and rapidly rent a car. For that matter, utility systems are sometimes referred to as platforms over which electricity is delivered to customers. However, “platform” has a slightly different meaning in the utility of the future (UoF) context, which is more in line with the way the term is used in the economics and management literature.

Platforms, in economics, are rooted in two-sided markets, a business model that is found throughout the economy but is brand new for

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<http://dx.doi.org/10.1016/j.tej.2017.07.007>

regulated infrastructure-based providers like electric utilities. This is bound to cause some confusion: all markets have two sides, namely a buyer and a seller. But, in economics, two-sided markets refer to situations in which buyers and sellers are brought together through an intermediary that operates an ecosystem that enables them to engage in products and services transactions. Even a farmers market, which brings a range of producers and customers together under a common tent, can be considered a platform under this definition. However, most of the platforms of note (for example, Amazon or eBay) use a combination of technology, digital communications, and logistics to enable buyers and sellers to find each other and complete transactions.

Platform operators, at least the pure play ones, follow a fundamentally different business model compared to more traditional “linear” businesses. Linear businesses, which account for the majority of businesses in the economy, derive revenues and profits by converting inputs into finished goods whose value exceeds the mere sum of the input costs, i.e., they produce value-added products through a linear value chain. In contrast, platform operators are instead focused on enabling and completing transactions between buyers and sellers, and are compensated from the fees they charge for either access to the platform, completing transactions, or both. Their value-added comes through facilitating interconnections.

A beneficial effect of platforms is that, by focusing on enabling and completing transactions, they tend to expand the size of the market (in terms of transaction volume and/or overall dollar value), which is accomplished mainly through network effects. “Network effects” refers to the phenomenon that the value of a platform increases as more people use it. More specifically, there is a positive externality created that increases, up to a point, as participation in the platform grows. The classic example of network effects involves the telephone: the value of being connected to a ubiquitous telephony network is derived from being able to talk to anyone you’d like; on the other hand, the value is quite low if you are the only person with a telephone. This example can readily be applied to other platforms, such as credit cards, which are a valuable means of facilitating retail transactions because many establishments accept them and many consumers have and use them. In addition, growth in the size of a market is also driven by innovation that is enabled by tools or functionalities made available over a platform. The resulting new products and services provide additional value to customers, for which, in return, they are willing to pay additional amounts.

The profitability of platform businesses is also determined largely by growth in the market. A platform operator’s compensation (from transaction-based fees) adds to the end-use cost of products and services. Nominally, that would be viewed as making consumers worse off. However, platforms’ network effects produce both value-added and price competition by expanding the scope of sellers. This provides the headroom for the platform’s transaction fee. In addition, the platform’s externality effects grow with the number of transactions, so larger transaction volumes allow for low per-unit transaction fees. From a societal (or “social welfare”) perspective, effective platforms thus tend to make consumers better off – through the realization of lower prices, by allowing for new and valued products and services, or both.

On the other hand, though, a platform that is considered ineffective (in that it produces no such positive externalities and, thus, does not provide sufficient growth opportunities) is simply displacing the transactions that took place in the pre-platform world, and the imposition of transaction fees might lead to higher prices, and accordingly provides little societal benefit.

3. The platform in the UoF ecosystem

A platform to facilitate exchanges and transactions of electricity and information at the distribution system level (i.e., a peer-to-peer system) is at the center of most, if not all, UoF frameworks. In its simplest sense, such a platform can be thought of as having two layers. The first layer is

mainly made up of physical infrastructure; that is, the wires and associated functionality that connect customers to the distribution grid. Although much of the infrastructure is in place, it will need to be augmented in order to: (1) provide smart grid functionality; (2) allow for two-way power flows; and (3) more fully integrate distributed energy resources (DERs). The second layer contains the functionality needed to enable a potentially large number of market participants to financially engage in peer-to-peer transactions and the systems keeping track of their exchanges and settlements.

Many of the details concerning how such a platform will work, as well as associated roles and responsibilities, have yet to be fully worked out. Most views foresee the incumbent distribution utility continuing to build and operate the physical layer of the platform. Initial pushes into UoF, notably in New York’s Reforming the Energy Vision (REV), have also given the utility responsibility for building and operating the exchange and settlement layer, mainly because utilities already have expertise concerning the complexities associated with energy trading. However, this will most likely only be a starting point. Distributed ledger technologies (DLT), as exemplified by blockchain technology, are being applied to many rule-based transaction settings, including at the peer-to-peer level, and are currently being used in pilot programs in electricity markets. The exchange and settlement layer will need to be integrated and coordinated with the physical layer but, going forward, it may well be built and operated by a non-utility.

The idea of a utility platform has captured the imagination of many industry observers because of its transformational possibilities – with respect to the way consumers can choose electricity options and, also, how it might change the way utilities do business. Some have postulated that a platform-based business model may soon replace the traditional utility model, in whole or in substantial part. Specifically, they point out that making the utility the platform operator would motivate them to enable transactions among non-utility providers and customers, rather than block them. They also suggest that the volume of peer-to-peer transactions may be sizable enough to generate revenues (via fees) sufficient to offset some or even all of a utility’s revenue requirements, which might redirect the traditional incentive structure that emphasizes realizing returns by building rate base.

The introduction of a peer-to-peer market structure (via a utility platform) is an exciting prospect. At a minimum, a platform-based model would enable a higher degree of customer engagement and choice in the electricity market, a longstanding goal of many policymakers. However, whether or not it will turn the traditional utility business model on its head is less clear, and depends on the products and services that will be offered over the platform.

4. Platforms and services

A platform provides value only to the extent that the products and services provided over it are valued by its users. From the user perspective, value is typically derived through lower prices for the current portfolio of products and services and/or new and valued products and services. Platform businesses may be based on strategies to gain market share from their linear business competitors but, in practice, few if any of the widely cited platforms are based wholly on displacement strategies. Instead, their model is based on exploiting their platform’s network effects in expanding the market, either through connecting more buyers with sellers for the existing product set and/or providing the avenue for innovators to introduce a whole new product set. This allows for upward sales and profit potential and also, as previously noted, allows the platform operator to keep transaction fees low enough so that they do not impede transactions.

Estimating the scope of services as well as associated transaction volumes is nearly an impossible undertaking, especially with respect to new products and services – because it requires knowing what customers want before they do themselves. However, this does not mean that successful platforms were developed wholly under an “if you build it,

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