

Research Report

How to make IT Projects accountable in the Network Economy

IN TWO-SIDED MARKETS SUCH AS EXCHANGES, AN INTERMEDIARY BRINGS TOGETHER TWO DISTINCT CUSTOMER POPULATIONS, E.G., BUYERS AND SELLERS. THESE CUSTOMER POPULATIONS INTERACT VIA A PLATFORM PROVIDED BY THE INTERMEDIARY, AND TYPICALLY NETWORK EFFECTS ARE OBSERVABLE IN THESE MARKETS; IF THE NUMBER OF BUYERS IS HIGH, MORE SELLERS ARE ATTRACTED TO THE PLATFORM, AND VICE VERSA. IN SUCH MARKETS IT IS DIFFICULT TO MEASURE THE ECONOMIC SUCCESS OF IT INVESTMENTS. THIS ARTICLE PROPOSES A SOLUTION.

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Introduction

According to IDC, the worldwide IT investments in 2010 amounted to over one trillion Euro. However, it has been shown that only 62% of all software projects are successful. Due to the combination of high investment volumes with the moderate success rates of these investments, IT departments are increasingly under pressure to justify expenses for past IT investments and to use measures to make informed decisions about future IT investments. The success of IT investments can be qualitatively assessed using measures such as user satisfaction and system quality, or according to their economic success using measures such as revenues and profits. IS research and practice have developed a broad spectrum of instru-

ments to measure the qualitative success of IT investments, though only a few approaches enable the measurement of the economic success of IT investments because this field lacks simple and valid methods (Tallon and Kraemer, 2007). Due to network effects, measuring the economic success of IT investments in two-sided markets has become even more challenging. Positive (negative) network effects exist if a customer's utility derived from a service increases (decreases) because of other customers using the same service.

Two-sided markets exist in many industries and are part of the "Network Economy". In two-sided markets, an intermediary provides the platform that connects two distinct customer

populations. For example, peer-to-peer lending platforms such as Prosper.com bring together lenders and borrowers and provide an infrastructure and rules that enable transactions between these two customer populations. The Internet has created new industries such as online auction houses and digital marketplaces where intermediaries provide platforms that bring together buyers and sellers or, generally speaking, demand and supply.

In two-sided markets, both customer populations (e.g., buyers and sellers in the case of an exchange) are crucial to the intermediary. The existence of many sellers attracts more buyers to the platform. Conversely, the presence of many buyers attracts more sellers. Thus, so-called cross-side network effects exist in two-sided markets. In addition, network effects can exist within one customer population – referred to as same-side network effects. IT investments in two-sided markets should not only aim to increase short-term profits, but should also strengthen the retention of existing buyers and sellers and facilitate the acquisition of new buyers and sellers because both customer populations are important to the intermediary. Along with the growth of both customer populations, the intermediary aims to create a virtuous circle, where both customer populations stimulate each other's growth through network effects. However, network effects in two-sided markets can be positive or negative. For example, a new seller can have a positive effect on the cross-side customer population (i.e., can retain and attract buyers) and a negative effect on the same-side customer population (i.e.,

can increase competition between sellers). These feedback loops explain the complexity of the growth process of customer populations in two-sided markets.

From an intermediary's perspective, making investments in a platform's functionality to stimulate the growth of both customer populations is somewhat difficult. First, the intermediary must make a strategic decision to determine the customer population to invest in. Most new IT functionalities can only be targeted at one customer population. Second, the intermediary must decide which type of IT functionality should be introduced. The IT investments and their impact on the retention and acquisition rates of the targeted customer populations, together with the effect of feedback loops, make it difficult to assign IT investments to customer populations in two-sided markets (Bakos and Katsamakos, 2008) and to measure the economic success of such investments.

Solution: Measuring the Platform Value

Measuring the intermediary's so-called platform value provides a remedy. The platform value is the net present value of all long-term profits provided by current and future buyers and sellers. The intermediary can thus measure the economic success of IT investments in monetary terms and specify whether investments in buyers or sellers are more successful. Thus, the platform value enables the intermediary to make a strategic decision regarding which customer population priority should be assigned to. The platform value also facili-

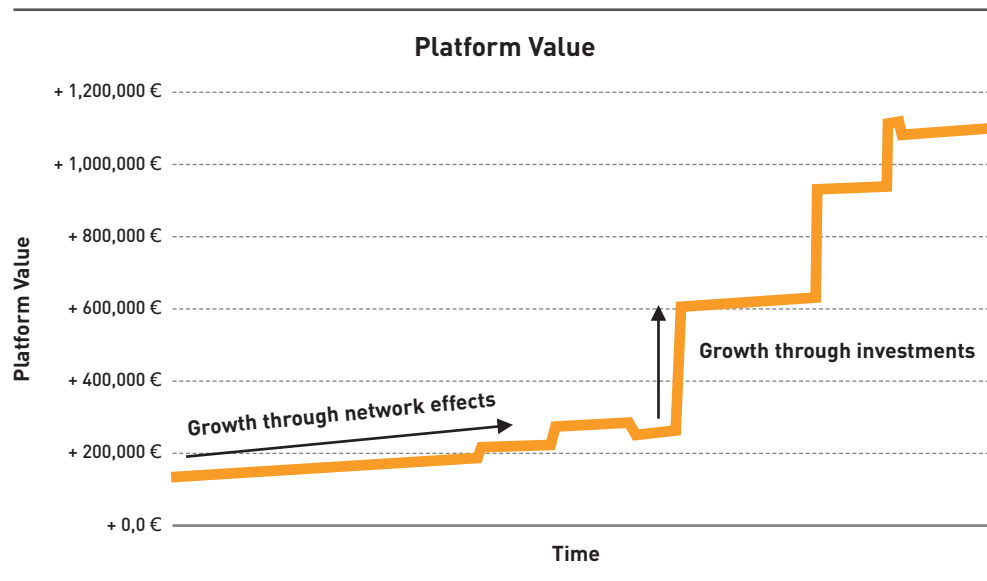


Figure 1: Development of Platform Value over Time

tates decisions regarding the types of IT functionality that should be introduced by taking cues from the most successful IT investments in the past and their effect on the two market sides. From the perspective of IT departments, measuring the platform value enhances the accountability of IT investments. Therefore, IT departments can better justify expenditures for successful IT investments and are able to learn from failed investments. Currently, knowledge about how the economic success of IT investments in two-sided markets should be measured is scarce. Managers might be tempted to assign IT investments to the customer population that provides revenues (i.e., the sellers). However, sellers only pay because of the presence of the “free customers” (i.e., the buyers). Thus, managers might mislead-

ingly ignore one customer population. Our modeling approach takes a Customer Equity model as starting point and integrates a model for growth processes in two-sided markets. The growth model accounts for asymmetric network effects both within a customer population (same-side network effects) and between customer populations (cross-side network effects). Moreover, we can distinguish network effects on the retention of existing customers and on the acquisition of new customers.

Empirical Findings

To demonstrate the applicability of the platform value approach, we apply it to data from an intermediary operating a two-sided market. The intermediary charges sellers a fee of

3% of the transaction volume, while buyers can use the platform free of charge. This intermediary relies on growth through network effects fostered by an improvement of the platform’s functionalities and already completed eight major software releases, each of which represented investments into IT. The intermediary targeted the buyer’s side with five IT investments and the seller’s side with three IT investments. We consider cross-side and same-side network effects in the estimation of the number of new and lost buyers and sellers in each time period. Thus, we measure the success of IT investments by the additional profits from buyers and sellers who either continue to use or join the platform because of the investments in platform functionality. We analyze data on 78,180 completed transactions on a daily basis and measure the economic success of all major IT investments. Figure 1 shows that the platform value increases due to positive network effects at the beginning. We also observe sharp increases of the platform value due to new platform functionalities. These functionalities increased either the retention or the acquisition rate. Based on the changes of the platform value, it is straightforward to determine the ROI if project costs are tracked.

The platform value reveals a significant contribution of buyers to the platform value, even though the intermediary exclusively charges the seller. We find further evidence suggesting that intermediaries should invest in buyers rather than in sellers because the most successful IT investments

were targeted at buyers. In terms of the types of IT investments that are most successful, our results suggest that intermediaries should invest in functionalities that increase trust in products, trust in the intermediary, and trust in trading partners on the other market side.

Conclusion

High project costs have put IT departments under pressure to provide better information regarding the economic success of IT investments. This task is particularly difficult in two-sided markets where an intermediary brings together two distinct customer populations, such as buyers and sellers on an exchange platform. The IT investments of the intermediary typically provide benefits to only one customer population, but cross-side and same-side network effects allow them to have an impact on both customer populations. We find that measuring the intermediary’s platform value provides an elegant solution to this problem.

References

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