Value Creation vs Value Appropriation: Network Externalities for Auto-Dipper

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Abstract
A firm's competitiveness is deeply engrained in its offering. It is important to understand the competition, the market requirement, production-operations and the value of its offering. Moreover, to ensure survival of the firm, it is essential to ascertain the plausible source of competitive advantage, the obvious being its value offering. Most firms face the necessity to not only creates value for its customer, but also to appropriate value for itself. This paper takes the case of Auto-Dipper and tests the issues of value-creation and its appropriation in the practical perspective of business strategy, through the concept of network externality. The Auto-Dipper is an optical-mechanical device that automatically puts the vehicle headlights to lower beam when it encounters an oncoming vehicle in the night. The glare of oncoming headlights puts the driver to light blinding which increases the chance of an accident. Further, as most of the Indian roads are two-way and the frequency of oncoming vehicle is very high, the driver is severely fatigued after a night drive, raising the accident chances. The product passes through stringent field trials and the price is affordable for the market. The ministry of surface transport of the Government has made the product mandatory for all four wheelers and other heavy vehicles. Further, the product is patented and has a seemingly ready market. However, the product is still not seen in vehicles and the analysis points to network externalities that inhibits in capturing value. The paper exemplifies through the research approach of analytic induction technique that value-creation in itself is not sufficient for the firm to achieve growth and profits, but the capability to appropriate value is as crucial as the value itself. With this, the argument between value-creation versus value-appropriation is explained in the perspective of business strategy with the help of the case on the firm, through the lens of network externality. The network externality is crucial in the movement from value-creation to value-appropriation, as is exemplified by the case of Auto-Dipper.

Key words: Value Creation, Value Appropriation, Network Externality, Competitive Advantage, Business Strategy.

JEL classification: M13, M30.

1. Introduction

To understand a business, it is important to understand its competency with respect to the business environment it operates in. To ensure sustainability, it is essential to ascertain the plausible source of competitive advantage, its value offering. The value is ascertained when the company provides a solution that is appreciably better than the solution provided by its substitutes, at a price that is acceptable to the market. Armed, with the value, the company tries to build layers of augmented value so that it becomes difficult for the competitors to emulate. The company may go further to create barriers for competitors to build similar offering.

The case of Auto-Dipper suggests that the offering promises to provide a tangible offering benefit at an affordable cost. The product is an optical-mechanical device that senses light from an oncoming vehicle in the night and helps the driver to automatically dip for better night vision sans glare. Further, the product (offering) has made through the stringent industry trails and is made compulsory by the Government for all four-wheelers to have, in India. The product is patented and most automobile producing companies have accepted the product. Although, the offering provides strong value, still it is not seen much in the market.

The paper analyses the strategic reasons for poor commercial performance of the offering by identifying the network-externalities that the product must have in order to appropriate value.

2. Theoretical Perspective:

The considerations for value creation and value appropriation for business is a subject that is

neither complete nor has established a lot of seminal research. However, while understanding a firm, especially a start-up venture, a few things that should be kept in mind is that the factors of value-creation and value-appropriation are dynamic in nature and the configuration of it changes constantly. This questions the sustainability of business, continually. The competitive forces that shape value by Porter (2008) highlights the requirement of a strategist to understand the forces that are at play to understand and cope with competition with respect to the value of its offering. Market attractiveness indicates the potential to make profit for the organization, given the condition of the market or industry, and the value proposed. Many factors influence market attractiveness, such as size of the market, competitors, their comparable offerings, readiness of customers, and so on. High barriers to subsequent entry can make the market attractive for the incumbent and not so for new entrants. Interestingly, if the market is attractive, it does not automatically mean that the business will surely flourish. If the firm controls some of the factors that influence market attractiveness, such as high barriers to entry, the potential for value-appropriation goes a lot higher with the same value proposition.

Addressing competency issues, the firm may choose to stick to its competency or else acquire the required capability. It is even more important to know the resources that are valuable for the firm in ensuing competitiveness and sustainability. Prahalad and Hamel (1990) highlight the importance and role of competency as the root of competitiveness for the organization. It is important to understand that the organization cannot always have or create all competencies that are required for competitiveness. Rather, the organization is often faced with the strategic choice to either build all the required competencies in-house or somehow acquire them from outside.

Network externality can be seen as a change in the benefit for a consumer that is directly attributed with the change in the number of consumers. In other words the value received by consumer rises sharply with the rise in the number of consumers for that offering. Network effect is not necessary but is usually seen in new path breaking offerings that need higher market efficacy to be successful (Katz and Shapiro 1985, Farrell and Saloner 1985, Arthur 1996). Network externality also supports path dependence, where the size of a network increases based on what the performance of the network in the past (Liebowitz and Margolis, 1995). Network becomes more successful when the size of the network surpasses the critical size, when the benefits of the network seem to rise considerably.

3. Research Method:

Event-history approach to a case becomes convenient where the theory is tested in light of the case in a longitudinal manner. Hence, this research can be seen as a way to answer to the research question of the link between value-creation and value-appropriation through network externality. This is achieved by considering the value that the firm creates, the capability of a firm under study, and the network effect that is essential to the case.

It is seen that similar studies mostly incorporate a modified form of analytic induction technique (Denzin, 1978; Yin, 1994), combined with the theoretical perspectives under study through the case (Wollin, 1996). This is a flexible technique for obtaining, ordering and analysing primarily qualitative instances (Wollin, 1995; Eisenhardt, 1989; Pettigrew, 1995) that we will find from the case. As such, the case includes the retrospective longitudinal and processual analysis techniques of Pettigrew (1995). Analytic induction commences from an existing theoretical position, and then compares the theory, or emerging theory, with the evidence obtained by each case instance, prepared on the basis of its possible contribution to answering the question and the answer itself is then modified in the light of such cases (Wollin, 1995). This iterative process provides an empirical explanation to the research question.

The unit of the study in this research is ‘firm’. The concept of subject (value capture and competitiveness of the firm) is to be seen as a part of the emerging view of institution as social

system, where the interrelated choices of individuals compete and cooperate to form a community of symbiotically related choices (Van de Ven and Garud, 1989), natural for studying network externalities (Katz & Shapiro, 1994). However, the social definition of an institution contrasts with more conventional perspective of substitute choices (Porter, 1980), or group-think, where groups of individuals agree on a choice for the sake of group choice over individual choice (Kool & Dierickx, 1993; Porter, 1980). It should be noted that in both the conventional definitions, the competitive interactions of the individual choices are assumed, ignoring cooperative or neutral interactions, essential in studying the network effect. Further, this research is based on the case of Auto-Dipper and studies the firm's resources, value activities and network effect to ascertain value-appropriation.

4. Data from Case:

The Auto Dipper is a product that is created by Kakatiya Energy Systems, for four wheelers in order to help them in night driving (Kakatiya's Unique Auto Dipper, 1996). The product when installed in the vehicle can automatically put the vehicle headlights to lower beam as it encounters an oncoming vehicle from the other side. This reduces the glare and fractional blindness that drivers may experience from oncoming traffic. This less-glare situation helps reduce the chances of an accident. Further, as the frequency of oncoming vehicle is very high on Indian highways and the roads are mostly two-ways, the driver feel severely fatigued after a night drive. To reduce this fatigue also, auto-dipper is useful, as it automatically dips the headlights and manages the intensity of light. The government of India, through its ministry of surface transport has made this device mandatory for all vehicles. All new vehicles must have the product installed, whereas all on-road vehicles are expected to have the device installed within the next ten years. The testing of the product passes through stringent field trials and the price of the product is reasonable (Kakatiya Energy Systems, 2014a). With this patented product that has a ready-made market; Kakatiya Energy Systems should not have any problem in commercializing it.

The firm enjoys numerous favourable factors on which the business can thrive. The offering has a large market potential, a product that is dependable, affordable, patented, made mandatory by the Government, guaranteeing profits, yet the product in reality is not conspicuous. If a product is good and cheap and has a guaranteed market, it is natural that it experiences success. The importance of scientific validation and acceptance by the prospect market is even more essential than the technical performance of the product and its affordable price ((Kakatiya's Unique Auto Dipper, 1996).

Drivers appreciate that Auto-Dipper signals the oncoming vehicle to dip their headlights when they pass (Kakatiya Energy Systems, 2014b). The mind-set of commercial drivers is that they see Auto-Dipper as a "preferable product" not as an "essential product", as life was going on without Auto-Dipper and will continue to do so (Kakatiya Energy Systems, 2014c). Maximum benefit of Auto-Dipper would happen when both the vehicles (coming for opposite directions) are fitted with Auto-Dipper.

The product undergoes successful field trials means that the product performs to customer satisfaction and says that it improves visibility by minimizing glare, and glare causes momentary loss of vision. However, most commercial drivers did not feel that this momentary loss of vision is the reason for accidents at night (Kakatiya Energy Systems, 2014d).

The description of parts of the Auto-Dipper, such as light sensor, plastic casing, electronic items (transistors and relays), indicates that the component are relatively cheaper and easier to get from open market. As the product components are sourced locally, the plants will at best assembling few parts, the cost of the plant and the warehouse for finished goods may not exceed INR 25 million. The cost of the product is ascertained to be in the range of INR 500 to 1150/-. The company has put an estimated price of the product at around INR 3150/-. Hence, the

product can have a margin of around INR 2000/- for each unit (Kakatiya Energy Systems. 2014e).
The number of 4 wheelers sold in 2016 is about 400,000 and considering the road worthiness of old vehicles (replacement market) to be at least 15 years, the total market size can be estimated to be about 4.5 million four wheelers that are currently plying on India roads. Even if only the OEM market is tapped for the first years, the profitability can be INR 800 million.
Overall, with such a large confirmed market, dependable product, high plausible profits, the company is all set to appropriate value that it has created and protected.

5. Analysis:

When the two-third of the price of the product is the profit margin, it can be safely assumed that the margin is very high. Under the circumstance, the company can reduce the margin and attract more customers. However, this is not needed now as the company already is looking at a ready-made huge market, of about 400000 new vehicles (OEMs) in 2016 and about 4.5 million older vehicles (replacement market) that are on the roads. Even if the company sells its product only to the OEMs for the first year, it is expected to make a profit of 800 million. This about 25 times the investment they would make in the first year. If we consider the replacement market also, then the profitability if going to be even larger. But the product has not seen high sales. With such a large confirmed market, dependable product, high plausible profits, the product is not seen around as the replacement market waited towards the fag-end of the time given of ten years, and the OEM market waited for each other to install the product first.
The maximum benefit of Auto-Dipper would happen when both the vehicles (coming from opposite directions) are fitted with Auto-Dipper. This rises to the question of "Network Externality". Drawing an analogy, imagine the person having the first telephone in the world. Who would the person call? The benefit of phone comes only when the person's friends, relatives and workmates have phone connections. This means, the more people have phone connection, the more people the person can call, the more benefit the phone provides. If most of the vehicles are fitted with Auto-Dipper, the vehicle having Auto-Dipper will have the most benefit. If everyone waits for the other to get Auto-Dipper installed first and wait till a critical mass is reached, then everyone will wait for each other and the product will take a long time to be embraced by a large population. However, the automobile manufacturers- the original equipment manufacturers (OEMs) don't have a reason to wait as it has been made mandatory by the Government. However, the benefits derived by the OEM Auto-Dipper installed vehicle will be a direct function of the size of the network. The immediate servicing of the replacement market remains another concern, which leads to competency question.
Explaining with another example from India, the Government of India has made it mandatory the use of electronic meters by the auto-rickshaw yet took more than a decade in most cities to implement. The typical issues were political (auto-rickshaw driver's union), departmental (road transport departments in most states were inadequately manned) and suppliers (tenders for electronic auto meters went through a lot of trials and tribulations). It was not possible to implement the electronic auto meters instantly as the sheer numbers of auto rickshaws plying on the road were millions and the installation took time. The same effect can be expected for Auto-Dipper installation in replacement market.
It is said that the on-road vehicles are expected to have the device installed within the next ten years. This will make most on-road vehicles to wait for a later date as neither the drivers felt that this product is not crucial for night driving nor the vehicle owners saw any direct correlation of data between night glare and accidents. The scientific link between night glare, momentary blindness and road accidents in night due to glare is not conclusively ascertained. The commercial drivers have seen the Auto-Dipper as a 'preferable product' as they still drove on the roads during night time, managing the glare, without meeting with an accident.

Moreover, the vehicle owners may feel that this product can at best be a good-to-have product. There is a conflict of interest between the consumer and customer of the product. In India, most of the vehicles that ply in the night on highways are commercial vehicles and these vehicles are driven by hired drivers. This meant, the owner of the vehicle would have paid for the Auto Dipper and the benefit is derived by the driver, who in most cases is not the owner. As owners mostly thought that drivers are compensated adequately for the night glare inconvenience, they can always defer the purchase of Auto-Dipper. Moreover a commercial vehicle is heavily comprehensively insured for accidents.

The successful field trials suggested that the product performs to customer satisfaction and says that it improves visibility by minimizing glare, and glare causes momentary loss of vision. This meant that the product could perform to specifications, and not necessarily mean that the product will provide the claimed benefit (value). The natural way to achieve value in the case of Auto-Dipper is through the network externality where the size of the network generates more value.

The best way to achieve the network effect (reaching critical mass) through network externality for the Auto-Dipper was to have it installed in all new four-wheelers, perhaps initially at cost. OEMs have been witness to the trials and are happy with the reliability of the product. Moreover, the product is also not so expensive that it would have an appreciable raise on the prices of the new cars/trucks. The 4-wheeler accessories cost a lot more than an Auto-Dipper and this can be marketed as a safety accessory. It is important to understand that for the OEMs (Car/Truck manufacturers), their production plants are heavily automated and any variance to the production process is not readily embraced. Moreover the cars/trucks being compact in their space, electrical, and conduits, would find the additional installation of Auto-Dipper tedious. OEMs, instead of waiting for each other to implement the product first, should be encouraged to take the first initiative to showcase their vehicles as a safety conscious. It is essential for Kakatiya Energy systems to scientifically establish the link between night glare and accident.

This case takes up the argument between value-creation versus value-appropriation and identifies the critical factor such as network externality in ascertaining profitability and sustainability of the business. It is important to have a clear understanding of the situation and the appraisal of the firm's resources and operations. What the business does and is capable of doing, is crucial to ascertain how the business can achieve what it claims. Understanding what resources are critical to the firm in achieving competitiveness and sustainability is crucial to the argument of firm's value capture.

6. Conclusion:

As is obvious from the analysis above, there is a mismatch between the benefit that the product promises and the benefit that it delivers. The value of the offering increases only when the size of the network increases, meaning more and more vehicle installing the product. To pull off commercial production, the firm may need to secure people from outside the firm, leading to expansion of organization's capability. Only when, the organization pulls it off consistently over time, it may translate into a competency. The network externality can provide value only when a critical mass is reached, after which it may go into a positive feedback loop, attracting more consumers into the network and thereby raising the value of the network itself. Value-creation in terms of potential benefits of the offering is not enough. Value-creation happens and expands only when the network expands. Hence, value-appropriation can only happen when network externality helps further value creation.

The case of Auto-Dipper is idiosyncratic and exemplifies that although the market is attractive, the product is dependable, the offering affordable, the product is compulsory for everyone to have (mandatory by the Government), the product fosters safety, and even when all the

plausible external factors are made favourable for business, it may still not translate into profitable business. The network externality is crucial in the movement from value-creation to value-appropriation, as suggested by the case of Auto-Dipper.

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