

# 14

## Vicious Cross-licensing Strategy for Technology Spread: Case Study of Samsung Electronics

Baba Gnanakumar

### Introduction

Software companies in India are losing two-thirds of their revenue in piracy in a year. It also caused \$866 million loss to the Indian government in the year 2011 (PTI, 2011). According to NASSCOM, the compound annual growth rate of IT spending in India was 15 % until 2014 (Sharma, 2011). If PC software piracy is curtailed by 5 %, the ITES revenues will increase to \$790 million, and 26,108 new high-skilled jobs will be created in India (PTI, 2011). If software piracy is reduced by 10 %, the economic benefits for a firm will increase by 31 % in two years. The traditional model of licensing the software such as shrink-wrap, browse-wrap, and click-wrap system has no longer been giving fruitful results in curbing the software piracy. To mitigate the software piracy losses and to get rid of

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B. Gnanakumar (✉)

Sri Krishna Arts and Science College, Coimbatore, India

e-mail: [gnanakumar12000@yahoo.com](mailto:gnanakumar12000@yahoo.com)

litigation expenses on intellectual property rights, technology giants such as Microsoft, IBM, Apple, Samsung, Nokia, and Seagate are entering into cross-licensing agreement (CLA) with regional players and competitors. These cross-licensing contracts not only provide hindrance to piracy but also enhance the technology spread. In this context, the present study intends to identify a competent business model created by the CLA.

## Review of Literature

Software piracy is significantly correlated to gross national product per capita, income inequality, and individualism (Husted, 2000). The residual increase in software patent propensity is deteriorating, and it is to be controlled through strategic patenting (Bessen & Hunt, 2007). Technological collaborations are essential for the software servicing companies for their global marketing (Grimaldi & Torrasi, 2001). When technologies are complex, it is essential to share ownership of a product's technology and innovators are forced to have CLA (Bessen, 2004). However, robust cross-industries differences are the main constraints in creating CLAs with respect to ex-post technology transfers and intellectual property rights (Anand & Khanna, 2003). The reciprocal agreement between the technological partners strengthens competition within the partners in the cluster (Lavie, 2007). Cross-licensing in ITES permits offshore entry for the firms even without any previous experience (Cockburn & Macgarvie, 2011). Past literature asserts the merits of the cross-licensing system. The present study aims to identify the cross-licensing models that mitigate technology piracy and increase the earning capacity through market capitalization effect.

## Aim and Methodology

The objective of the study is to identify an "Assertive Business Model" that restrains technology piracy in the ITES industries. The secondary aim is to maximize corporate revenues through collaborative ventures in the form of cross-licensing strategy.

Five cross-licensing contracts of AMD, Microsoft, Seagate, Samsung Electronics, IBM, and Yahoo entered during 2010–12 were studied to portray the competent business model.

## Cross-Licensing Strategy

Cross-licensing is an agreement between two firms that permits each the right to use the other's patents. It may or may not include annual payment or having royalties, or running royalties in one direction or both. It incorporates the usage of patents in a geographical area, carves out the patent usage in certain products, and fixes a time limit for the contract (Jaffe, Lerner & Stern, 2001). It may also take the form of exchanging the shares in the licensee company for providing the contract license of the intellectual property rights. These agreements are suitable if the parties to the contract follow defined set of interoperability standards for their technology. It originates from a joint venture business model. CLA is suitable if both organizations wish to use the common technology platform for research and development purpose (Morasch, 1995).

## Justification of CLA

The traditional purpose of entering the CLA is to mitigate the litigation expenses with regard to technology piracy. These agreements, in the long term, enable the firm to earn profits from market spread created by the high-end business partners. This is substantiated with the case of CLA between Advanced Micro Devices Inc. (AMD) and Intel.

AMD entered a CLA with Intel in November 2009. The terms of the agreement are as follows:

Both firms agreed to a 5-year patent CLA that gives AMD rights to work in multiple foundries.

- Both firms waived all claims on the breach of the previous agreement.
- Intel gave \$1.25 billion to AMD.

- AMD withdrew all pending litigation in the USA, two agreements in Japan, and all the regulatory complaints worldwide.
- There are no future payments, or delivery is required for using the fully paid licenses.

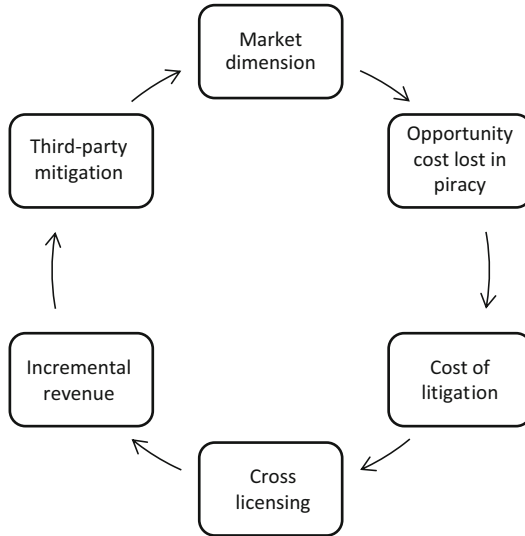
After the deal, all the outstanding legal disputes between both companies with regard to antitrust litigation and patent came to an end. AMD's legal expenses, administrative expenses, and amortization expenses decreased by 67 %, 24 %, and 49 %, respectively, in 2010. In the same manner, the legal disputes between Intel versus Nvidia and HP versus Microsoft have been solved by signing a CLA. Microsoft estimated that the opportunity cost lost in every dollar due to software piracy equals to \$5.50 in 2008 (Darren Bibby, 2008).

Microsoft entered into CLA with more than 600 regional and international firms to decrease software piracy. More than 250 legal suits are pending in various courts with regard to patent right violation. However, Microsoft was able to resolve only 20 % of disputes so far.

Based on the above case, we concluded that CLAs are motivated in the arbitrage process about the patent problems. Firms are using CLA as a defensive tool in decreasing legal expenses. Firms create virtuous cross-licensing models to shrink the litigation case disputes. Firms that aim to increase the market spread and wish to survive cut-throat competition are following the vicious model of CLA.

## Virtuous Cross-Licensing Model

Microsoft created virtuous cross-licensing patent model that enables to protect their patents from third parties. Under the virtuous model of CLA, the contracting parties identify the estimated cost of litigation due to technology infringement, opportunity cost lost due to legal suits, technology piracy cost, and marketing cost before entering into the agreement. The purpose is to get rid of court suits between the parties to contract, competitors' legal suits, and aims to create new marketing opportunities. Figure 14.1 represents the virtuous CLA model created by Microsoft.



**Fig. 14.1** Virtuous cross listing model

Smartphone market witnessed an exponential growth in 2009. The smartphone market grew by 64 % worldwide during 2009. Android device shipment in 2009 increased by 886 % (Constantinescu, 2010). According to Gartner report, smartphone sales grew at the rate of 74 % in 2011 compared to the previous year (Gartner Research, 2011). Smartphone manufacturers are extensively using the Microsoft software. To make use of patent rights, Microsoft has entered patent right royalty agreements with Android manufacturers, namely HTC, Acer, View Sonic, Velocity Micro, and Winston. Microsoft filed suit against Android for violating patents that are offered free to smartphone and tablet manufacturers by Google. Samsung had a majority of market share in Android devices in 2010 and its annual growth rate was 355 % in 2010–11 in smartphone segment (Canalys, 2011). Android smartphone had 43 % market share in the USA (Nielsen, 2011). Samsung's Galaxy Tab tablet was also powered by Android. Apple filed a patent infringement petition against Samsung for using its technology in Galaxy tablet. Microsoft also sued Samsung for paying the royalty for using its software in smartphones.

To resolve the legal problem, Samsung has signed a cross-licensing deal with Microsoft in September 2011 (Microsoft, 2011). The terms of the contract are as follows:

- Microsoft will receive royalties from Samsung for every Android Smartphone produced by Samsung.
- Samsung will facilitate the marketing of the Windows Phone system and develop the Microsoft platform.
- Samsung and Microsoft will stop the legal battles on patent rights linked to Android.

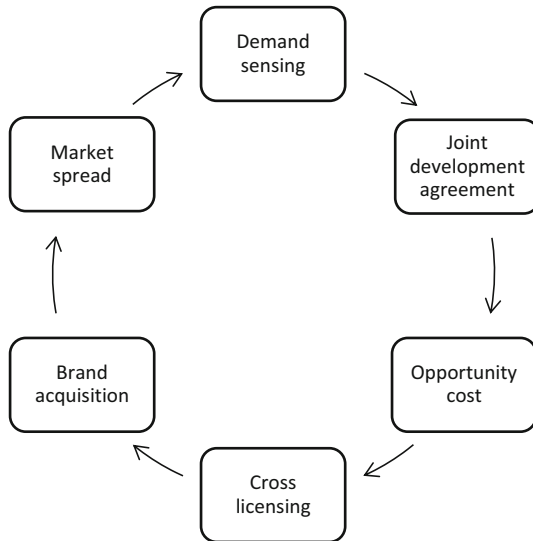
This kind of CLA settled patent lawsuits between Microsoft and Samsung, rather than engaging in a battle in court. This CLA protects both companies from third-party piracy attacks. The reciprocal deal allows Samsung to manufacture innovative products using Microsoft's patent. Windows phone 'Mango' came to market because of the collaborative agreement. However, Google assessed the agreement as a measure to extort profit from others' success.

The virtuous cross-licensing model of Microsoft and Samsung identifies the potential opportunity cost lost due to legal disputes. It also set up a viable method to market the software technology of Microsoft and hardware technology of Samsung.

## Vicious CL Model

Samsung Electronics created a vicious cross-licensing model that increased its revenue and market share for their patented technologies. Under this model, the parties to the contract estimate the future market share, create joint development agreements to measure the competitive advantage of both parties, and measure the opportunity cost to be gained before entering into CLA. Figure 14.2 represents the vicious CLA model.

The effect of the agreement results in technology acquisition/brand acquisition and increases the market share for both parties. These agreements reduce the technology competition. It is signed before acquiring the competitors' patent rights over the software/hardware. The legal



**Fig. 14.2** Vicious CLA model

battle over the patent has been avoided. Samsung Electronics CLAs with Seagate and IBM during the period 2010–11 enabled to increase its net revenue by 18 % and mitigated legal suits in court of law.

A licensing agreement entered by Samsung with Micron worth \$280 million in October 2010 placed Samsung as the second most inventive company in the world. By that time, the International Data Corporation's hard disk drive market report in the year 2010 quoted that the HDD gross revenue would increase from \$33.4 billion in 2010 to \$48.2 billion in 2011 (Harris, 2011). Samsung decided to reap the revenues as it is the market leader in HDD. The problem with regard to HDD industries is amortization cost of technology.

Hence, economies of large scale production are essential in HDD industries for cost reduction. In case of SSD industries, Hitachi's multi-year development agreement with Intel achieved the benefits of large scale operations.

After considering the Hitachi and Intel agreement, Seagate Technology and Samsung Electronics entered into a joint development agreement in August 2010. Samsung is the market leader in digital electronics, whereas Seagate is the market leader in hard disk drives.

Through the joint development agreement, both companies had identified their respective strength in the manufacturing sector. Both companies decided to make use of their technology assets to create more innovative products in the fields of solid state storage, mobile computing, and cloud computing. This resulted in signing a CLA in April, 2011 (Seagate, 2011). The objective of the agreement is to strengthen their strategic relationship by establishing joint ownership and investing in new upcoming technologies. The principal terms quoted in the accord are as follows.

- Samsung agreed to supply NAND drivers and semiconductor products to Seagate.
- Seagate agreed to supply hard drives for Samsung computers.
- Both companies agreed to cooperate in developing enterprise storage solutions.
- Purchase consideration paid by Seagate to Samsung was fixed as \$1.38 billion. It was in the form of cash (50 %) and stock (50 %).
- Samsung will acquire 10 % stake in Seagate capital and nominate one executive to the board of directors of Seagate.

Upon closing of the deal, Samsung had obtained Seagate's ordinary shares valued at \$687.5 million, which was equal to 9.6% stake in Seagate. The price of shares was fixed based on 30 days weighted average share price prior to signing the agreement.

## Effect of the Agreement

The strategic alliance enabled Seagate to strengthen its association with SAE Magnetics and TDK Corporation. Samsung and Seagate achieved the benefit of large scale economies within the first year of agreement and introduced innovative storage products to their customers. Seagate's customer base has been spread out to China, Brazil, Germany, Russia, and Southeast Asian countries. Seagate also benefits from the utilization of Samsung assets such as M8 and 2.5 inch HDDs. By utilizing the technical man power resources of Samsung's Korea facility, Seagate developed form-factor product that is used in mobile computing market. Seagate retained the usage of Samsung HDD for 12 months and established a



collaborative R&D unit. Based on the successful completion of Samsung and Seagate agreement, Seagate's primary competitor, Western Digital acquired Hitachi's business. Apple also plans to acquire Anobit, an SSD controller technology company.

## Market Implication

Due to CLA, the hard disk drive market leaders were reduced to three suppliers, that is, Seagate, Western Digital, and Toshiba. Within four months, the total shipment share (sales) for Seagate and Samsung was around 90 %. This move helped to even out the competition among the remaining HDD suppliers. After the CLA, Toshiba's market share reduced to 10 %. However, Toshiba changed its marketing strategy and decided to concentrate on the notebook computer category. Toshiba's notebook computer sales rose by 10 % within six months. Toshiba maintains its lead in "fat tablet" business applications over Samsung.

## Competitive Environment

If the CLA is entered between competitors, it leads to concentration of the market rather than perfect competition. Hence, statutory provisions of different countries are to be considered in finalizing the deals. "Herfindahl-Hirschman Index" (HHI) is usually calculated to find out the concentration of markets due to joint cooperative agreements. Factors such as product consistency, market intelligibility, product uniqueness, countervailing buying power, purchasing methodologies, non-compete bonds, market entry constraints, impediments in intellectual property, territorial limits, technical know-how, and scale competences are considered in calculating the HHI. HHI is calculated based on the sum of the squares of market share of the competing firm. The score ranges from zero to 10,000. If the score is more than 1800, the market is said to be concentrated or less competitive. Competition is moderate if the score is between 1000 and 1800. A score less than 1000 implies that there is a perfect competition even after the acquisition. US and Chinese courts follow the HHI system to identify market concentration and thereby reduce the monopoly.

The CLA among Samsung, Seagate, and Micron led to creating an HHI score of 4004 for Samsung in HDD market ( $48^2 + 40^2 + 12^2 = 4004$ ). This reflects that the CLA entered by Samsung decreased the competition in HDD market. Hence, the Chinese government endorsed the Samsung and Seagate deal by imposing following restrictions:

- Samsung's HDD must be sold only after one year from the date of CLA.
- Production capacity of Samsung hard drives must be increased after six months from the date of CLA.
- A separate production unit must be established by Seagate for Samsung-branded hard drive.
- Seagate should disclose information on prices, volumes, or business strategy to the Chinese government.

Both the firms are benefited because of decrease in competition. However, monopoly has been prevented in HDD markets by the legal rules prevailing in the respective countries.

## Impact on Profit

The cost of acquisition of both companies has been offset by the incremental revenue from market expansion. The litigation cost has been decreased. Technology piracy has been mitigated by the market spread. Immediately after the CLA, Samsung's sales growth rate was 6.663 % (quarter ending June, 2011) as compared to the previous quarter "−11.67%" (March 2011) (Source: 2012 FactSet Research Systems Inc.).

## Subsequent Agreements

On February 2011, Samsung entered a patent CLA with IBM. This CLA enabled the two companies to use both companies' patented innovative technologies according to the business demands and maintain competition with others. However, these agreements are not created as an effect of minimizing legal expenses, but to sustain as a market leader and to reduce technology piracy.

## Apple Versus Samsung Case

Apple proffered a CLA to Samsung in 2010 for using 3G/UMTS under FRAND (fair, reasonable, and non-discriminatory) terms involving 0.33US\$ per unit sold as royalty (Seltzer, 2012), and Samsung turned down the offer (Mello, 2012).

On April 15, 2011, Apple filed an infringement petition against Samsung in US District Court of California. The court granted \$1,051,855,000 to Apple from Samsung. In the next hearing, Apple contended in Court for a ban on Samsung's 4G Smartphone and Galaxy 10.1. The court declined the petition ruling in favor of Samsung (Kelion, 2012).

In South Korea, the Court decision was of \$20 million in damages for each violated patent by Apple, and \$25 million by Samsung. The Court found that Apple infringed two of Samsung's technology patents and ordered Apple to stop sales of the infringed product in South Korea. Samsung infringed Apple's "Bounceback" patent but not the icon (Ramstad & Lee, 2012).

UK Court denied Apple's infringement petition against Samsung stating that there was no case of infringement by Samsung, and ordered Apple to pay the legal charges (Whittaker, 2012).

In the Netherlands, the Dutch Court coincides with the UK Court ruling that Samsung has not infringed design patents of Apple in Samsung Galaxy Tab. The Court specified that the amount payable was to be calculated on the sales of iPhone and iPad in the Netherlands (BBC News, 2012).

Even though Apple succeeded in US court awarding USD 1.05 million, Samsung has successfully picked up the market from the rival. When Apple focused on sales to their loyal customers, Samsung widened their range to match most customer demands by introducing more models. This has resulted in change of market holdings.

## Implications

Reciprocal agreements with competitors, technology providers, and diversified business partners pave the way for creating lucrative profits in the long run. The virtuous cycle model in cross-licensing can be

transformed to a vicious cycle model to ensure technological spread. The royalty cost in joint agreements is offset by the market spread. Samsung's cross-licensing deal with Microsoft was a defensive tactic to get rid of the litigation attacks, whereas Samsung's deal with Seagate was an assertive tactic which led to establishing the market leader in a particular product line. As IT industries are entering into a hyper-competitive world, it is essential to have strategic alliances with regional partners. The various stages in vicious model of CLA have been optimally used by Samsung. They are listed as follows.

**Stage I Demand sensing:** Samsung aimed to utilize the large scale economies of production, introduce a new product, avoid future litigation expenses, and extend the market spread without affecting its brand name. Hence, it considered the IDC report to sense the future demand in HDD sector. The technology competitors were listed by Samsung.

**Stage II Joint development agreement:** Samsung did not want to have direct CLA without considering the SWOT analysis of Seagate. Hence, it signed a joint development agreement. The feasibility of having CLA was identified by Samsung by considering HHI factors.

**Stage III CLA pact:** The gaining and sacrificing arguments about CLA were put forward by the advisors of Samsung and Seagate. Allen & Company LLC and Morgan Stanley & Co served as the financial advisors to Samsung and Seagate, respectively. Janofsky & Walker LLP and Wilson Sonsini Goodrich served as legal advisors to Samsung and Seagate, respectively. The agreement was specific in nature about the product development.

**Stage IV Brand acquisition:** The CLA resulted not only in brand acquisition, but also acquisition of ownership. Samsung acquired around 10 % stake in Seagate and Samsung nominated one director in the board of directors' team of Seagate. This enabled to clinch the administrative strategies taken by Seagate.

**Stage V** Market consolidation: CLA agreement favors both companies to enlarge its market boundary. Seagate entered into South Asian countries. Samsung's global brand positioning increased in HDD market, and the competition decreased. However, the market concentration report has to be considered for ethical values that lead to perfect competition.

CLA with competitors strongly supports D'Aveni's concept that firms will go through escalating stages of competition in case of hyper-competition (D'Aveni, 1994). Strategic alliances not only save the litigation cost/piracy cost but also reap revenues. After the Microsoft—Yahoo cross-licensing pact of 2009, for using Microsoft platform in Yahoo search engines, Yahoo's income increased by \$500 million annually and Microsoft is also able to protect its software patent.

## Conclusion

Cross-licensing models share the major physical assets of both parties and aim to protect their intellectual property rights. Technology piracy can be mitigated through these licensing systems. The success of the cross-licensing model depends upon identifying the business partners and to what extent the resources resulting from joint cooperation are compatible. Multiple business models are essential for a single firm while dealing a pact with others. A competitive CLA with regional technological partners is not a risky one, but it is considered to be a new business strategy to get rid of tangible losses.

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