

A Critical Literature Review exploring the hypothesis that the modular production network is a modern development of transaction cost theory and using this to explain and predict the growth of the firm using Apple and Samsung as case studies

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Abstract:

The global mobile phone market is worth \$330 billion and in 2014 Samsung was the market leader with a 31% share up from 5% in 2007. Apple's share declined to 15% from 27% in 2011. The mobile phone industry is in the mature stage of the product life cycle, and as mobile phone technology became standardized, Apple outsourced production and followed the modular production network model as described by Sturgeon (2002). In 2007 Samsung appeared as a 'follow-my-leader' new entrant in the mobile phone market and are Apple's largest competitor.

Two paradigms of internalization and modular production networks are compared using Apple and Samsung as evidence of both at work in the same industry.

Apple is part of the modular production network. It outsources all production of elements and final stage assembly in line with the mature stage of the industry where products are standardized and cheaper to produce. Apple concentrates its resources on innovation and design features. But it has 'lost competence and control to bring about innovations' in the production of elements, which continue to be innovative. (Frenken, K. 2006). Samsung continues to have a vertically integrated organizational structure but also forms part of the modular production network as a component producer and has maintained competence in mobile phone component manufacture. Apple has to work in partnership with Samsung to produce the components which are specific to their needs and continues to transfer knowledge via the R&D embedded within the components to Samsung who have used this opportunity to increase their absorptive capacity as lead firms transfer knowledge via product and/or process instructions to component manufacturers.

Coase predicted that the cost of internalization would increase as firms grow, and Samsung has capitalized on this knowing that most firms will find the costs of remaining fully integrated prohibitive and offer contract-manufacturing services as well as being a proprietary producer. They built a \$26 billion production facility and this scale gives Samsung the opportunity to create entry barriers to other component manufacturers because large sunk costs at certain stages of production create unilateral or bilateral market power. Component sales to Apple represent 17% of Samsung's total component sales, which means

they profit from an increase in Apple market share via component sales, or they profit from increases in sales of their own brand phones.

Apple tried to limit Samsung components in their phones and in 2014 purchased components from other suppliers but had to return to Samsung because they were unable to equal the speed, power and cost of Samsung processors. Samsung also dedicate a large team in their new production facility dedicated to Apple products. Apple is unlikely to vertically reintegrate their component production due to the huge sunk costs in this volatile market. Furthermore Samsung have created a barrier to entry with an investment of \$26 billion in their latest production facility.

Samsung recognize the contribution learning from a lead firm has had on the success of their business and are unlikely to outsource large parts of production to other firms. However it does outsource up to 30% of its production as part of strategic learning tactic to gain access to new technology.

Apple has perfected the new role of lead supplier in its modular production network and Samsung has retained significant competitive advantage in its productive capacity and has used this to develop sustained competitive advantage in absorptive capacity. The evolution of the firm theory can be applied to both firms from different approaches. Outsourcing and modular production networks in technological industries can be used as a way for firms to focus on core competencies, increase efficiency through the reduction of transaction costs and to achieve access to larger and more flexible industry manufacturing capacity to cope with the volatile and price-elastic nature of this unique market. Samsung appear to use outsourcing in a tactical way to reduce the power competitors have over component supply.

Brief Summary of Aims, Content and Results

I discovered that the organizational structure of the two largest mobile phone brands were completely different. They appeared to represent two paradigms of organizational structure. One represented the standard theory of the firm paradigm, which is the internalization approach whilst the other represented the newer paradigm typical of volatile technology industries called the modular production network. One would expect lead firms within the same industry to broadly adopt the same organization structure, so the aim was to conduct a critical literature review to analyze the current theoretical and topical issues related to this to establish whether the firm within the first paradigm would adopt the second paradigm.

My prediction is that Apple will not vertically reintegrate and that Samsung are unlikely to adopt lead firm status in the modular production network.

Methodology Used

Meta-synthesis was used to evaluate the results of multiple research studies and business press articles to identify common themes.

The process was to:

1. Select the review topic
2. Search the literature
3. Gather read and analyse the literature
4. Write the review
5. References

The sources were secondary sources from the business press and research papers concerning the theories associated with the topic.

Conclusions

The evolutionary path of the firm makes unique contributions to the development of organizational structures over time. Even within the same industry, the largest firms do not necessarily adopt the same organizational structure to achieve the same aim of being the industry leaders.

Apple and Samsung have the largest market share in the mobile phone industry. But they have completely different path evolutions as a result of their geographical environment at the point of inception. At this point in time, Apple is a lead player in the Modular Production Network paradigm and Samsung's structure is rooted in the vertical integration theory regarding the growth of the firm.

Policy Implications

The policy implication of this research is for firms to consider carefully the implications of what they outsource. Cost savings and efficiency gains do occur as a result of outsourcing, but at the cost are technology transfer and the potential creation of direct competitors. More consideration needs to be given to the percentage of the total product, which is outsourced to a single firm in order to protect the firm from new entry competitors

Possible Future Research Developments

Two possible future research developments have arisen. Firstly, research into the effect outsourcing has on the firm in the form of lost capabilities and whether this results in the reduction of innovative capability.

Secondly, it would be useful to conduct more in-depth analysis regarding the differences geographical environment makes to the organizational structures and evolutionary paths of Apple and Samsung.