

Balancing the Vertical Integration vs. Out-Sourcing Decision for Quality and Continuity

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Abstract

Manufacturing executives have the option of either vertical integration, or outside sourcing, or some combination of the two. Pros and Cons exist for all option and is dependent on each enterprise's philosophy and situation. Some psychological factors may enter the decision, such as, a desire to expand the company via vertical integration; or alternately to go outside to not be "bothered" with the internal management of vertical integration. The vertical integration positives may include: cost savings, quality improvement, lack of available domestic sources, etc. Cons may be in diverting management energy, unknown technology, etc. Outside sourcing pros may be higher quality, new technology, local source availability, etc. Cons may be lack of confidentiality, off shore location, transportation costs, etc. The literature review indicates reasons for the decision and allows the reader to gain from these insights.

Introduction

The decision concerning vertical integration verses outside sourcing is faced by many manufacturers. Various pros and cons exist and are explored within this literature search paper. Numerous studies have also been done to attempt to focus on the correct decision making logic. However, with the complexity and nuances in each enterprise, no magic algorithm has been discovered, only an attempt to view similar situations and the resulting outcomes of their decisions. Obvious issues are cost, delivery, continuity, quality, and management focus. Interestingly, and often not considered are antitrust issues and psychological aspects that influence the decision.

Literature Search

Ding et al (2013) have concluded that the purchasing objective is to receive the best quality at the lowest price for the enterprise. However, they also note that procured material from an outside operation may result in loss of direct control over the production of the components. Thus requiring a high degree of trust in the vendor to adhere to the approved specifications. In addition, it becomes a requisite that the faster a product can be brought to market, the more potential sales exist thus affecting the procurement decision. In addition, lean methodology demands a minimum of inventory, and any delay in the flow of material causes major disruptions downstream. They have posited that vertical integration is related positively to price premium. The Newswire Association, LLC(2014) noting Smith & Wesson's "Vertical Integration of Precision Plastic Molding Supplier". In integrating their primary plastics molding supplier, their operational costs were reduced and their supply chain from external delays were protected. Additionally, the reduction of costs and decreased uncertainty in the supply chain has a net increase on the value of company stock. It was noted that, acquiring this capability allowed for vertically integrating a key component of the manufacturing operations thus resulting in increased flexibility and the expectation is to eventually lower production costs and reduce risk within the supply chain.

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Xingyi Liu (2016) noted that an individual organization may have the resources necessary to develop their next product, but they may need help getting it to the consumer, or may need a new and unique raw material to create their product. Thus, both upstream and downstream innovation is required permitting vertical integration to become the most efficient. If there is an upstream or downstream innovation that needs to be developed concurrently with what the organization is working on, then vertical integration, with either upstream or downstream has a potential return on investment. Bringing the upstream and downstream operations together allows the innovations to occur concurrently, while maintaining the corporate strategy. Beyond the capital resources required for integration, there are other concerns that must be evaluated prior to integration.

The cost of integration must be carefully weighed against the projected cost of creating an internal entity that is capable of providing the same benefits. Every circumstance will be unique and must be treated as such, but benefits of integrating (as opposed to building an internal organic department) can be a lower cost and a shorter development timeframe. Lastly, in the business environment, the time to market for a new development is often more crucial than the projected costs of development. Fiocco (2016), discusses the advantages and disadvantages to both the organization and the consumer of a partial integration. It is common practice for manufacturers to acquire a portion of their supply chain, or vice versa, in an attempt to increase control of the supply chain in an effort of ultimately increasing profits. Anytime integration, either partial or total, the organization must be careful to consider antitrust laws.

The Clayton Act of 1914 provides that "... the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly." Kersting (2014) noted that if a supplier is integrated into an operation, the number of assemblies would decrease, easing operational burden. The fewer the number of assemblies that a manufacturer has to produce at any time, the lower their operating costs in labor, support and material that must be on hand at any given time. The economic literature has emphasized influential contribution as a major problem within a supply hierarchy if a firm can access privileged information about relevant aspects of the market. Hirotohi Kambara (2013) testing of 1,421 Japanese manufacturing firms between 2007 and 2011 resulted in data analyses that established the relationship between the degree to which a firm engages in outsourcing and its performance is parabolic in shape.

This relationship has not been extensively found in past research. Ultimately, this article suggests that there exists a U-shape relationship between a firm's outsourcing rate and its performance. Their literature reviewed the determinants of vertical integration and outsourcing within the scope of firm boundaries. Hypothesis is developed through use of transaction cost economics and capability theory, tested through use of regression analysis. With an in-house dominant strategy, outsourcing complements an organization's own production to optimize capacity utilization and outsources less cost-efficient production, or is used as a tool to learn how to outsource. With an outsourcing-dominant strategy, in-house production helps maintain complementary competencies and avoids lock-in risk. Managers must think twice before rushing into "me too" outsourcing strategy in which in-house capacities are completely closed. It is important to take a dynamic view of outsourcing that maintains a mixed strategy as an option, particularly in situations that involve an underdeveloped supplier market and/or as a way to develop resources over the long term.

The concept of combining both "make" and "buy" is not new. However, little if any research has special explicitly on exploring the variety of different types of mixed strategies that exist on the continuum between in sourcing and outsourcing. Full in-house production strategies leave very little flexibility in the planning and change process. Hirotohi Kambara (2013) noted that case studies showed that outsourcing of non-standardized products that ran inefficiently in-house were the most logical items to outsource, while other parts were best suited to run in-house were very cost efficient.

It was also found that mixed sourcing/production strategies allowed firms to save on long run cost in situations where "short-term economies of scale might not be possible". Firms may be required to deal with erratic demand and inaccurate forecasting methods and thus could outsource production of non-proprietary components for long run cost savings. When making a strategic outsourcing decision, it is necessary to look beyond just economizing circumstances, such as asset specificity and technological uncertainty, and to include a number of other important factors. They argued that four crucial conditions exist for strategic outsourcing:

- o capabilities,
- o strategic relatedness,
- o relational capability-building mechanisms, and
- o cooperative norms

The need for production flexibility is contingent on a number of factors, including:

- o demand fluctuations,
- o degree of automation,
- o technological development

Tactical use of an external source to balance in-house production is particularly helpful for firms facing constantly fluctuating demand. Arguably, a mixed strategy enables the development of suppliers and knowledge transfer from in-house to external suppliers suggested that firms often need to keep manufacturing capability in-house to manage their outsourcing and found that firms with in-depth expertise still often apply a concurrent sourcing strategy that further helps augment its own knowledge. Zhang, et al (2013) effective evaluation of outsources' capabilities and relationship management are often central for outsourcers to secure sustainable competitive advantage. A study of Pharm Co indicated its outsourcing partners based their dynamic capabilities on:

- o project deliverables,
- o communication,
- o and accuracy of costs,
- o positions (financial assets, number of scientists, spectrum of services, and geographical presence),
- o past experiences

The findings indicated that a pharmaceutical company outsources to partners with high operational capabilities, whereas it builds fully integrated outsourcing relationships only with those that have high dynamic capabilities. Guan et al (2012) noted that the current popularity of vertical integration seems inspired by something more than altering industry structure and minimizing costs, which are the traditionally accepted explanations for vertical integration. Their study found that the most important factors driving the manufacturer's vertical integration of distribution were the demands of large retail chains and the manufacturer's decisions to focus on developing its positioning strategy in the supply chain.

Discussion and Conclusion

Based on the experience of these literature search findings, it may be concluded that the decision of for vertical integrations or outside sourcing follows the reasoning:

- o No universal algorithm exists for a decision
- o Financial investment in either approach may not be the driving consideration
- o Ultimate "speed to market" plays a role
- o Hybrid thinking and parallel approaches may be an option
- o Consideration of anti-trust laws must be considered
- o Management preference plays a role

Students in Operations Management (graduate and undergraduate levels) were questioned, based on their academic studies. Their opinions on strategic decisions concerning out-sourcing versus vertical integration are summarized as follows:

Table I: Rank from Most Important (1) to Least Important (5) for vertical integration

#	Question	1		2		3		4		5		Total
1	Cost advantage	35.71%	15	23.81%	10	14.29%	6	21.43%	9	4.76%	2	42
2	Delivery advant	0.00%	0	19.05%	8	42.86%	18	28.57%	12	9.52%	4	42
3	Continuity of supply advantag	9.52%	4	11.90%	5	30.95%	13	35.71%	15	11.90%	5	42
4	Quality advanta	40.48%	17	42.86%	18	9.52%	4	2.38%	1	4.76%	2	42
5	Antitrust issues	14.29%	6	2.38%	1	2.38%	1	11.90%	5	69.05%	29	42

Table II: Rank from Most Important (1) to Least Important (5) for outsourcing

#	Question	1	2	3	4	5	Total					
1	Cost advantage	50.00%	21	23.81%	10	7.14%	3	9.52%	4	9.52%	4	42
2	Delivery advantage	4.76%	2	26.19%	11	40.48%	17	19.05%	8	9.52%	4	42
3	Continuity of supply advantage	9.52%	4	7.14%	3	30.95%	13	45.24%	19	7.14%	3	42
4	Quality advantage	21.43%	9	33.33%	14	16.67%	7	23.81%	10	4.76%	2	42
5	Antitrust issues	14.29%	6	9.52%	4	4.76%	2	2.38%	1	69.05%	29	42

Considering the small sample size and the lack of any other mitigating circumstances, cost and quality appear comparable for either choice.

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