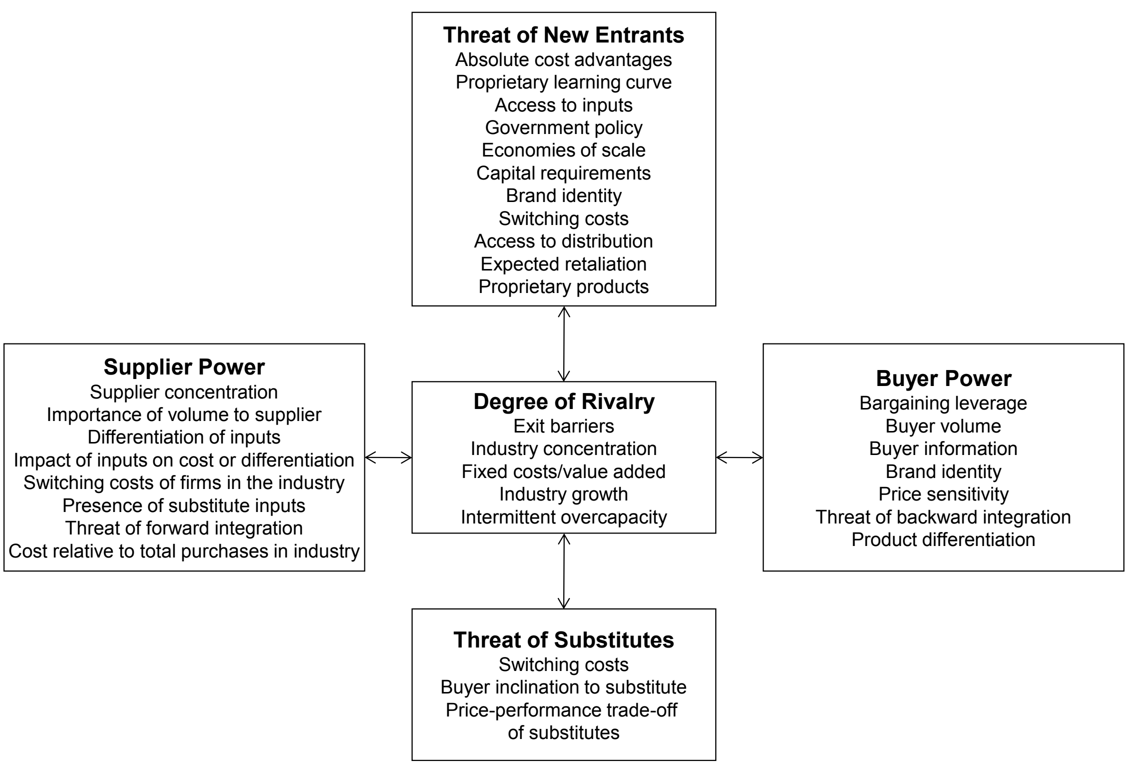
Appendix 2.4.1
Porter's Five Forces

Porter's five forces framework, developed by Michael Porter of Harvard Business School, identifies the five primary forces that drive competition within an industry:[1]

- The threat of new competitors to the market (and the barriers that prevent them from entering).
- The bargaining power of suppliers (as measured by the number of suppliers in a market and the costs of switching from one to another).
- The bargaining power of buyers (in terms of the extent to which buyers can directly affect profitable sales).
- Pressure from substitute products or services (which necessitates differentiation).
- The intensity of rivalry among existing competitors.

These five forces interact with one another to shape the profit potential of an industry (and the primary firms within it) as shown in Figure 2.4.1-1.[2] By investigating each factor, and how they are inter-related, an innovator can objectively characterize the market, the potential for profitability (which is directly related to the market opportunity), and the critical issues that must be managed. For optimal results, the five forces framework should be applied within a single specialty or therapeutic area, such as drug eluting stents (DES). A high-level example for this space is outlined below.

Figure 2.4.1-1 – Porter's five forces (from an overview of the framework developed by QuickMBA.com; reprinted with permission).



Threat of New Entrants

The DES market, although highly competitive, was controlled by two companies for roughly four years. Cordis, a unit of Johnson & Johnson, introduced the first drug eluting stent in April 2003. Boston Scientific followed suit with its own product in March 2004. These two companies had the only two DES in the market until Medtronic made a product launch in February 2008, followed by Abbott in July 2008. One factor accounting for the absence of new entrants was the immense capital requirements associated with developing, testing, and launching a DES. The level of risk is also daunting. Furthermore, the incumbents worked diligently to create additional barriers to entry. For example, both companies constructed formidable patent portfolios, which they enforced aggressively. Evidence of this can be found in Cordis, which had sued Abbott five times for infringing on its patent before its product was even released.[3]

Threat of Substitutes

Substitutes for DES include any drugs that may prevent coronary artery disease and the need for angioplasty. For instance, a patient could take cholesterol-reducing drugs in lieu of receiving angioplasty (which necessitates the use of stents). However, such drugs need to be used regularly and preventively. Once coronary artery disease is diagnosed, the patient may not have access to any comparable substitutes. Bare metal stents, which preceded DES, do not perform as effectively (in terms of restenosis rates), and coronary artery bypass grafting (CABG) is a far more invasive procedure for which many patients do not qualify.

Supplier Power

Suppliers of the raw material used to make DES do have some power, especially those companies that provide the drugs used in the stents. Evidence of this power can be found when suppliers exert themselves against the stent makers. For example, in October 2006, Wyeth, the supplier of the drug used in the Cordis stent, sued Cordis for breach of contract.[4] The two companies eventually settled.[5] Such actions demonstrate that suppliers in the DES market do have some power that must be managed to prevent them from negatively affecting industry/firm profits.

Buyer Power

Buyers of stents include hospitals (the direct purchasers) and payers (indirect buyers through third-party reimbursement). Because of the strength of the clinical evidence favoring DES, and the lack of substitutes, buyers have limited power in this field. However, as buyers (especially insurers) consolidate in the U.S., their purchasing power is likely to increase. This change may eventually lead to pricing pressures on firms in the industry.

Degree of Rivalry

The lack of sufficient buyer power and substitutes in the field, combined with significant barriers to entry, creates an environment that supports high profitability for the established firms in this industry. These desirable conditions, however, have led to an environment characterized by extreme levels of rivalry in the field as the incumbents jockey for position. This intense competition and the presence of some supplier power in the field are among the few factors keeping DES manufacturers in check.

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[1] Michael E. Porter, "How Competitive Forces Shape Strategy," *Harvard Business Review*, March-April 1979.
[2] Ibid.
[3] Manuel Baigorri, "Abbott Fights Fifth Patent Accusation," *Medill Reports*, January 16, 2008, http://news.medill.northwestern.edu/chicago/news.aspx?id=74855&print=1 (March 29, 2014).
[4] "J&J/Cordis' Cypher DES Threatened by Supplier Dispute," *The Gray Sheet*, October 30, 2006, https://www.pharmamedtechbi.com/publications/the-gray-sheet/32/044/jjcordis-cypher-des-threatened-by-supplier-dispute (March 29, 2014).
[5] "Wyeth, Cordis Drop Stent Lawsuit**,"** *Cardiovascular Business News*, January 3, 2008, http://www.cardiovascularbusiness.com/index.php?option=com_articles&view=article&id=12685 (March 31, 2014).

