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Enhancing Product Market Payoff in Small and Medium Internet-Based Firms: A Survey-Based Analysis of Innovation and Competition Factors

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Abstract: This paper aims to explore the relationship between innovation and competition and identify the conditions that affect the industry's innovation and welfare. The authors analyze various factors, including the properties of product market payoffs, to determine whether competition increases or decreases industry innovation. The ultimate goal of this study is to provide policy recommendations that support innovation and competition.To achieve this objective, the authors conducted a survey to collect responses from industry professionals and identify the challenges that hinder innovation and competition. They examined several models and case studies,to understand how competition drives innovation. Despite the challenges, leading business consultants found that increased competition leads to higher productivity in various industries, including manufacturing and services.The study's findings reveal that the recommended policy effectively overcomes the challenges related to innovation and competition sustainability. These findings have practical implications for regulatory organizations, highlighting the importance of adopting these policies to ensure innovation and competition for small and medium-sized internet-based firms.This paper presents a thorough examination of the correlation between innovation and competition, outlines the key elements that foster both innovation and competition, and suggests policy measures to bolster innovation and competition while improving product market outcomes.

1 INTRODUCTION

Competition is a key driver of innovation in any industry. It affects innovation through two primary channels (Li and Nguyen, 2017; Reinganum, 1985). The first channel is related to the reduction in the number of firms performing R&D(research and development), which, holding product market profits equal, can lead to a decrease in the pace of innovation in the industry. The second channel is associated with the direct effect of competition on the product market payoffs, and thus, the profit gap that exists between the market leader and its followers. As a result, competition in the product market can affect the incentives for firms to innovate. The specifics of the product market game determine whether a lessening of competition in the product market will increase or decrease the profit gap between leaders and followers (Shimomura and Thisse, 2012; Bresnahan and Reiss, 1991).

The impact of competition on innovation has been a subject of considerable interest in the economic literature. While some studies suggest that competition stimulates innovation by incentivizing firms to invest in R&D and preventing monopolies from stifling innovation, others argue that intense competition may hinder innovation by discouraging firms from taking risks and investing in R&D (Griffith and Van Reenen, 2021). Industries with less competition tend to innovate less, while firms with high market shares have greater incentives to innovate preemptively (Bloom et al., 2002). Nonetheless, some studies show a weak positive relationship between R&D intensity and concentration, indicating that fewer firms can profitably participate in markets with high fixed costs resulting from R&D competition (Sutton, 2007). Despite this, competition remains a crucial factor in R&D, as firms invest in R&D to gain a competitive advantage in the market (Marshall and Parra, 2019).

There is no clear consensus on the relationship between competition, R&D investment, and innovation. While some research indicates that competi-

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tion encourages innovation, other studies suggest the opposite. Further research is needed to comprehend the complexities of this relationship and its implications for both firms and policymakers (Bessen and Maskin, 2009). Leading business consultants such as Michael Porter (Porter, 2011) and a team from McKinsey Global Institute (Manyika et al., 2010) have independently discovered that increased product market competition among firms within a nation leads to higher productivity for companies in that country. Nevertheless, cross-industry studies are challenging because isolating the effect of competition is difficult. Therefore, the connection between innovation and competition should be approached with caution. However, it is evident that a measurable relationship exists between innovation and R&D, as evidenced by documented co-integration (Hanel and St-Pierre, 2018).

Innovation and competition have become the most challenging activities faced by organizations in today's business environment, yet they often lack regulatory support. According to our survey, 62.5 percent of companies are facing challenges related to regulatory policies, while 43.56 percent are struggling with market competition. To gain a deeper understanding of these challenges, we conducted an online survey with 11 small and medium internet based firms , with participation from key roles such as Project Manager, CTO, Product Owner, Business Developer, Legal Advisor, and CEO. The survey utilized questionnaires specifically designed to map out the areas of innovation and competition, as well as their relationship to product market payoffs.

The key questions for this research are given below,

Q1. What measures can be taken to foster partnership and enhance cooperation among business research and development?

Q2. Which regulations are in place to ensure a fair and competitive environment, with minimal barriers to entry for new players, such as the implementation of net neutrality for internet-based firms?

The main objective of this paper is to conduct a comprehensive analysis of the relationship between competition and innovation, while identifying the key drivers that foster both. Additionally, this study proposes policy recommendations that can be implemented to promote innovation and competition. To achieve these goals, we conducted a review of existing research papers, followed by a survey of 11 small internet base firms to identify gaps in the existing literature. Our survey revealed that many companies face similar regulatory challenges, and while some have partially overcome these challenges, others are unable to compete in the market due to their status as start-ups. To address these issues, we propose a policy guideline that considers the product market payoff, ultimately aiming to maximize innovation and competition. This paper presents an in-depth examination of the correlation between competition and innovation, highlighting the key drivers that foster innovation and competition. Furthermore, it puts forward suggestions for policies to bolster innovation and competition. Finally, the study concludes with a concise summary.

2 RESEARCH BACKGROUND

Blundell, Griffith, Van Reenen (Blundell et al., 2002) found evidence that less competitive industries innovate less, which is consistent with the second principle, while firms with a high market share have greater incentives to preemptively innovate, which is consistent with the fourth principle.

Peter Howitt (Howitt, 2007) argues that competition policy should not be relaxed in hopes of boosting innovation, as more competition actually strengthens the incentive to innovate.However, some studies have observed a weak positive relationship between R&D intensity and concentration, which can be explained by fewer firms being able to profitably fit in markets with high fixed costs resulting from R&D competition (Sutton, 1999).

In a study by Lin and Wu (Lin and Wu, 2021), they examine the impact of competition on firm innovation and find evidence of a non-linear relationship. Their findings suggest that moderate levels of competition can stimulate innovation, while excessive competition may have a negative effect.In a deterministic-R&D model, Dasgupta and Stiglitz (Dasgupta and Stiglitz, 1980) study the role of product market competition in a scenario in which symmetric firms compete like Cournot and in developing process innovations. Under an isoelastic demand assumption, the authors show that an increase in the number of firms decreases each firm's investments, but increases aggregate investment. Reinganum (Reinganum, 1985) incorporates dynamics by studying a sequence of patent races where firms compete through a ladder of innovations. She finds results analogous to DS in a context where product market payoffs are unaffected by the number of competitors.

Aghion et al. (Aghion et al., 2001; Howitt, 2005) and other follow-up papers have examined the impact of product market competition on innovation decisions in duopolistic markets. In these models, the duopolists compete in prices, and competition is cap-

tured by the degree of substitution between the products sold by the firms. The authors observe that innovation is driven by the "escape competition" effect, i.e., the difference between the payoffs before and after the introduction of an innovation. When there are substantial gains to be enjoyed by "escaping," innovation is more likely to occur.

According to several studies, there is evidence of an "inverted U" relationship between market competition and innovation. Specifically, industries with oligopolistic market structures, where there are only a few dominant firms, have been found to exhibit greater levels of innovation compared to industries with either highly competitive or monopolistic structures (Baumol, 2002a; Sutton, 1991).

For instance, Baumol (Baumol, 2002b) argues that oligopolistic industries incentivize firms to innovate due to the presence of strong competitive pressures and the need to differentiate their products from those of their rivals. In contrast, monopolistic industries may lack the same competitive pressures, while highly competitive markets may lead to a "race to the bottom" in terms of innovation as firms focus on cost-cutting rather than product differentiation (Sutton, 1991).According to a study (Zitzewitz, 2003), in the tobacco industries of the United States and United Kingdom, periods of greater competition were associated with more rapid technological innovation, despite both industries having been monopolies in different decades. However, such case studies are not entirely conclusive, as cross-industry comparisons face challenges in isolating the effect of competition (Howitt, 2004).Despite the challenges, greater product market competition among firms within a nation leads to higher productivity for firms in that country across a range of industries, including manufacturing and services (Syverson, 2004).

Moreover, some researchers have suggested that a strengthening of competition policy is likely to have a positive overall effect on innovation, which contradicts Schumpeterian theories (Howitt, 2005). In general, it seems that the relationship between market competition and innovation is complex and varies across industries and circumstances.The level of competition in a market can significantly impact firms' incentives to invest in R&D. This is because firms invest in R&D to gain a product market advantage, which is influenced by the level of competition and the resulting product market payoffs (Marshall and Parra, 2019).

Several studies have found a positive and significant effect of business, public, and higher education R&D on innovation (Cabral, 2000; Gavil et al., 2002). Business R&D, in particular, is seen as necessary for the development of new and innovative products and services (Wei et al., 2001).However, one potential drawback of competition is the possibility of excessive R&D expenditures in a patent race (Marshall and Parra, 2019). This means that firms may engage in costly R&D efforts solely to obtain patents and block their competitors, rather than to develop innovative products that benefit consumers.The main focus of our article is to analyze the current policies and processes, and identify the crucial areas of innovation and competition that can assist small and medium-sized software companies in increasing their profitability in the product market. The primary objective of our survey is to propose policy recommendations that can ensure the sustainability of innovation in small and medium-sized internet-based firms.

3 RESEARCH DESIGN AND METHODOLOGY

The main purpose of this study is to investigate the relationship between innovation and competition among internet-based firms and provide policy recommendations for developing countries to support their business continuity. In order to achieve this goal, we are focusing on key research questions Q1 and Q2, as mentioned in the introduction. To analyze the current scenarios of small internet based organizations, we reviewed previous research conducted, to explored the relationship between productivity, economic policy, and endogenous growth, and suggested certain policies for improvement (Howitt, 2004). Additionally, researchers have analyzed related components of innovation and competition, and facilitated them by sharing common understanding (Howitt, 2004).

To address the challenges faced by internet-based firms in Bangladesh, we conducted a survey with 11 firms, including CEOs, CTOs, product owners, legal advisors, and business developers. The firms were classified based on metrics such as age, size, project or service-based, number of employees, and location. After analyzing the data, the author identified the challenges they face and proposed policy recommendations that consider budget limitations, resources, innovation timelines, and maximize product market payoff. Our goal is to provide a clear understanding of the major challenges faced by internet-based firms and propose policy recommendations to overcome those challenges.

To evaluate the existing challenges, we collected data through both online and offline surveys. To evaluate the data, we followed two methods: Analyzing Factors and Reliability Analysis. Factor analysis is

used to assess observable variables such as performance in specific areas. It is also useful for summarizing a large amount of observations into a smaller number of factors. At the early stage of the survey, the author set the following 3-point scale for each question: 1-No, 2-Partial, 3-Yes. Then the author calculated the average value of each factor area to assess those organizations and be able to understand the gaps.

After collecting the data, we followed Reliability Analysis. Basically, reliability analysis refers to the consistency of measurement. This method can be used to evaluate the survey questionnaire. The mean, median, and mode are three ways of calculating the average. The author can use the scale for each question to assess responses from surveys, and each respondent represents their activities, whether they involve innovation or completion.

4 FINDINGS

4.1 Characteristics of Firms towards the Topic:

In the conducted research, 11 small and medium-sized internet-based companies were evaluated based on multiple criteria, including work experience, company size, location, and job positions. The survey gathered data from participants with varying levels of work experience, with 50% having 5-10 years of experience, 45% having 2-5 years of experience, and 5% having less than one year of experience. The majority of respondents identified as project managers (25%), CEOs (25%), CTOs (20%), business developers (10%), legal advisors (10%), and product owners (10%). Table 1 provide valuable insights into the characteristics of the surveyed companies and their respective workforces.

4.2 Trend followed by company

We have received 24 responses from these 11 companies across different roles for a set of 23 questions focused on various factor areas. Our research was based on nine factor areas, as discussed in previous studies (Marshall and Parra, 2019; Carayannis and Campbell, 2009; Carayannis and Rakhmatullin, 2014; Foundation, 2012; Baker, 2007; Merges and Nelson, 2007).

The aim of this study was to understand the trends of small internet-based companies. To achieve this goal, a survey was conducted and the average value of each question was calculated based on the factor area. Table 2 shows the percentage of factor areas and reflects the trends in internet-based firms. The authors analyzed the average value of each factor area to determine the challenges faced by internet-based firms in terms of innovation and competition. This analysis helped the authors to understand the trends and reasons behind the fluctuation in product market payoff.

Table 1: Survey profile characteristics

Title	Measure
Total Number of company	11
Respondent Experience	50% 5-10 years 45% 2-5 years 5% 0-1 year
Product Types	100% internet based
Product market place	Bangladesh
Respondent Location	Bangladesh
Respondent Role	project managers 25%, CEO 25%, CTOs 20%, business developers 10%, legal advisors 10%, product owners 10%
Company Size	20-70 employees

Table 2: Percentage of following Factor Area.

Factor no.	Factors	Responses
F1	Competition among rivals	43.5
F2	less incentive to invest in R&D	62.5
F3	Antitrust intervention	18.75
F4	First movers gain	32.5
F5	Companies preventing new entrants	37.5
F6	Regulatory, monetary, tax policy.	62.5
F7	Procurement, workforce, market access	43.75
F8	Potential profit	70
F9	Pre-innovation competition.	25

4.3 Reliability Analysis

Reliability analysis is a method used to assess the properties of measurement scales and the items that make up those scales (Gemino et al., 2021). In our study, we used reliability analysis to determine if our questionnaire was related to the nine factor areas of innovation and competition. The questionnaire consisted of 23 questions in total.

To measure the reliability of the questionnaire, we employed Cronbach Alpha method, which is a coefficient of reliability that assesses internal consistency based on the average inter-item correlation. In Table 3, the number of items refers to the 23 survey questionnaires. According to the general rule, the acceptable level of reliability alpha is in the range of 0.6-1.0 (Gemino et al., 2021). Our study obtained a Cronbach Alpha value of 0.943, which indicates a strong level of internal consistency and a satisfactory level of reliability for the survey questionnaire.

Table 3: Unwavering quality insights.

Cronbach Alpha	Cronbachalpha Based on Standardized Things	Item No
0.943	0.940	23

5 SURVEY RESULT ANALYSIS

5.1 Factors that effect innovation

Public policies, such as regulatory, monetary and tax policy, procurements, standards, human capital of the workforce, and market access, play a crucial role in creating an environment that fosters innovation (Foundation, 2012). These policies can have a significant impact on the innovative capabilities of firms and their ability to compete in the market.

The potential profit from innovation is another important factor that influences a firm's innovation efforts. The size of the expected reward to innovation depends on several factors, including the size of the innovation, the size of the market, and the extent to which innovating eliminates the innovator's profit from its pre-innovation technology (Baker, 2007). A larger potential profit from innovation can provide a stronger incentive for a firm to invest in research and development.

However, a firm facing less pre-innovation competition, and therefore having a more steeply downward sloping demand curve, may have a greater legacy flow of economic profits. As a result, the firm may have an incentive to protect its profits by slowing down its innovative efforts (Merges and Nelson, 2007). This highlights the importance of competition in encouraging firms to innovate and invest in research and development.

5.2 Insights from survey Analysis

Based on the pivot chart 1 created from the table 2, it can be seen that the most challenging factor that small internet-based companies face is "Potential profit" (70%). This is followed by "Less incentive to invest in R&D" (62.5%) and "Regulatory, monetary, tax policy" (62.5%). Other factors such as "Competition among rivals" (43.5%), "Companies preventing new entrants" (37.5%), and "Procurement, workforce, market access" (43.75%) also play a role in the challenges faced by these companies. However, factors such as "Antitrust intervention" (18.75%) and "Pre-innovation competition (25%) appear to be less significant compared to the other factors. Overall, this pivot chart provides a visual representation of the key factors that affect small internet-based companies and can be used to inform further analysis and decision-making.

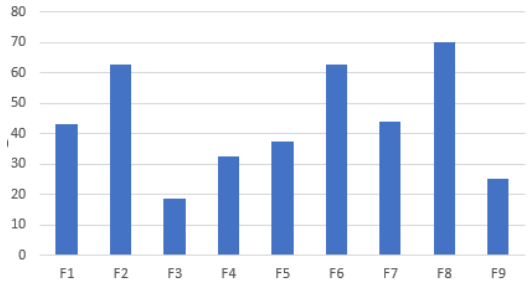


Figure 1: Key factors affecting small internet-based companies.

5.3 Regression Graph

The results of the regression analysis suggest that certain factors, specifically F2, F8, and F6, located above the linear regression line (outliers), got the highest priority from companies. These findings reveal areas where companies facing difficulties and can serve as a guide for policy recommendations with the aim of enhancing the product market payoff. See the following figure 2

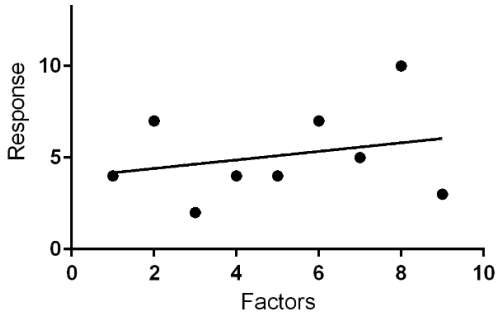


Figure 2: Linear regression.

6 POLICY RECOMMENDATION

Based on analysis of the data, the authors suggest policy recommendations that take into account factors such as innovation, competition, budget constraints, and available resources, with the ultimate goal of maximizing product market returns. These policies recommended to address the particular obstacles to innovation and competition encountered by internet-based companies.

6.1 Antimonopoly and Merger

Based on our survey and analysis, it appears that small and medium internet base firms are facing significant competition from large corporations. To address this issue and promote innovation, the authors recommend implementing anti-monopoly and merger policies (Baker, 2007; Gemino et al., 2021).

a. Reversal of previous mergers that have reduced competition: Reversing previous mergers that have resulted in reduced competition can be an effective way to restore competition and promote innovation. This can be done by breaking up the merged companies or requiring them to divest some of their assets.

b. Laws and regulations geared towards preventing dominant companies from preventing new entrants: Laws and regulations that prevent dominant companies from using their market power to prevent new entrants can help to promote competition and innovation. This can include measures such as prohibiting exclusive dealing, tying arrangements, and predatory pricing.

c. Disallowing shareholders' horizontal shareholdings: Disallowing shareholders' horizontal shareholdings can prevent them from acquiring significant stakes in multiple companies in the same industry. This can help to prevent the formation of interlocking ownership structures that can reduce competition.

d. No shareholder should be able to buy more than 5 percent of competitors in the same industry: Limiting the amount of shares that a shareholder can acquire in competitors in the same industry can help to prevent the concentration of ownership and promote competition.

e. Speeding up antitrust trials rapidly to ensure laws are enforced: Speeding up antitrust trials can help to ensure that laws are enforced in a timely manner and can prevent companies from engaging in anticompetitive practices for extended periods.

f. Eliminating frequent appeals: Eliminating frequent appeals can help to reduce the time and cost of antitrust trials, which can help to promote competition and innovation. However, it is important to ensure that there are sufficient safeguards to protect the rights of defendants.

6.2 Regulation

Our findings suggest that small firms are particularly concerned about market payoff. Implementing the proposed regulations can help to ensure fair competition in the market, which can result in better product market payoff for all firms, including small ones.

a.level playing field where new entrants face low barriers to entry, such as passing net neutrality for internet-based companies (Vandal, 2017).**b.**Creating rules that reduce switching costs and customer lock-in, which promote competition by eliminating barriers to entry (Brynjolfsson et al., 2013).

6.3 Patents and Copyright

Encouraging competition once patents expire, such as faster approval of generics and the importation of generics from developed countries to under developed countries, which can promote innovation and serve the public interest.

7 CONCLUSION

The primary objective of this study is to enhance the product market payoff of small and medium internet-based firms through the lens of innovation and competition. To achieve this goal, the authors conducted a survey to map out the areas of innovation and competition factors, along with policy recommendations.

Our research focuses on innovation and competition, with specific factor areas outlined in Table 1. Using various research methodologies, the authors evaluated the existing practices and policies of these firms, and related them to standard policies and processes to offer suggestions for improving competition and product market payoff. The authors received

24 responses from 11 internet-based firms, which enabled us to identify their gaps and activities regarding innovation and competition. Through result analysis, the authors elaborated on the factors that impact innovation and competition in internet-based products. Finally, authors proposed policy recommendations that consider budget limitations, resources, and ultimately maximize product market payoff.

Future research in this field should prioritize identifying and addressing the factor areas that have the greatest impact and optimizing any gaps. To gain a better understanding of the reasons behind fluctuations in specific factors, researchers should analyze trends in greater detail. In addition, conducting further surveys to validate product market payoffs and performing more comparative evaluations with the company's internal processes would be advantageous. Implementing standard policies and existing policies in parallel is critical to ensure a continuous improvement process. In order to improve specific factors, it is essential to conduct a comprehensive analysis of that area and identify all possible related tasks. Such an approach would have a significant impact on enhancing competition and promoting innovation.

REFERENCES

Aghion, P., Harris, C., Howitt, P., and Vickers, J. (2001). Competition, imitation, and growth with step-by-step innovation. *Review of Economic Studies*, 68(3):467–492.

Baker, J. B. (2007). Beyond schumpeter vs. arrow: Antitrust fosters innovation. *Antitrust Law Journal*, 74:575.

Baumol, W. J. (2002a). *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton University Press, 1st edition.

Baumol, W. J. (2002b). The free-market innovation machine: Analyzing the growth miracle of capitalism. *The Journal of Entrepreneurial Finance and Business Ventures*, 7(1):1–18.

Bessen, J. and Maskin, E. (2009). Sequential innovation, patents, and imitation. *The RAND Journal of Economics*, 40(4):611–635.

Bloom, N., Griffith, R., and Van Reenen, J. (2002). Do rd tax credits work? evidence from a panel of countries 1979-1997. *Journal of Public Economics*, 85(1):1–31.

Blundell, R., Griffith, R., and Van Reenen, J. (2002). Dynamic count data models of technological innovation. *The Economic Journal*, 112(478):F311–F332.

Bresnahan, T. and Reiss, P. (1991). Entry and competition in concentrated markets. *Journal of Political Economy*, 99(5):977–1009.

Brynjolfsson, E., Hu, Y. J., and Rahman, M. S. (2013). Competing in the age of omnichannel retailing. *MIT Sloan Management Review*, 54(4):23–29.

Cabral, L. M. B. (2000). *On the dynamics of innovation and competition: An investigation of the interactions between market structure, technology, and competition*. Massachusetts Institute of Technology.

Carayannis, E. G. and Campbell, D. F. J. (2009). Mode 3 and quadruple helix: Toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3-4):201–234.

Carayannis, E. G. and Rakhmatullin, R. (2014). The quadruple/quintuple innovation helixes and smart specialisation strategies for sustainable and inclusive growth in europe and beyond. *Journal of the Knowledge Economy*, 5(2):212–239.

Dasgupta, P. and Stiglitz, J. E. (1980). Uncertainty, industrial structure, and the speed of rnd. *The Bell Journal of Economics*, 11(1):1–28.

Foundation, N. S. (2012). The science of science and innovation policy (scisip) program solicitation.

Gavil, A. I., Kovacic, W. E., and Baker, J. (2002). *Antitrust law in perspective: Cases, concepts and problems in competition policy*. West Publishing Co.

Gemino, J., Horner Reich, C., and Serrador, P. (2021). Project management and its effects on innovation. *Project Management Journal*, 52(1):6–21.

Griffith, R. and Van Reenen, J. (2021). Product market competition, creative destruction and innovation. *CEPR Discussion Paper No. DP16763*.

Hanel, P. and St-Pierre, J. (2018). Competition, innovation and productivity: A review of theory and evidence. *Journal of Economic Surveys*, 32(1):1–50.

Howitt, P. (2004). Endogenous growth, productivity and economic policy: A progress report. *Canadian Journal of Economics/Revue canadienne d'économique*, 37(3):587–710.

Howitt, P. (2005). Competition and innovation: An inverted-u relationship. *The Quarterly Journal of Economics*, 120(2):701–728.

Howitt, P. (2007). *Innovation, Competition, and Growth: Schumpeterian Ideas for the 21st Century*. MIT Press, 1st edition.

Li, M. and Nguyen, B. (2017). When will firms share information and collaborate to achieve innovation? a review of collaboration strategies. *The Bottom Line*, 30(1):65–86.

Lin, C.-H. and Wu, Y.-L. (2021). Competition and firm innovation: A non-linear perspective. *International Journal of Industrial Organization*, 78:102930.

Manyika, J., Mendonca, L., Remes, J., Klubmann, S., Dobbs, R., Karkun, K., Klintsov, V., Kukenshoner, C., Nikomarov, M., and Roxburgh, C. (2010). *How to compete and grow: A sector guide to policy*. McKinsey Global Institute.

Marshall, G. and Parra, A. (2019). Innovation and competition: The role of the product market. *International Journal of Industrial Organization*, 65:221–247.

Merges, R. P. and Nelson, R. R. (2007). On the complex economics of patent scope. *Berkeley Technology Law Journal*, 22(2):567–607.

Porter, M. (2011). *Competitive advantage of nations: creating and sustaining superior performance*. Simon and Schuster.

Reinganum, J. (1985). Innovation and industry evolution. *The Quarterly Journal of Economics*, 100(1):81–99.

Shimomura, K. and Thisse, J. (2012). Competition among the big and the small. *The Rand Journal of Economics*, 43(2):329–347.

Sutton, J. (1991). *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration*. MIT Press, 1st edition.

Sutton, J. (1999). *Technology and Market Structure: Theory and History*. MIT Press, 1st edition.

Sutton, J. (2007). Market structure: theory and evidence. In *Handbook of industrial organization*, volume 3, pages 2301–2368.

Syverson, C. (2004). Product substitutability and productivity dispersion. *Review of Economics and Statistics*, 86(2):534–550.

Vandal, S. (2017). The battle for net neutrality: A case study of activism and the Internet as a public sphere. *Media, Culture and Society*, 39(2):238–255.

Wei, Z., Liu, Z., Song, L., and Romilly, P. (2001). Productivity, innovation and r and d in chinese enterprises. *International Journal of Innovation Management*, 5(3):363–386.

Zitzewitz, E. W. (2003). Competition and innovation in the United States and United Kingdom tobacco industries, 1900–1990. *Review of Industrial Organization*, 22(3):179–197.