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Analyzing the Differential Impacts of Customer Concentration on the Performance of Service and Product Firms

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Abstract:

The study examines the structural distinctions between service-oriented and product-oriented companies regarding the influence of customer concentration on the performance metrics of each firm type. The research posits that customer concentration may affect costs, inventory turnover, accounts payable, accounts receivable, return on assets, and gross margins differently in service firms compared to product firms. Furthermore, this paper explores the effect of major customers on firm performance. A comprehensive review of existing literature was conducted, yielding significant insights. Building on prior research findings, the study aims to delve deeper into the impact of customer concentration across various industries by identifying their structural variations.

Keywords:

Customer concentration, Product firms, Service firms, Firm performance.

1. Introduction

This study examines the differences between service and product firms in terms of how customer concentration impacts the performances of those two kinds of firms. A service firm is defined as a firm that generates income by providing services rather than selling physical products. Examples of service firms include restaurants, hotels, airports. A manufacturing business, the product firm, is any business that uses raw materials, parts, and components to assemble finished goods. Some examples of product firms include Apple, which designs, develops, and sells consumer electronics, computer software, and online services and provides products like iphone, ipad and other devices. Over the years, customer concentration, the measure of distribution of revenue among customers, of firms increases steadily, which brings attention to its impacts on firm performances. Previous studies show that higher customer concentration "have higher returns on assets, lower selling, general, and administrative expense, and enhanced asset turnover rates" [1] while lower customer concentration may not present as much risk as higher customer concentration [2].

The paper focuses mainly on exploring impacts brought by the customer concentration on the service and product firms because of their structural differences. Below, there are key differences which will allow for a better understanding of how different companies make policies for their operations.

Cost of Goods Sold: One of the distinct differences is cost. Firm's expenses can be categorizedinto two types: cost of goods sold (COGS) and selling, general, and administrative expenses (SG&A expense). Product firms spend money primarily on inventory, labor, and property, plant,and equipment, resulting in high COGS. In contrast, the main cost for service firms is employee salaries and, resulting in low COGS. Research finds that "suppliers exhibit even more rigid coststructure when both product market competition and customer concentration are high" and that "Suppliers with more concentrated customer bases hold less inventory" [3,4]. This means that product firms, which own more inventories, tend to have higher inventory turnover compared to service firms.

(1) Accounts Receivable Turnover: Another key difference between product and service firms is their accounts receivable turnover. Generally, product firms see a significantly higher accounts receivable turnover than service firms. This is likely driven by the fact that service companies tend to finish payments shortly after the transaction is completed, in contrast to product companies,

which tend to extend the payment process. Banerjee, Dasgupta, and Kim present evidence that principal customers settle their accounts payable with supplier firms more promptly (i.e., use less trade credit) when the supplier is in financial trouble" [5]. This means that major customers tend to have higher accounts receivable.

(2) Accounts Payable Turnover: Accounts payable turnover is another key difference between these two types of firms. Product firms need to pay more things as they own more inventories and PP&E than the service firms, so they would have a higher rate of accounts payable turnover. However, "sales to major customers do not directly influence the supplier's days' purchases in accounts payable" [6]. Lastly, the return on assets between the two firms is also a clear difference. Service firms may have a higher return on assets since they would have fewer assets compared with the product firms. Previous research suggests that return on assets are negatively impacted as sales to major customers increase [6].

In order to understand the differences in customer concentration's impact on product and service firms, the structural differences between the firms are being identified first. After identifying key differences, tests were run to verify the relationship between customer concentration and various controls such as growth, industry, year, etc. In order to understand whether the differences are significant, another test was run to make comparisons.

In the following sections, this paper will discuss relevant background information and literature for this study (Section 2), present the hypotheses (Section 3), and share key conclusions for moving forward (Section 4).

2. Literature Review

There are a variety of studies that describe how customer concentration impacts firm performance. Recent empirical work indicates that supplier profitability would be lowered by buyer concentration in competitive industries rather than oligopolistic industries[7], but the transaction costs of trading with major customers can be lowered by making more relationship- specific investments with greater customer concentration [3]. Business revenue can increase significantly with the help of major customers, and their relationship with the suppliers shifts once the major customers realize their value to the firms; firms change costs according to major customers' demand. Once the firm has committed resources to production for a major customer, these customer-specific investments represent costs that the firm cannot fully recover unless they maintain the relationship.

Major customers can also negatively impact firms. Recent literature finds that gross margins and return on assets are negatively impacted as sales to major customers increase. Since the total suppliers incur remain the same, lower return on assets would mean that other costs, including inventory carrying cost,and advertising, increases. [6]. It would be risky to depend on a major customer for a large percentage of sales. This is because if the major customer faces financial distress or declares bankruptcy, the supplier would lose a substantial amount of sales.[3]. Smaller manufacturers are more vulnerable because they may face special cost burdens in implementing the preferential treatment, while large manufacturers are less vulnerable because they are more likely to have significant global sales which give them more clout to resist the negative impact of domestic buyer concentration[7].

Major customers can put firms at risk, even though risk declines as the business relationship matures [1]. Irvine et al argue that it is inadvisable to examine the impact of having a major customer on suppliers at a single point in time.[1] Instead, a more complete understanding of the effects should be developed by applying the concept of the relationship life cycle. In general, the relationship between customer concentration and firm performance is dynamic. This is because the characteristics of early supplier firms are often markedly different than that of the mature firms. Supplier firms in an early relationship tend to have a higher probability of losses due to larger fixed costs, greater operating leverage, while mature firms tend to have improvements in operating margins and profitability due to lower cost of credit and increasing technology transfers. Itzkowitz has reported that as the customer concentration of a firm increases, measured by the percent of sales to important customers, the cash holdings of the firm increases proportionately.[8] Existing firms have shown a trend that suppliers in an important buyer-supplier relationship hold more cash

averagely than firms that are not in the relationship, as cash holdings may serve as a risk management tool, which is valuable to firms with high external financing costs and large growth opportunity.

It is also important to explore the impact of major customers on the two firm types noted above, service and product. Customer concentration impacts these two types of firms in different areas. This is also important for the exploration of whether these firm types are positively or negatively impacted by customer concentration. Research shows that the biggest difference between service firms and traditional manufacturing is that service firms primarily handle perishable and intangible goods, (ex., travel, accounting, education, etc.) that are produced, presented, and consumed closely, sometimes in a single episode [9]. Service firms' cost consists primarily of COGS and labor costs, also called prime cost, and makes up 60% of total costs for service firms [3]. However, product firms' costs include inventory, labor, property, plant, and equipment, which may result in higher costs compared with the service firms.

3. Hypothesis

Key structural differences between service and product firms suggests that customer concentration will impact these firm types in different ways. The structural differences noted above will help us identify the impacts of customer concentration on firm performance.

Empirically, Chang et al find that "suppliers exhibit even more rigid cost structure when both product market competition and customer concentration are high."[3] Firm's expenses can be categorized into two types: cost of goods sold (COGS) and selling, general, and administrative expenses (SG&A expense). Since product firms spend more money on inventory and other assets, their cost must be higher than the service firms whose cost mainly consists of employees' salaries and a small portion of the cost of goods sold. As product firms would have higher direct costs of producing goods, they tend to have higher COGS. However, service firms spend more money on non-production costs, so their SG&A expense would be higher than service firms'. Patatoukas suggests that an increase in customer concentration leads a decrease in SG&A expenses per dollar of sales[4]. Similar findings by Gosman et al suggest that major customer's buying power can lower the overall cost of purchases since they would share some cost, for example, advertising[10]. The substantive supply arrangement also can reduce the administrative costs of managing inventory.

H1a: Customer concentration impacts the COGS of product firms more than the COGS of service firms.

H1b: Customer concentration impacts the SG&A of service firms more than the SG&A of product firms.

Patatoukas finds that "Suppliers with more concentrated customer bases hold less inventory."
[4] Compared to service forms, product firms own more inventories for their production. To illustrate, the average inventory turnover rate for product firms is 3.89. The average inventory turnover rate for service firms is 53.07. For product firms, inventory turnover reflects how efficiently products are moving along the supply chain and the inventory turnover ratio can help product firms to pinpoint their sales. Conversely, service firms do not need to heavily rely on inventory turnover as they don't need as many inventories. They tend to focus more on their direct relationship and communications with their customers. Therefore, the assumption that product firms have a higher inventory turnover, and service firms have higher customer concentration and hold fewer inventories is made.

H2: Product firms with a concentrated customer base may have higher inventory turnover than service firms with a concentrated customer base.

Banerjee, Dasgupta, and Kim present evidence that principal customers settle their accounts payable with supplier firms more promptly, indicating that major customers would help the firms to have higher accounts receivable turnovers[5]. If the customers are able to pay the payables in a short period of time, suppliers can collect their payables in short sessions. In addition, service firms' average accounts receivable turnover is 11.54[11]. While service firms' average accounts receivable turnover is 31.49. Service firms' accounts receivable turnover is much higher than that of product

firms. Service companies' customers tend to finish their payments shortly after the trade, while product firms tend to hold on to the process longer.

H3: Service firms with a concentrated customer base may have higher accounts receivable turnover than product firms with a concentrated customer base.

When determining the impact on the cash conversion cycle, Gosman & Kohlbeck suggest that "sales to major customers do not directly influence the supplier's days' purchases in accounts" [6]. The difference in accounts payable turnover between the two firms is closely related to the scale of inventories they own. The second hypothesis states that product firms have a higher inventory turnover than service firms because they own more turnovers, so product firms need to pay more debts as they own more inventories and property, plant, and equipment. Therefore, product firms have a higher rate of accounts payable turnover. Although customer concentration affects firms' inventory turnover, we hypothesize that customer concentration does not necessarily have a direct effect on firms' accounts payable.

H4: Customer concentration does not directly affect the firm's rate of accounts payable. Return on assets is calculated by dividing the operating income by total assets. As mentionedearlier, product firms hold more accounts receivable, therefore, they will have less return onassets than service firms. Product firms need more property, plant and equipment and inventories which also made them having more total assets than service firms. Thus, product firms' return on assets rate is lower than service firms. According to Gosman & Kohlbeck, as sales to major customers increase, return on assets are negatively impacted[6]. As a result, the hypothesis, when the two firms have the same customer concentration, productive firms' return on assets is lower than service firms' return on assets, is made.

H5: Service firms with a concentrated customer base will have higher return on assets than product firms with a concentrated customer base.

Previous prograph states that product firms have higher cost of goods sold compared with service firms. Therefore, their gross margins might be lower than service firms'. According to Gosman & Kohlbeck, gross margin would be negatively affected by the increasing customer concentration [6]. This indicates that suppliers with a more concentrated customer base tend to have significantly lower gross margins. Decreasing in gross margin also causes decreases on return on assets as major customers increase. In addition, the average gross margin percentage for product firms is 27.6%. The average gross margin percentage for service firms is 48.63%.

This shows that services' firms gross margin percentage is much higher than product firms'. H6: Product firms with a concentrated customer base will have lower gross margin percentagethan service firms with a concentrated customer base.

4. Conclusion

Previous research suggests that the biggest difference between product firms and service firms is that service firms primarily handle perishable and intangible goods, and thus mainly focus on customer concentration's impact in general. In an era where customer concentration is on an upward trajectory, it was important for this study to further identify the structural differences between the two firms and how customer concentration impacts them. These hypotheses focus on costs, inventory turnover, accounts receivable, accounts payable, return on assets, and gross margins. This research proposes an alternative way for others to study the different impacts of customer concentration on firm performances. Future research is needed to verify the hypothesis states in this paper, and compare the significance of the impacts.

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