PURCHASING STRATEGIES AND AN IMPLEMENTATION IN MANUFACTURING COMPANY

Irmak Daldır[1], *Beyza Yavuz**[2]

Abstract – *Considering the competition in today's world, the power of a business does not depend on just their own performance, every single units' performance in a supply chain directly effects the business' success. Therefore, the selection of suppliers in a supply chain and the evaluation of them are critical activities that provide cost benefits, product quality and help to improve customer satisfaction. Purchasing is an important element of a business' organization and it is the initial step of production. The paper provides a framework for the importance of logistics in purchasing and informs about the real life purchasing operations of the companies. This study also gives an extensive field research and asserts the main considerations of purchasing strategies.*

Keywords – procurement, rationalization, strategic purchasing, supply base optimization

1. INTRODUCTION

Competitive environment forces firms to differentiate themselves from their rivals. In order to achieve this mission, they seek several methods at different working functions. Purchasing is only one of these. In point of fact, it is a traditional activity, which is managed by firms for a long time. Even so, for the most of the companies the purchasing of both raw material and semi-manufactured goods could rise to the 70 percent of their total cost [1]. Therefore, gaining advantage at this area will have a huge impact on the company's budget. In addition to possible cost advantages of purchasing activities, it is one of the most important elements of a supply chain. Actually, purchasing is a main responsibility in inbound flows [2]; but poorly managed purchasing activities would cause a detrimental effect through the supply chain. For instance, the end user's satisfaction of a particular good is determined by different factors; like quality, cost, delivery, service and quantity. Even the good is a high quality product if targeted customer cannot afford it, the quality of that good will be meaningless. On the contrary, if the good is cheap but its quality is under the customers' quality expectation again the customer satisfaction will not be achieved. In order to find the balance between these kinds of tradeoffs, different kinds of supplier selection methods should be analyzed.

1.1. Definition and Objectives of Purchasing

Purchasing is not only buying. It is getting the right product or service at the right time, the right quantity, at the right cost, the place, and condition or quality [3]. In addition to this, its meaning is narrower than procurement. According to reference [4], purchasing involves determination of the need, supplier selection, contracting, ordering, expediting, and follow-up or evaluation. Procurement includes appraisal, sourcing, and delivery. Since our aim is defining strategic purchasing our scope will also include appraisal and sourcing.

The main aim of purchasing is adding maximum value to the organization and creating competitive advantage [5]. For realizing this, purchasing requires operating such activities like evaluating and selecting suppliers, buying, negotiating and contracting, researching supply market and following business trends, conducting supplier measurement and improvement projects, developing purchasing systems, working on supplier relationship management and maintaining quality.

As mentioned before, the procurement of right quality, from the right source, in the right quantities, at right time and at right place directly affects the successfulness of the manufacturing activity. This five Rs are known as the art of efficient purchasing [6].

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Purchasing is an important operation for businesses. In addition to this, effective purchasing has cost reduction benefits too. According to reference [6] the advantages of efficient purchasing can be classified as efficient administration, the quality of the final product, delivery in time, increase in profitability and optimum utilization of capital. S. Bhat K. defines four factors that have contributed to the rising importance of purchasing [7]. These are mainly post-war shortages and governments increasing self defense requirements, cost of holding inventory and being stock out, increasing competition between companies, and more complicated trade as a result of global supply chains.

2. PURCHASING STRATEGIES

2.1. Supply base optimization

All businesses are connected to each other by value adding purchasing activities of goods and services from a group of suppliers [8] [9]. This group of suppliers is called the supply base, and the buying company that purchases from its supply base is called the focal company [10]. The focal company is located at the center of the supply base to coordinate and control its buyer-seller relationships. K. D. Choi T.Y. shows the relationship between the focal company and the supply base which is shown in Figure 1. [10]

Optimal configuration of the supply base is an important side of supply chain management [11]. The optimal number of suppliers that an organization should maintain is a critical decision for the supply managers. According to Handfield et al., this question can be solved by the measurement of supplier performance which is the basis of supply base optimization. It is a continuous process that preserves supply base efficiently [3].

R. J. Trent meantions that its aim is generating a pool of enough suppliers for each purchasing item, category or commodity. The author also underlines that its aim is not to decrease the number of suppliers; it is finding the ideal number and mix of capable suppliers. So that, its definition should also include the switching supplier possibility [12]. Based on this information to show the optimized supply base figure 2 is developed from figure 1, which represents the possible suppliers and the selected suppliers by focal company.

Benefits of the optimized supply are summarized by Handfield et al. as easier administration, use of full-service suppliers, reduction of risk, and lower cost [3].

Easier Administration

According to D. J. Wisner et al., it is stated that since there are fewer suppliers (or optimal number of suppliers) there will be frequent interactions between suppliers and firm so collaboration will be closer and often. It is also underlined that delivery and quality will be better if supply base optimization is applied [13]. Moreover, it is indicated that there would be less contracts or purchase orders to write, fewer material releases

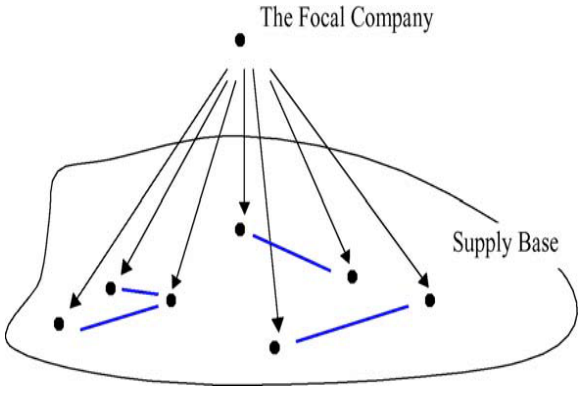


Figure 1. Focal Company - Supply Base relationship cited from [10]

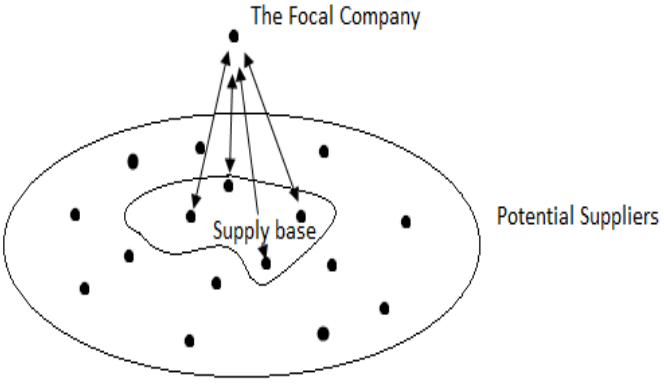


Figure 2. Optimized Supply Base

and receipts, materials would be easier to monitor, and fewer accounts in debit [14].

Use of full-service suppliers

As the concept of supply base optimization there will be enough or ideal number suppliers, so that if a manufacturing firm buys a material from single supplier instead of more suppliers as the amount of order increases the supplier differentiate itself for the firm's needs. In other words, it can work as tailored made. It is illustrated that the need for electrical wiring at motor industries is continuous and stable [3]. Instead of buying from different 10 suppliers using one supplier can result for them increased reliability, guaranteed quality, less developing time for customer needs and main car design.

Reduction of risk

As indicated before having closer collaboration with suppliers have several advantages, which are mainly more on time deliveries and less variability of materials.

Lower Cost

According to the main motivation of the companies to apply supply base optimization is cost benefits. Since it is expected to decrease at the number of suppliers theoretically, the amount of order would be larger. Larger orders provide economies of scale [15]. Naturally, higher quantity buying will increase companies bargaining power.

2.2. Risks of Supply Base Optimization

According to R. J. Trent, it is stated that "optimization is nothing without risk" [12]. And implied two main risks which are keeping wrong suppliers or if it is supply base reduction, it can cause problems when it is made rapidly or deeply. There are more several risks which are supplier dependency, absence of competition, supply disruption, and overaggressive supply reduction [3]. These are the risks which can occur with fewer suppliers. Mainly supplier dependency means if the supply is too depended to the buyer company, which means the most of the income of supplier comes from single source. Reduction of the orders or changes that supplier cannot suit up could lead to financial problems at the supplier site. Financial problems at the supplier site affect directly the buyer. Afterwards, competition always is a motivation for companies to make better. If there are not good competitors suppliers have more power on different variables. For example, one of them is price, which could reduce the bargaining power of the buyer. Supply redaction can come out by several problems. The most common one of them is disasters. For example, recently the tsunami disaster happened in 2011. According to Beissmann, Honda stopped working for three days at least [16]. 113 of the supplier were at the disaster area and they even could not connect 44 of them. For 16.000 vehicles were estimated to meet delays because of factory closers. Applying multi sourcing or at least selecting suppliers, who has the ability of producing at different factories same materials, can be the basic solutions.

2.3. Supply Base Rationalization

Generally, the researches on the supply base management deal with the number of suppliers that the focal company has in its supply base [10]. Most of the companies tend to reduce the number of suppliers in their supply base under the name of supply base rationalization. The reason behind this attitude is the willingness of decreasing administrative and transaction costs and cost savings from focusing on greater purchase volumes with less suppliers [17].

Supply base optimization determines the best number of suppliers and works on the reminder to improve and develop them. On the other hand, supply base rationalization removes the worse performing suppliers and works with the best ones [18]. There are four supply base rationalization methods that are competency staircase approach, improve or else approach, triage approach and 20/80 approach [12].

Competency staircase approach

Competency staircase approach requires that the suppliers must pass a series of hurdles similar to climbing a staircase. Each hurdle eliminates some suppliers and brings the remaining ones a step closer to the ultimate goal of staying in the supply base. Purchaser defines the hurdles--possible areas include quality, delivery, technical capability, willingness to share information, supplier size etc. [18]. First hurdle is a basic quality standard. Second hurdle is the ability to meet technical product specifications and the third hurdle can be lead time, proximity or anything that the purchase manager decides [12].

Improve or else approach

In this approach, all suppliers, regardless of history, have a chance to remain in the supply base. The suppliers have a specified period to meet stringent performance requirements in cost, quality, delivery, etc. Suppliers who fall short may soon become ex-suppliers [12].

Suppliers may perceive this approach as heavy handed.

Triage approach

Triage approach requires careful evaluation of the performance record of each supplier to place suppliers into one of three categories [19].

First category (and likely the largest) includes those suppliers incapable of meeting current or future performance requirements.

Second category includes suppliers falling short but demonstrating performance potential.

Third category includes near-perfect suppliers requiring no improvement assistance.

20/80 Approach

This approach comes from the Pareto's rule and it is used when there is a rapid need for the reduction. 20/80 approach requires an analysis to identify the 20% of suppliers receiving the majority of purchase dollars. The company should also identify the minority of suppliers causing the majority of problems. The results shows that 80 % of the quality and general problems come from 20 % of the suppliers [19]. 80% of the purchases come from the 20 % of the core suppliers, so others can be considered for elimination. However, the disadvantage of this approach is the possibility of losing capable suppliers that receive small orders [12].

2.4. Supplier Selection & Evaluation

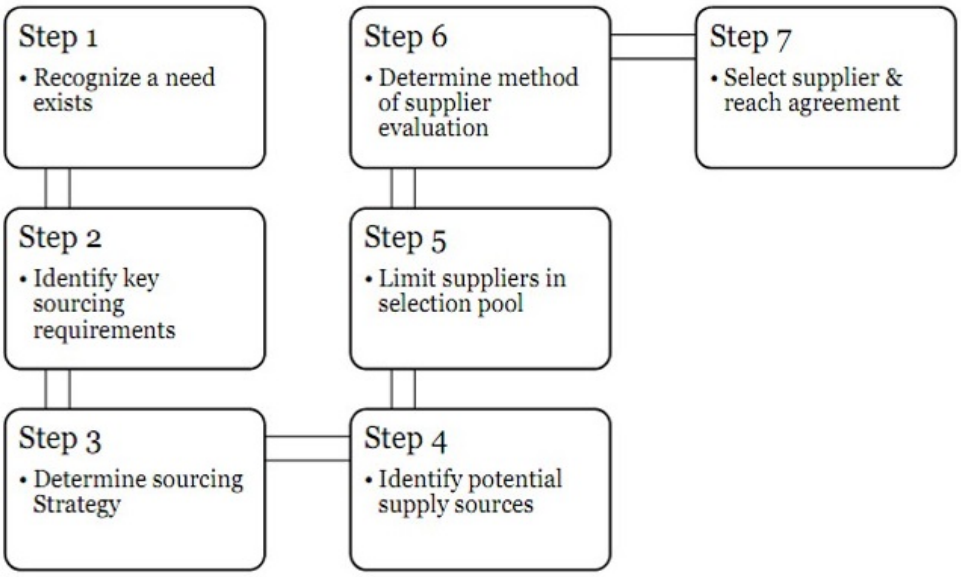


Figure 3. Supplier Selection Process [32]

Supplier selection is a critical decision for the supply manager and it has to be performed well and quickly [12]. As usual, companies want to work with the best suppliers and gain competitive advantage in the long run. Purchasing managers have to make their decisions based on facts, not the perceptions. For this reason, to keep a healthy buyer-seller relationship, getting frequent feedbacks about the supplier's performance has a critical impact [13].

R. J. Trent advises a methodical approach for supplier selection process [12]. Figure 3 shows the suggested seven-step supplier selection process: For the beginning, the purchase manager needs to recognize a need when it exists. This could be happen on new product development teams, from internal customer requision, during supply base reduction or optimization, during market testing or outsourcing. Step 2 is identifying key sourcing requirements which is a critical step that determines the critaria for the supplier selection. Step 3 is determining the sourcing strategy and step 4 is identifying potential supply sources. Step 5 requires to make a reduction in identified suppliers and puts the selected ones in a selection pool. In step 6, purchase managers determines the supplier evaluation method and makes the selection in the last step.

The Development Project Committee of the National Association of Purchasing Agents (U.S.A.) suggests three methods for evaluating the past performance of the supplier; each of which differs in its ease of use, level of subjectivity, required resources and implementation cost. These three methods are: categorical technique, scoring model – scorecards and cost based techniques [18]. Table 1 shows a comparison of the advantages and disadvantages of these three methods.

Willis T.H. tells that in the categorical technique, the purchaser evaluates the supplier and ranks as being good, unsatisfactory, or neutral on all the attributes considered in the evaluation process [20]. Accourding to this approach all the attributes are equally weighted. The scoring method assigns weights to each criteria and evaluates the attribute scores for each alternative. Assigning criteria weights in an objective manner and standardizing all the attribute units are some of the key issues with this approach. The cost-based method looks at the cost of each factor as a percentage of total purchases for the supplier. However, this approach has difficulties in developing cost accounting systems for this purpose [21].

Table 1. Comparison of Supplier Measurement and Evaluation Systems [3]

System	Advantages	Disadvantages	Users
Categorical	Easy to implement Needs minimal data Different people contribute Good for firms limited resources Low cost	Least reliable Less frequent evaluations Most subjective Usually manual	Smaller firms Firms that are developing new evaluation systems
Scoring Model	Flexibility Gives supplier ranking Moderate costs Quantitative and qualitative factors combined into a single system	Subjective inputs Depends on the criteria and weights Tends to focus on a few criteria	Most firms
Cost-Based	Gives a total cost approach Specific areas on non-performance identified Objective supplier ranking Greatest potential for long range improvement	Based on accounting conventions Most complex Higher costs	Larger firms Firms with a large supply base

Categorical technique

After deciding on the list of evaluation criteria, the simplest method that can be used is the categorical method. Each supplier is evaluated accourding to basic criterion like good, neutral and unsatisfactory [22]. A supplier's overall ranking can then be based on the number of criteria ranked as good, neutral and unsatisfactory. The biggest arguement about this approach is that it is based on intuitives, personal judgements and the least practice among the other evaluation methods. However, because it is an inexpensive and an easier method, it is a very preferable approach for the purchase managers of small firms.

The advanteges of categorical method as: easy implementation, lowest implementation costs and necessity for minimum data [23]. According to this study, the disadvantages of this approach are equal weight to all criteria and being subjective.

Scoring model – scorecards

According to categorical method all criteria are assumed as having equal importance. The scoring model determines a set of scores indicating the relative importance of each criterion, adding up to unity or 100%. After the purchaser gives the determined scores to each supplier for each criteria, the sum of each supplier's scores are called the total score of this supplier. This model provides flexibility for the purchaser and helps to moderate costs. On the other hand, the biggest difficulty of this method is the determination of the scores to use. Therefore, the management of each company has to determine the scores subjectively by considering its own situation [22].

Handfield et al. underlines the steps of implementing scoring model [3]:

Step 1: Identifying supplier evaluation categories

Step 2: Determining a weight to each evaluation category for showing its importance (1 to 100)

Step 3: Identifying and weighting subcategories

Step 4: Giving a score for each factor

Step 5: Multiplying each score by its weight and summing these to get a total score for the supplier

Step 6: Making selection decision according to the highest total score

Step 7: Reviewing and improving supplier performance continuously

There are some disadvantages of this model such as using subjective inputs, depending on the criteria and weights and focusing on a few criteria.

Cost-based techniques

Cost-based technique uses standart cost analysis to evaluate supplier performance. A total cost of each purchase is determined by adding the supplier's selling price to the buyer's internal operating costs which are related to the quality, delivery and service elements of the purchase. For making this calculation, the internal costs related with the quality, delivery and service have to be determined. Followingly, these determined values are expressed as the total expected value of the firm's purchase. The overall cost ratio is calculated by summing ot the three individual cost ratios which is then the proportional margin to be added to the supplier's quoted price.

Substantially, the allocated costs depend on the products involved; but the quality, delivery, service and the price are the most commonly used categories. For this reason, the cost-based technique is a complex method and requires a comprehensive cost accounting system to generate the precise cost data needed [22].

2.5. Supplier Involvement

Purchasing is not one time event. Firms cannot continue its operations without supplies. Since the interactions between companies continue developing these relations with suppliers and involve them to firms' activities can help to new product design activities and continues improvement efforts [24]. Supplier involvement in product development has positive impact on customer satisfaction. An example can be given as; Japanese car manufacturers are able to produce cars with more advanced features in less time with less effort at development phase with only depending more on to their suppliers [25]. In addition to product development, involving supplier production phases can help to create better understanding between buyers and suppliers. Ford Company's problem at 2010 can be given as example. After launching new model of Fiesta they recognize problem at car carpets quality. They came together with their supplier and work on the problems and their work on improvement of carpets. Their work is reworded by ASQ, International Team Excellence Award [26].

2.6. Supplier Development

Only after selecting capable suppliers to work with, supplier development could be applied. Because, this development process would consume time and other resources, only worthy supplier should be chosen. When term "supplier development" was created, it was referring to achieving better supplier's performance and turn the supplier into more workable ones [27]. It can be also defined as a cooperation of both buyer and supplier in order to achieve continuous improvement and gaining competitive advantage on the behalf of buyer [28]. Briefly, supplier development is any attempt is done by buyer side to supplier side to increase its performance or capabilities [29]. Figure 4 is a guide to show application stages of supplier development. It is developed according to reference [30].

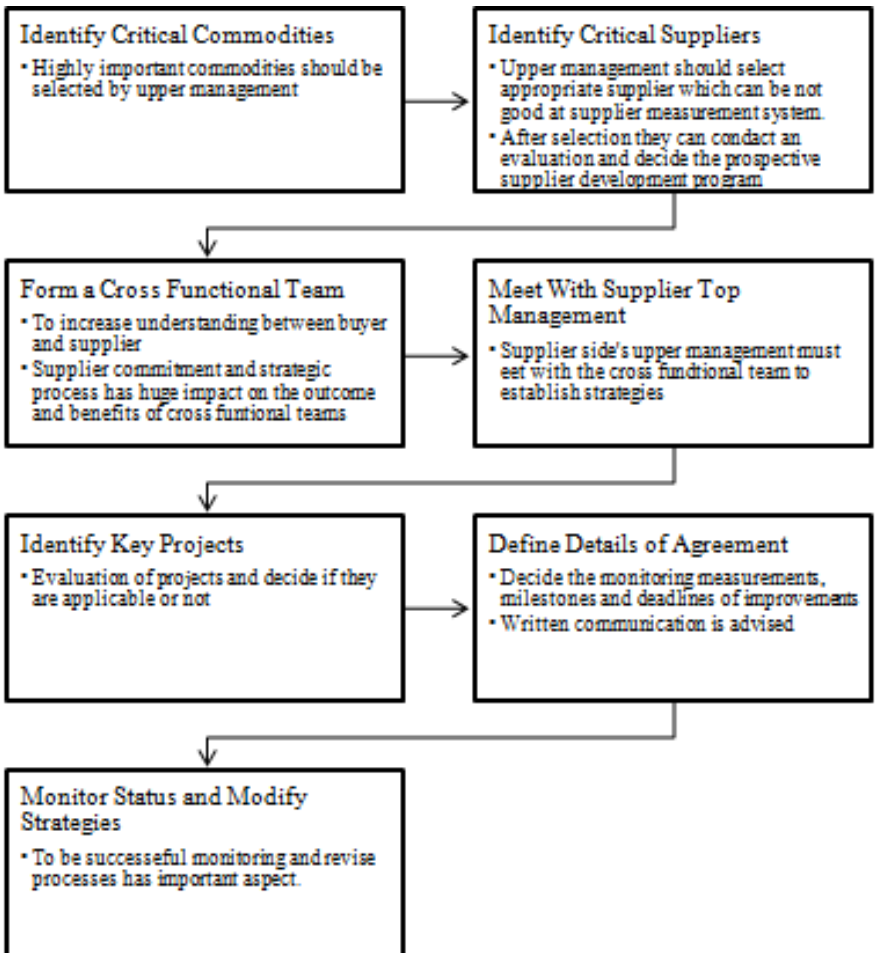


Figure 4. Supplier Development Stage

3. HOW PURCHASING STRATEGIES IMPLAMENTED IN A MANUFACTURING COMPANY?

For understanding the real life implementations in the field of purchasing, a meeting was arranged with a manufacturing company, operating in food sector. The company is selected from Capital 500 firms, which are located in Izmir. After bilateral discussions with several companies most suitable one is selected according to time and cost constraints. The purchasing manager of this company informed about their supplier selection and evaluation methods and the way they handle these processes during our meeting.

Because of working in the food sector, the most important criteria is the freshness and the quality of the unprocessed agricultural products that the company purchases. The quality control after the arrival of the products at the company was causing troubles for both the manufacturing operations and the supplier relations. Therefore, the company decided to work on supplier development to avoid from this kind of problems. The company realized that being in touch with the supplier along the production period is crucial

for gathering high quality raw materials from the supplier at the end of the production. They made brainstorming in the manufacturing company about what to do for the development of the suppliers and they searched for the sample cases. Because the biggest purchaser in the area was this manufacturing company, the producers were already willing to work for this company. The company started to give seed and fertilizer support and keeps visiting the producers from planting the seeds till the harvest. They also arranged education courses for the producers and frequently send an expert for the quality control during this period. Despite of being very advantageous for reaching the high quality, this process was being very costly for the company. Because there were too many suppliers, the company had to deal with several issues in this supplier development process. For this reason, the company decided to implement supplier selection and they chose the scoring model (scorecards) technique.

The company decides on three main categories for the evaluation criteria: price, quality and service. The first category was divided into subcategories as price, discount and compound to market benchmark; the second category was divided as realizing the expected quality and responsiveness to issues; and the third category was divided as on time delivery, order fulfillment, lead time, ordering/scheduling flexibility and ease of doing business. Each category and subcategory was ranked 1-5 and a target score was determined for each of them.

After each supplier was evaluated according to the categories, their overall scores were obtained. The suppliers are located into three groups according to their overall scores which are:

1. Excellent – Exceeds Requirements
2. Satisfactory – Meets Requirements
3. Unsatisfactory - Fails to Meet Requirements

They decided to end their relationship with the suppliers in the third group and redirect the investment for this group to the second group. So, by increasing the support for the second group suppliers, their performance will reach to the first group suppliers' performance.

4. CONCLUSION & RECOMMENDATIONS

Purchasing is a key operation for a business organization that is effective both on product quality, manufacturing costs and the customer satisfaction. The advantages of the purchasing function only appear with a good management. The purchaser-supplier relationships must be kept in a healthy way to get the benefits of purchasing in the long run. For building good relations with the supplier, the first thing to do is, obviously, selecting the best suppliers to prevent from possible troubles. However, the selection and evaluation process is not an easy task for the purchasers. Usually there are many issues affecting the selection criteria or there are many suppliers make the selection decision hard.

This paper gives comprehensive information about the definition and significance of purchasing by also giving the objectives of it. Another aims of preparing this study is informing about the purchasing strategies by underlining the supplier base optimization and rationalization methods. Moreover, a real life example of a supplier selection and evaluation method also presented as a contribution to the literature.

A further research on purchasing strategies of Turkish industry including a comparison between the implications of the companies would be a good contribution.

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