Service Businesses and Productivity*

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ABSTRACT

The records of superior performance of selected service firms over many years suggest that they may be more productive than others. This article uses the Theory of Swift, Even Flow to explain why that might be true. In the process, this article improves Schmenner’s 1986 service process matrix. The redefinition of the axes of this matrix and of the resulting diagonal leads to enhanced understanding of productivity for service operations and helps to explain how some leading service companies have been able to sustain their competitive positions for decades.

Subject Areas: Productivity, Service Operations and Theory.

INTRODUCTION

In 1986, an article entitled “How Can Services Survive and Prosper?” (Schmenner, 1986) grouped service businesses with similar characteristics into a “service process matrix,” much as we group manufacturing firms into job shops, batch, line flow, and continuous flow operations. The article also observed the then-prevailing dynamics of the service sector and argued that many pace-setting services were those moving to and up the diagonal of that service process matrix. The service industries singled out in that article included no-frills airlines, warehouse and catalog retailers, fast-food restaurants, for-profit hospitals, back-of-the-house financial services, and some trucking companies and law firms. The name companies in those industries from that era—firms such as Southwest Airlines, Wal-Mart, McDonald’s, HCA (formerly Hospital Corporation of America), Citibank, and Yellow Corporation—are still with us. Indeed, they seem to be even more of a presence in their respective industries now than they were then. And, those companies that have copied them in important ways since then are also thriving, as Ryan Air, EasyJet, Target, Home Depot, Costco, and others can attest.

Table 1 examines just how dominant some of these name companies have become. They have grown their sales over a two-decade span at a rate that far exceeds the average rate of sales growth in their service industries.

*The author is indebted to Robert S. Collins of IMD, John Haywood-Farmer of the University of Western Ontario, James D. Blocher of Indiana University, and two anonymous referees for their comments on previous drafts of this article.
### Table 1: Some leading service companies, 1980–1990–2000.

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<td>Yellow Corp</td>
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Sources: Compustat for company sales, employment, and capitalization data. Statistical Abstract of the United States, various years, for industry sales data. U.S. Bureau of Labor Statistics (BLS) for service industry productivity data.

Notes: BLS Service industry productivity measures use independent estimates of output and hours and thus differ from company sales per employee measures. The industries are, respectively, commercial banks, eating and drinking places, air transportation, retail trade, and trucking (except local). Industry sales data from 1980–1999/2000 refer to the following industries: Outlays, passenger air travel, intercity, in billions; Sales, general merchandise stores, in billions; Sales, eating places, in billions; Expenditures, hospital care, in billions; GDP, depository institutions, in billions; Volume of intercity freight, ICC truck, in billions of ton-miles.
That some service firms have consolidated their positions within their industries of the service sector suggests staying power. These firms all have strong brands, but there have been other companies in their industries with strong brands that have not fared as well, as any reflection on the airline, retail, or trucking industries reveals. Why these companies?

Our discipline of operations management has a natural bias for operational explanations for such phenomena. This suggests that we ought to examine productivity, as differences in productivity could explain the long-term differences in sales growth. As Table 1 displays, the productivity of these companies, measured in terms of sales per employee, is, in fact, greater than the productivity of their industries. And, their average annual changes in sales per employee over the past 20 years exceed the rates of productivity growth for their service industries, as measured by the U.S. Bureau of Labor Statistics (BLS). Admittedly, sales per employee, computed for each company, is not the same as the productivity measure (output per labor hour) calculated by the BLS, but one could expect similar results from the two measures, especially over long periods of time.

Unfortunately, data are not readily available to analyze the degree to which productivity, by itself, accounts for the staying power or dominance of some service firms. The limited evidence is only suggestive. Nevertheless, the evidence is intriguing enough for us to investigate further why some service firms are more productive than others.

It is the thesis of this article that the service industry leaders from 20 years ago are companies that exemplify “swift, even flow” in their operations and are thus more productive than others for that reason. In addition, a subtle, but significant, revision of the service process matrix can capture this explanation of productivity and the matrix can then be used to track the important, strategic moves of these name service firms. To set the stage for this, let us turn to the Theory of Swift, Even Flow.

THE THEORY OF SWIFT, EVEN FLOW

The Theory of Swift, Even Flow holds that the more swift and even the flow of materials (or information) through a process, the more productive is that process (Schmenner & Swink, 1998; Schmenner, 2001). Thus, productivity for any process—be it labor productivity, machine productivity, materials productivity, or total factor productivity—rises with the speed by which materials (or information) flow through the process, and it falls with increases in the variability associated with the flow, be that variability associated with quality, quantities, or timing.

The theory takes the perspective of a molecule in a production process. It looks to throughput time as the relevant measure, from when the molecule is ready to have value added to it until it is a part of the finished product. Throughput time is indicative of the waste in a process. The longer the throughput time, the more likely waste of all types bogs down the swift flow of materials. The classic seven wastes of Shigeo Shingo: overproduction, waiting, transportation, unnecessary processing steps, inventory, unnecessary motion, and defects, apply here.

The theory underscores that it is not necessarily the speed at which value is added to materials (e.g., machine speed or utilization) that is important, because, in
most operations, wasteful waiting time far exceeds beneficial value-adding time. Instead, it is always adding value that is important so that waiting time can be reduced. Neither is it the capital intensity of a process that determines its labor productivity. According to the theory, capital-intensive processes are productive not because capital has replaced labor (as microeconomics asserts), but rather because materials flow swiftly and evenly through them. The investment in capital simply aids speed (e.g., materials handling, production steps themselves) and reduces variation (e.g., better quality), and it is through increased speed and lower variation that capital intensity or any other factor or policy affects productivity. By rejecting a direct connection between capital intensity and productivity, the Theory of Swift, Even Flow can explain phenomena that have eluded the conventional view that productivity (e.g., labor productivity) and the capital-labor ratio are formally linked. For example, labor productivity in the United States was greater than that of Great Britain throughout all of the 19th century, despite Britain’s greater capital-labor ratio (Broadberry, 1994). Economic historians point to the “American system of manufactures,” with its standardization and interchangeable parts, as an explanation (Landes, 1998). Such an explanation that highlights reduced variation in manufacturing fits well with Swift, Even Flow, where it cannot fit with a view that productivity varies directly with capital intensity.

Indeed, the Theory of Swift, Even Flow argues that only the swift, even flow of materials (or information) matters to productivity. Other potential explanations—automation, capital intensity, scale, labor efficiency (actual vs. standard), machine utilization, or information technology—influence productivity through their effects on the speed and/or variability of that flow. There are too many examples of situations in which large-scale operations became less productive than smaller ones (e.g., General Electric’s Louisville complex or Volkswagen’s Wolfsburg works) or where new ERP systems did not lead to more productivity or where automation was a net cost to the company. Only as these items contribute to reduced throughput times or to reduced variation would they be associated with productivity advance.

Swift, Even Flow is consistent with the breaking of bottlenecks, the improvement of process quality, scientific methods for accomplishing work, level production plans, pull production systems, factory focus, and several other elements of modern thinking about managing processes productively.

The theory gives managers some paths to follow so that they can improve productivity:

1. If the throughput time is long, the theory suggests hunting for those places in the process where throughput time accumulates. Such places could include areas where inventory is great or where bottlenecks exist or where materials wait to be worked on. In these cases, management and labor can work to remove waste of one type or another and thus enhance productivity.

2. Evenness can be disrupted by the irregular receipt of orders, either because of irregular timing or because quantities vary considerably. Evenness can also be disrupted because of the functioning of the process itself: variability in the time it takes for the various tasks to be done, whether by machine or labor, and variability in the quality of the process, causing differences
in yields. Improving productivity in such instances means, among other things, managing and regularizing the demands on the process, running more level production plans, improving quality, and balancing the steps in the process, perhaps by grouping products or tasks together into families so that cells can be defined. These are other ways by which waste can be removed and productivity enhanced.

It is important to remember that swift, even flow pertains only to productivity (output per unit of input). It does not directly address the profitability of a business. Only to the degree that productivity is linked to profitability can one link swift, even flow to profitability.

With this background, let us turn to an examination of services and then proceed to link productivity explicitly to services.

THE SERVICE PROCESS MATRIX

The 1986 article classified various service businesses into one of four quadrants of a matrix. The four quadrants were labeled “service factory,” “service shop,” “mass service,” and “professional service.” At the time Schmenner was trying to impose some order to the analysis of service operations, an order that mirrored the familiar breakdown of factories into job shops, batch, line, and continuous flow types.

As Figure 1 indicates, the axes of that matrix are the “degree of interaction with and customization for the consumer” and the “degree of labor intensity.” The service factory is the service type that exhibits low labor intensity and a low degree of interaction and customization. Schmenner argued in that article that many of the moves that had been made in the service sector involved moves toward a diagonal and, indeed, up that diagonal toward the service factory. He mentioned trends such as deregulation of banking, airlines, and trucking; the introduction of paralegals in law firms, as well as innovations such as for-profit hospitals, fast-food restaurants, and warehouse format retailing. In all of these examples, companies were argued to have successfully altered their operations and to have become more profitable by being less labor-intensive and by reducing their customer interaction and customization.

In thinking about those trends, Schmenner was struggling with the issue of control in service businesses. Control in services is vastly more difficult than control in a factory situation. He reasoned that much of this movement toward and up the diagonal was caused by the desire of firms to get more control of their operations. The service factory was the one service type with the most control. That was the suspected lure for many services, and it thus prompted their strategic moves to and up the diagonal.

In retrospect, the issue is not control, but productivity. Productivity has the staying power to explain why name companies may have been able to grow faster than the industry average. And, as discussed above, it is swift, even flow that has been argued to lie behind productivity. With this in mind, the service process matrix is in need of modification.

Others would argue for modification, as well. This service process matrix, much as with similar matrices, has drawn some criticism. The criticism has been
varied. Some observers have noted that interaction and customization may not always act in the same direction, and, thus, that three dimensions would be more precise than two (Haywood-Farmer, 1988). Some have wanted to see a more straightforward direction of causation from service encounter to service process choice (Collier & Meyer, 1998). Others have wanted to see more dynamic drivers for the service process matrix than the capital-labor ratio (Tinnilä & Vepsäläinen, 1995; Silvestro, Fitzgerald, Johnston, & Voss, 1992; Kellogg & Nie, 1995). Tinnilä and Vepsäläinen, in particular, fault the matrix for not having a theoretical reason why the diagonal should be important, and they also introduce the issue of productivity with the matrix. Silvestro et al. also move toward productivity when they introduce the number of customers processed as an axis in their matrix. All these criticisms have considerable merit, and they, too, argue for modifying the matrix and for tying it to a theory such as the Theory of Swift, Even Flow.

**MODIFYING THE MATRIX**

With the Theory of Swift, Even Flow as background, it is fruitful to retitle the axes in the service process matrix in subtle, yet important, ways. From an operations standpoint, the “degree of interaction with and customization for the consumer” translates to variation in the provision of a service and thus the $x$-axis can be retitled.
Figure 2: A revised service matrix.

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<th>Degree of Variation</th>
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<td>High</td>
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<tr>
<td>High</td>
<td>Area 1</td>
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<tr>
<td>Low</td>
<td>Area 2</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>Professional Service</td>
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</tr>
</tbody>
</table>

“variation.” Interaction and customization are very common sources of variation and they are unquestioned drags on service productivity. To be clear, however, the variation under discussion is variation that occurs in the provision of the service; it is not variation, or variety, in the service “products” on offer. A service may well offer a host of options that may not call for much variation in their provision (e.g., Subway’s sandwich variety).

And, what about the y-axis, labor intensity, or its inverse, capital intensity? It is worth considering a change here, too. In particular, consider using “relative throughput time” to label that y-axis. (See Figure 2.) In the same spirit as occurs with swift, even flow in manufacturing, the critical interval (the throughput time) is the clock time between (1) the moment when the service and any facilitating goods are available for use in the “service encounter” (where customer and service process meet) and (2) the moment when that service encounter is completed and the customer exits satisfied. The issue is then not the capital intensity of the operation but how quickly the service encounter can be rendered relative to others in the industry.

With these modifications, the matrix also changes to one that examines productivity only, and not necessarily profitability. A service business can be hugely profitable anywhere in the matrix. The diagonal of the matrix merely shows the path to increased productivity, where both variation and throughput time are
reduced. Moving up the diagonal is a move to greater productivity, although not necessarily to greater profitability, and off-diagonal locations in the matrix can be very profitable. In fact, this revised matrix is the service counterpart of the revised version of Hayes and Wheelwright’s (1979a, 1979b) product-process matrix for manufacturing that was proposed in Schmenner and Swink (1998).

It is instructive to reflect on how throughput time—the interval of time between availability for use and completion of the service encounter—should be defined for a variety of services. Consider air travel. The airplane—the “molecule” in this instance whose clock time tracks the service encounter—becomes “available for use” when it arrives at the airport of origin. The service encounter is complete when that airplane arrives at the destination airport with its load of passengers. The relevant throughput time is the time between these arrivals. One can usefully think of that time as divided into “back office” time when the plane is prepared for the trip, and “front counter” time when the plane is in the process of flight. In this case, back office and front counter must be accomplished serially; they cannot be accomplished at the same time. The same can be said for hotel rooms or hospital stays.

In other services, the back office and the front counter can be operated in parallel; they can be synchronized. In the typical fast-food restaurant, the back office process has the food ready and waiting for customers entering the restaurant. The throughput time in such an instance can be the familiar front counter door-to-door time, from the entry of the customer in the fast-food restaurant until he walks away from the counter with his order. The molecule that tracks the service encounter in this example is the customer himself.

In still other services, there is neither a perfect synchronization of back office and front counter processes nor a perfectly serial operation. In these services, there is some overlap between the back office process that typically deals with facilitating goods and the front counter process where the service encounter itself takes place. In retail operations, the back office process is the replenishment of goods and the front counter process is where the customer enters the store, shops, and then checks out. Sometimes, these processes occur at the same time and sometimes not. An appropriate throughput time for retail operations is thus somewhat ambiguous as the goods replenishment back office process may or may not coincide with the front counter shopping process.

The throughput time for a retail service encounter begins with the customer. One can think of the customer’s initial action as alerting the good to be purchased—the molecule to be tracked—and starting the throughput time clock. If the good is in stock, the throughput time would be the sum of the front counter transaction time and any time necessary to bring the good to the customer. In this case, the throughput time would be very much like the door-to-door time of the fast-food restaurant. If, on the other hand, the good is not in stock, then the throughput time is lengthened to include the time to procure the good for the customer and thus complete the service encounter. For some retail transactions, such as ordering a car, this time can be measured in weeks. Given these examples, a conservative definition of throughput time in this instance would place the back office and front counter in series, by summing the two times. For all but those service processes that are synchronized, the conservative definition
of throughput time—back office and front counter in series—is the most easily defended.

Capital intensity can, of course, be correlated with throughput time. Indeed, most highly capital-intensive operations are speedy ones, too. However, it is the throughput time and not the capital intensity that counts. Highly productive name companies such as Southwest Airlines, Wal-Mart, and McDonald’s are all examples of services that have been refashioned for lower throughput time and/or for less variation than their competitors, either by the design of the service itself or by the operation that has been developed to deliver that service. They are not markedly more capital intensive than their competitors. (These are modern examples, but the phenomenon is not new; the appendix discusses how goods distribution was transformed during the Industrial Revolution in much the same way.)

IMPROVING THE CLASSIFICATIONS OF SERVICES

By refashioning the axes, particularly the y-axis, the classification of service companies within the matrix is affected; the classifications from the 1986 article do not all remain the same. Yet, on reflection, the new classification of companies into one of the four quadrants is more sharply focused by introducing “relative throughput time” as the more appropriate y-axis label. Consider the following.

The 1986 article put retail stores in the mass service quadrant. The variation (customization and interaction) in retail operations is typically low, but many retail establishments have relatively quick throughput times for goods replenishment while others have slower times. Thus, the varying throughput times imply that retailing should spread itself out in the matrix. (See Figure 3.) For example, a traditional furniture store, where one orders furniture and waits weeks for its delivery, is very different from a grocery store. The former occupies the right-hand portion of the mass service quadrant while the latter is a service factory. Seen in this light, an innovation such as IKEA, where clever design speeds up both the customer order-to-delivery process, which at IKEA is a front counter process, and the back office goods replenishment process, represents a move into the very productive service factory quadrant. Under the 1986 classification scheme, the traditional furniture store and IKEA may well have occupied the same quadrant.

Under the old classification, trucking was listed as a capital-intensive service factory. With the new classification scheme, the express service of a trucking company such as Yellow (quicker relative throughput times) can be differentiated from the company’s traditional ground service. The traditional service is best viewed as mass service that then highlights the express options as service factories, where capital, in particular, is more productive. Such a distinction focuses attention on just how much of a break with tradition the launch of Federal Express was, with its use of airplanes in conjunction with trucks to move freight even more quickly.

Tax advice and filing is another interesting case. The traditional tax accountant occupies the professional service quadrant: the customization and interaction (variation) are great and the relative throughput time (order-to-delivery) is high.
With firms such as H& R Block, there is less customization and interaction but the relative throughput time is much less.

Restaurants comprise still another service that spreads itself out under the new classification scheme. The traditional restaurant is a service shop. One can enter it and enjoy a meal cooked to one’s specifications. On the other hand, the very best gourmet restaurants, where reservations are often obligatory and where the experience can be tailored to the diners, could even be classified as a professional service. The fast-food restaurant, with little room for customization, but a very quick throughput time, puts eating into the service factory.

While the push for greater productivity is a push toward the service factory, there will always be a role to be played by the other quadrants because profitable operations can exist anywhere in the service process matrix. Restaurants, as mentioned above, spread themselves out into multiple quadrants. The recent history of McDonald’s underscores the fact that customer choice will keep that spread, and the search for profits, broad. McDonald’s has acknowledged this fact by making investments in restaurant concepts that are different from the traditional fast food that it is known for and by adjusting its own menu recently (i.e., introducing its wellness menus) and increasing its previously flagging profits.
THE LURE OF THE DIAGONAL

Changing the axes helps to focus attention on some distinctions that have revolutionized service provision in a number of service industries. Changing the axes also makes clear the pressures for change within the matrix, pressures that can lead firms to adjust their operations in search of greater productivity. Suppose that one were in Area 1 of the matrix in Figure 2, amid other service shops. What are the pressures acting on such services? In Area 1, the primary pressure is to reduce the variation the firm is experiencing by standardizing the service more, spreading overhead costs over more units of the service output and gaining more control in the process. The pressure is thus to move to the left; it is typically not to take more time with service delivery and thus to drop down in the matrix. Alternatively, suppose one were in Area 2, amid other mass service firms. What are the pressures there? The pressures are to fight potential high costs with the ability to offer more capacity during the same period of time and to keep the operation smooth. The pressure is thus to remove waste and move upward; it is not so much to offer a more customized/interactive service and move to the right. Although these pressures are real, they are not so great that all firms feel compelled to move toward the service factory, but they are great enough to explain the lure of the diagonal for some firms.

Adopting different labels for the axes of the matrix does not eliminate the insights that the matrix brings to the management of different kinds of service processes. The challenges for managers that were noted in the 1986 article remain. The challenges pitting low variation versus high variation essentially remain the same as before when they dealt with interaction and customization. So it is with relative throughput times. Quick throughput times are clearly tied to issues about equipment investment, new technology, scheduling, and demand management. In fact, scheduling and demand management are arguably better connected conceptually to service throughput times than they are to low labor intensity. Similarly, slow throughput times are tied to sources of waste in the service process. Waste easily relates to things such as methods, quality, and concerns about insufficient capacity. These, in turn, hinge on such things as workforce hiring, training, labor scheduling, how the service is delivered, control over far-flung geographies, new start-ups, and coping with significant growth. The management insights still fit the matrix.

APPLICATION TO SERVICE BUSINESSES

If the service firms with staying power have indeed prospered, at least in part, as a result of their productivity, and if the Theory of Swift, Even Flow explains productivity, then we should be able to isolate key aspects of the operations of these name service firms that are consistent with the theory. The 1986 article talked of no-frills airlines, the paragon of which in the United States is Southwest Airlines, an airline that has inspired two very successful no-frills airlines in Europe: Ryan Air and EasyJet. Southwest Airlines is very productive (i.e., high passenger-miles per plane per day) because it keeps its aircraft in the air earning revenue and not on the ground. It does this by being able to turn its aircraft around, from arrival at
a gate to departure for the next destination, in less than half an hour. This insures that throughput times of the service encounters (i.e., the intervals between plane arrivals at origin and destination) are relatively shorter than those of competitors. During turnarounds, all the ground-based crew get involved. It helps greatly that Southwest flies from less crowded airports and operates a point-to-point flight schedule where planes do not have to wait for connecting flights, or other airlines’ luggage. With identical B-737 aircraft on all its routes, the turnaround routine can be a well-choreographed activity. In short, the turnarounds that are key to the airline’s productivity are swiftly done and with as little variation as possible. That Herb Kelleher made it fun for his employees is an added bonus.

The 1986 article also discussed retailing and in that industry the stellar performer of long standing has been Wal-Mart. Wal-Mart’s productivity as a retailer (e.g., high sales per square foot per day) has been attributed to its innovations in information technology and in logistics. Its information system is legendary, having pioneered in tracking inventory, scanning, and relaying information from each store each day via satellite. Such information technology helps greatly to trigger a supply chain that can resupply each store quicker and more frequently than other retailers. Innovations in its distribution centers, such as cross-docking, have meant that comparatively little inventory is kept, and thus inventory turns are high. As argued earlier, the conservative definition of throughput time for retail is the sum of the back office goods replenishments process and the front counter shopping process. Clearly, the low throughput times for the back office operations of Wal-Mart imply a swiftness that other retailers are hard-pressed to match, and its regularity (evenness) from day-to-day, helped by everyday low prices, also helps to keep productivity high.

McDonald’s, clearly, has developed well-known and reported operations that make its throughput time, both back office food preparation and front counter order-filling, quicker and more synchronized, and thus more productive (e.g., sales per hour per worker) than other restaurants. In addition, its consistency (i.e., low variation) is legendary. The famed McDonald’s French fries are cut from potatoes grown especially for their size and starch content, fried in specialized equipment and served with the now-famous McDonald’s French fry scoop for quick, standardized servings. The requirement for consistency is so strong that the company is willing to create, if need be, virtually all of its own supply chain, from farm through processing plant and distribution, as it did for its Russian operations. The company can be sophisticated, as well; a linear program aids the scheduling of its workforce.

Citibank started to differentiate itself decades ago with its passion for systems and the back office elements of bank operations. Its early ability to design and implement new technologies—ATM machines, credit card authorization systems, electronic payment networks, and transaction processing systems—became a significant competitive advantage that has spilled over to its front counter operations. Its ability to offer 15-minute mortgage loan approvals and its investment in systems to participate in world markets 24 hours a day are other manifestations of its operating prowess and devotion to speed.

Yellow Corporation has a rich history, too, of innovation and productivity. Before trucking deregulation in 1980, it had pioneered the use of a relay system to keep its trucks on the road longer and of computers to track the whereabouts of those
trucks. It also consistently sought better truck design and more efficient breakbulk operation. Although caught flat-footed by deregulation, it has since aggressively constructed new terminals and breakbulks, invested heavily in logistics software and technology, and has successfully introduced its Metroliner two-day service and its guaranteed Express Lane service. These door-to-door times are classically appropriate measures of throughput time, and indicative of Yellow’s productivity (e.g., ton-miles per truck per day).

CONCLUSION

The philosophy of science teaches us that a hallmark of good theory is the ability to unify regularities and concepts that were previously considered separate. In this article, I have argued that the Theory of Swift, Even Flow can be used to explain why some service companies have been more productive than others and thus may have been able to survive longer and prosper more than their competition over at least the past 20 years. This insight into service productivity has also led to the modification of a 1986 service process matrix so that it can now help to explain the sustained outstanding performance of these leading service companies and how they have differentiated themselves from their competitors.

This examination of service process productivity introduces a variety of topics suitable for future research. Some of that research can be devoted to testing the Theory of Swift, Even Flow. For example, is there an instance where a service’s throughput time and variation declined, and productivity, as measured by output per unit of input, did not improve? Or, is there an instance of the inverse? Other research can be devoted to defining throughput times for a variety of services to assess whether there are better ways to define times. And, more can be done to examine why some service firms have sustained better performance over long periods of time, and whether productivity differences are sufficient, in themselves, to explain such differences. [Received: January 2003. Accepted: December 2003.]

REFERENCES


APPENDIX

Service History and Productivity

History also confirms the power of movement up the service diagonal (Chandler, 1977, 1990). The Industrial Revolution addresses itself mainly to manufacturing productivity gain, but it was accompanied by vast changes in services, particularly the distribution of goods. In pre-Industrial Revolution, colonial America, as well as in Europe, it was the general merchant who was the all-purpose distributor and marketer of consumer products and the supplier of raw materials to the small, typically one-man manufacturing operations that were a small sliver of the economy. This general merchant took title to the goods he purchased and he acted as an agent to others elsewhere, selling their goods for a fixed commission. He was also the anchor for financing farmers. Together with others he insured ships and cargoes and invested in infrastructure and other industries. In terms of the service process matrix, the general merchant provided a professional service.

After about 1800, however, especially as British demand for cotton grew, more specialization began to occur. The cotton factor entered as a middleman between the American planter and the British manufacturer, and three-fourths of Britain’s cotton came from America. And, then, specialized brokers were created. While the factor bought and sold on the planter’s account, the broker simply brought planters and manufacturers together to fill a shipment or to dispose of an odd lot. Then came the jobber who used auctions to buy in quantity and then to break down those large quantities into batches that could be marketed through smaller shops. The distribution of goods ceased to be a professional service—painstakingly delivered with great customization—and instead became a more quickly provided service with much less customization and less interaction with the final customer.
As improvements in transportation and communication came with the railroads and the telegraph, tremendous gains in speed occurred for the distribution of, first, agricultural products, and then, of manufactured goods. The new distribution systems that arose in the middle of the 19th century became much simpler and faster. In the 1850s and 1860s, commodity dealers and wholesalers sprang up, and then later, in the 1870s and 1880s, mass retailers and chains began to deal directly with producers, on the one hand, and with customers, on the other. This greatly reduced the number of transactions involved and increased the speed and regularity of the flow of the goods, and the railroads permitted a quicker and more reliable delivery than had existed before. Some of these wholesalers integrated forward into mass retailing (e.g., Marshall Field & Co. in Chicago). Inventories were reduced and orders matched needs better than ever before. The volumes of goods handled soared. Some small retailers also joined in this change and created the department store (e.g., Macy’s) and the catalog sales operation (e.g., Sears, Roebuck and Co.). Tremendous efficiencies were created by these innovations. Moreover, these efficiencies were not the result of economies of scale. Rather, it was economies of speed and regularity (swift, even flow) that brought on both productivity and profitability. The distribution of goods had metamorphosed from a professional service to a service factory.

Transportation was not the only thing to become more even and regular. In the supply chain for grains such as wheat, for example, the combination of swift and efficient rail and telegraph service spawned the creation of still other, new ways of doing business, including standardized grading, weighing, and inspection of grain and the introduction of the futures contract. In essence, with faster and more reliable transportation and communication, companies could afford to take ownership of the grain shipments themselves and to pass them on to markets with reasonable certainty of delivery in good condition. Commodity exchanges were thereby created and grain elevators sprang up. Grain truly became a commodity for the first time. The same story could also be told of cotton. In the space of decades, a critical service industry, goods distribution, had been thoroughly transformed from a costly professional service to a commodity service for the masses rendered by vast networks of service factories.

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