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Printing industry offshoring: perspectives from US based printers

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Abstract

Purpose – This paper aims to report on how US printers perceive offshoring trends in the printing industry, and explore how they are responding to its opportunities and challenges.

Design/methodology/approach – The authors relied on data collection comprising three stages: exploratory interviews, an industry survey, and follow-up interviews.

Findings – Many printers perceive offshoring as a threat, and some groups are being affected by it. Firms that offer quick and variable printing and/or non-standard IT services (with the exception of data management) are less likely to suffer from job loss due to the offshoring. To respond to the threat of offshore outsourcing, printers are trying to either focus on “safe” products, introduce new services, or offshore themselves. Most US printers do not have a global footprint, so few have taken advantage of the opportunities opened up by globalization, by offshoring their supply chain or selling abroad.

Research limitations/implications – Due to a low response rate, performance data are not in the analysis. This limitation is common for researchers of the printing industry where little public data are available.

Practical implications – While many US printers are feeling the negative effects of offshoring, few are taking advantage of its benefits.

Originality/value – Most offshoring studies to date have relied on publicly available data, which has significant limitations. This study uses a mix of both survey and interview data to attain a more nuanced view of how the US printing industry is being affected by, and responding, to offshoring.

Keywords Outsourcing, Printing industry, Offshore investments, United States of America

Paper type Research paper

Introduction

Offshoring and offshore outsourcing, the movement of work and tasks to low-cost countries, has been increasing in scale and scope. While offshoring in the manufacturing sector has been an ongoing phenomenon for more than 40 years, more recently, examples of offshoring in services industries such as software programming, once considered non-tradable and therefore to offshoring, have emerged. The concurrent effects of the recent very rapid growth of the Indian and Chinese economies at eight to ten per cent per annum (about four times the rate of developed countries), and dramatically lower cross-border transaction costs have led many to predict significant changes in the structure of many industries. Some have even gone so far as to call this as historic an economic transformation as the industrial revolution (Blinder, 2006).



Offshoring has already transformed a number of manufacturing industries. For example, in response to pressures from foreign competitors, US semiconductor firms were able to take advantage of labor in low-cost countries by modularizing their value chain, outsourcing non-core production steps, and locating each step in the most efficient geography (Sturgeon, 2006). Over time, the site location decisions followed a path of increasing division of labor. Firms first moved the very labor-intensive tasks such as assembly offshore. Later they moved more complex and capital intensive processes, such as foundries, to more efficient locations while keeping high level design closer to customers, who remained in large developed countries (Brown and Linden, 2005). This modularization process and de-integration has been replicated in a number of US manufacturing industries, including automotive and aircraft, albeit each with its own recipe.

On the services side, which by definition are much more labor intensive, certain industries are being rapidly transformed, enabled by dramatically lower cost telecommunication technologies. In a span of about three years, the information technology (IT) services industry has adopted a “Global Delivery Model” where customers now expect bids on projects with blended rates; i.e. including both on-site and offshore labor components (Hira and Hira, 2005). This would have been unheard of even as recently as 2003, but the transformation appears to be almost complete. As an Electronic Data Systems executive recently put it, “I can’t remember the last time we put a bid out that didn’t involve some form of offshoring” (Glick, 2006).

The printing industry has characteristics similar to both manufacturing and services industries. Like a manufacturer, printers produce tangible goods but like a service the product is often highly customized requiring co-production by customer and printer. Its industry structure is highly fragmented, with a very large number of small firms. As a result, any increased cross-border trade, especially with China and India, will affect the printing industry in ways distinctive from other industry sectors.

Offshoring comes at a difficult time for the US printing industry. First, it is undergoing intense competitive and economic pressures. Some analysts estimate that approximately 500 establishments went out of business each month from 1999 to 2001 (Romano and Soom, 2003). A major reason for the contraction is lower demand for traditional print products. For example, in 1973, the US daily newspaper circulation was 63,147 but has steadily declined over the past 30 years to just 55,186 in 2002 in spite of a population increase of one-third. And this decline has been accelerating more recently. From 2000 to 2002, newsprint consumption decreased 14 per cent (Newspaper Association of America, 2004). Moreover, an increasing share of customers are meeting their print needs in-house, through sophisticated yet easy-to-use desktop publishing systems, displacing demand for stand-alone printers.

The second factor causing troubles for the printing industry is the disruptive changes in the very nature of print, as digital printing and information exchange are becoming more popular. Digital printing has changed the skills needed in the industry, requiring printers to restructure their internal operations. Yet it also expands the frontier of opportunities to areas, particularly on the pre-press side, such as data management. By reducing the transaction costs of doing work remotely, the shift to digital media means an increasing share of the value chain can be done across organizational and geographic boundaries.

These two changes, reduced consumption and the introduction of disruptive technologies, have strained the US printing industry, heightening their concerns about the globalization. Printers face both challenges and opportunities with greater

cross-border trade. On the upside, US printers have the opportunity to expand their customer base by selling to new markets like China and India, lowering costs by more efficiently locating their inputs and processes, and expanding their product offerings to mature markets. On the downside, and perhaps what gets the most press, is that offshoring can result in the loss of customers who move their operations overseas and may stave off the ability to move into higher value complementary services such as database management and print pre-processing since these may move offshore as well (Nason, 2005).

Many printing industry observers are writing about the coming offshoring wave, and industry conferences about offshoring are proliferating. The attention is causing many US printers to worry about the wrenching changes being predicted. It is clear that printers and their suppliers are keenly interested in how globalization and offshoring is impacting their industry, yet the official trade statistics show that it is still very small relative to the size of the industry. The US printing production is a large industry, worth approximately \$166 billion in 2005, but international trade is still a fraction of it. Imports for 2005 were only \$4.7 billion and exports were \$5.2 billion, meaning the industry ran a trade surplus of \$0.5 billion. But two trends in the trade statistics bear noting, the surplus in 2005 was half the size of the surplus in 2000, and the bilateral trade deficit with China was \$1 billion and growing 26 per cent per year (Davis and Gleeson, 2006).

This paper helps to provide a baseline for how offshoring is progressing in the printing industry. A number of factors make this analysis difficult. Small firms make up a large share (about 80 per cent) of the printing industry, and most of those firms are not publicly traded so much of the financial data is proprietary. Also, the US industry itself is complex, with a large number of small to mid-size enterprises making customized products and serving many niche (geographic and customer) markets. In this paper, we move beyond the limitations of publicly available data by using a mix of survey and interview data. This study explores how much, and what types of, business US printers have lost to offshoring, and what they are doing to buffer their businesses from these losses. We also explore the extent to which they are taking advantage of the new opportunities from globalization.

Analytic framework

One of the key questions facing US printers is determining the products and services more and less vulnerable to offshoring. By understanding which products, for example, are geographically sticky, printers can take appropriate steps in response to the competitive changes. The analytic framework of measuring offshoring vulnerability has a parallel. Blinder (2007) has argued that estimating the vulnerability of particular occupations to offshoring is an important exercise because workers should specialize in those occupations that are particularly immune to offshoring and abandon those that are particularly vulnerable to it (Blinder, 2007).

There are a number of factors impacting whether or not firms are likely to lose print jobs to overseas competitors. Industry experts we interviewed emphasize several criteria as important when a customer chooses a printer, including: turnaround time, quality, cost, trust, ability to customize, co-location with other production processes, availability of other services, unique abilities, and others.

While some pre-print processes can be sent distances electronically, the end product of printed products is still a physical good that must be shipped. Long distances and crossing political borders (clearing customs) adds delays. Also, given

the high weight-to-value ratio of most printed products, speedy shipping options are often limited. For long distances, sea transportation, adding approximately six weeks to the length of the production cycle, is the only option. It follows, therefore, that “quick print” jobs, those that require a short production cycle, would not move overseas. Thus,

H1. Printers that offer “quick printing” will be less likely to experience job loss to offshore printers[1].

On the other hand, based on our discussion with industry experts, books often do not require this quick turnaround time. Also, many books, such as children’s “pop up” books are labor intensive requiring complicated finishing, and offshore providers often have a labor cost advantage. Given their longer product cycle and higher labor content, we hypothesize that books are more susceptible to offshoring.

H2. Printers that print books will be more likely to experience job loss to offshore printers.

Packaging also often requires significant labor intensive complex finishing, making it vulnerable to offshoring. In addition, package printing is frequently co-located with the production process of the final product, be it a toy or more complex product. As more manufactured goods are completed offshore, packaging often moves with it, and it is likely that printing of that packaging will move as well. Thus,

H3. Printers that print packaging will be more likely to experience job loss to offshore printers.

Variable data print is used to personalize printed products, and print vendors frequently offer complementary activities of mailing and fulfillment for the printed materials. Given the logistics of the process, sorting and physical transportation to the mailing facility, we believe that these products are less vulnerable to offshoring. Also, these products generally have a short cycle times from inception to grave, making shipping delays prohibitive. Advertising is one such product that is increasingly taking advantage of variable data printing. Therefore, we propose the following two hypotheses:

H4. Printers that offer variable data printing will be less likely to experience job loss to offshore printers.

H5. Printers that print advertising materials will be less likely to experience job loss to offshore printers.

Little is understood about the types of services that can help printers retain jobs that would otherwise be lost to overseas competitors (Sorce *et al.*, 2003). On one hand, greater digitization of the printing process, as in other industries, can facilitate information transfer on a global scale (Levy and Murnane, 2004). On the other hand, offering additional complementary services, increasingly facilitated by digital technology, is often seen as the means to address global competitive pressures, through product differentiation (Bauer, 2006). The latter view is supported by the concept of embeddedness (Uzzi, 1997; Morgan and Hunt, 1994).

In reality, new technologies have actually increased the embeddedness of some economic transactions in printing and decreased it for others. In the past, the basic printing process was more embedded in relationships. One printed item required

multiple personal trips back and forth from the customer to the printer, to ensure layout and color accuracy. In fact, many printers have lavish waiting areas with movies, food, etc. for customers to comfortably wait while an item is printed for review. With current technology, however, much of this physical face-to-face interaction is no longer necessary. A customer can email a file, the printer can print it with significant accuracy, and then the customer can mail it back for review, and iterate until the exchange is complete. All of this can occur without any face-to-face interactions. While these services may make them a more efficient printer, there is no reason to think that it would protect them from job loss to overseas companies that offer similar standard print services.

H6. Printers that offer standard digital services such as digital proofing will be more likely to experience job loss to offshore printers.

Another emerging area of service provision is data management services, where printers take and manage the data that will be used in the printed material. In its simplest form, this is a mailing list, but it often encompasses more complex and sensitive information such as financial information. In addition, what seems like simple information, such as a menu layout for a restaurant, can have embedded in it information that is quite central to the firm, such as information for proper supply chain management (i.e. what food to order and when). Innovative printers are finding ways to manage this type of information, and as they do so they create more complex business and social relationships with their customers. As printers take on some of the services that are further up and down the value chain, they increasingly embed the economic transaction in a relationship that requires trust, needed for the handling of sensitive information, and mutual knowledge exchange, both which serve to facilitate the effectiveness and efficiency of the interaction. Therefore, customers engaged in these relationships will face increased transaction costs if they move to a new print supplier. Thus,

H7. Printers offering data management services will be less likely to experience job loss to offshore printers.

H8. Printers offering non-standard IT services will be less likely to experience job loss to offshore printers.

Methods

The study relied on primary data, collected in three stages. The first was a set of exploratory interviews with industry domain experts. These exploratory interviews lay the basis for the hypotheses, described in the previous section, and for designing the firm surveys, the second stage. The web-based survey was written in cooperation with the GATF/PIA, the leading US print trade association. After pre-testing it with some industry contacts, the survey was sent to 3,228 printers, approximately one half of the GATF/PIA membership. Of these emails, 465 were returned as undeliverable. After two email reminders, a total of 242 responses were received, resulting in a response rate of 8.8 per cent.

In order to validate the survey results and to gain better insight into how printers viewed, and were responding, to offshoring, we conducted follow-up interviews, the third stage in our data collection. In the survey, we asked for contact information for those participants that would be willing to discuss the issue more with us. We randomly chose 15 interested participants and conducted semi-structured phone

interviews, each of which lasting 45 min to an hour long. All interviews were taped and transcribed for accuracy. Additional details on the methodology can be found in Appendix.

Survey findings

Descriptive statistics

The descriptive statistics suggest that while many in the printing industry are aware of the threat of international competition, and are being affected by it, they are not operating on a global scale to any large extent. When asked how foreign competition would change over the next two years, 72 per cent responded that it would increase and 18 per cent thought it would stay the same. A 49 per cent of the respondents reported having lost a job to a foreign competitor, a far larger percentage than we expected given the small size of print imports relative to the size of the industry. On average, 57 per cent of those losses were to China, 16 per cent to Mexico, 16 per cent to Canada, and 10 per cent to Europe. Despite the increased digital component of printing, on average only 5 per cent of these losses were to Indian printers.

For those that did lose jobs, lower costs were identified as the primary reason for the loss (34.0 per cent). The next most common reason was that the customer's work moved outside the US (7.7 per cent), better local reach (5.7 per cent), and the larger size of the foreign competitor (5.7 per cent). A 14 per cent of those losing jobs reported that a common factor across lost jobs were long print runs, while 11 per cent reported that a common factor across lost jobs were that they had a reasonable or long turn around time or labor intensive finishing.

For the most part, the printers did not have a global customer base, with only 17 per cent of the respondents reporting that they had performed a print job for a customer outside of the US. Most of their own outsourcing, if done, was done within US. For most aspects of the printing process, less than 1 per cent of the respondents outsourced outside the US, meaning that they are not taking advantage of modularizing the print processes and sending parts of it to the most efficient geographic location. There were a few exceptions to this. A 5.4 per cent of those outsourcing reported that they outsourced printing to China, 3.4 per cent to Canada and 1.5 per cent to Mexico. Approximately 2 per cent of the respondents outsourced finishing and assembly to Mexico and 3 per cent to China. Lastly, 1.5 per cent of the

Benefits	Mean ^a	Problems	Mean ^a
Used new technology	4.02	Language barriers	2.38
Increased production volume	3.67	Communication problems (other than language)	2.33
Increased product quality	4.03	Technology incompatibility	2.06
Increased product variety	3.15	Shipping delays	2.8
Learned about new technologies	4.03	Quality problems	2.49
Increased operational efficiency	3.67	Substrate availability	2.42
		Loss of intellectual property	2.22
		Increased travel budget	2.32
		Increased employee training	2.34

Note: ^aRespondents were asked to rate their level of agreement with a number of statements, with 1 being no agreement and 5 being full agreement

Table I. Problems and benefits of offshore outsourcing

participants reported that they sent some pre-press and design to China and 1.9 per cent reported that they outsourced this to India. For those that took advantage of offshore outsourcing, approximately 43 per cent reported no savings, 40 per cent reported savings between 1 and 39 per cent, and 16 per cent reported savings of higher than 39 per cent. So a small number of firms are able to offshore outsource for competitive advantage, but those that know how to do it well can reap significant savings.

Table I summarizes how those that were engaged in offshore outsourcing perceived the problems and benefits associated with it. Some of the highest rated benefits (other than cost savings) were use of, and learning about, new technologies (using a scale of 1-5, where 1 was “did not agree” and 5 was “fully agree”, the means were 4.02 and 4.03, respectively) and increased product quality (4.03). In general, the problems were rated lower than the benefits, but the highest rated problem was shipping delays (2.8), followed by quality problems (2.49).

While only a small number of firms were engaged in offshore outsourcing, many are considering it as an option for the future. A 18 per cent of the respondents who had not engaged in offshore outsourcing had definite plans to do so in the near future. The most often cited concerns for these printers were loss of client control (74 per cent saying this was a concern) and risk of losing key employees (31 per cent),

Summary of regression findings

Table II summarizes the means, standard deviations, and correlations of the related variables in this study. Since our dependent variable, job loss, is a dummy variable logistic regression is used to test the hypothesized relationships. Two sets of regressions relating to job loss were run to test both product and service types, respectively. Table III summarizes the test results.

We found that the more printing firms focus on books, the more likely they will lose jobs to overseas competitors, supporting *H2*. A similar relationship was found between packaging and job loss, indicating that the more printing firms focus on packaging business, the more likely they will lose jobs to overseas competitors. This supports *H3*. Advertising was also found to positively impact job losses but its relationship is not statistically significant, and therefore *H5* is not supported. The more printing firms focus on quick and variable printing, the less likely they will lose jobs to foreign competitors, thus supporting *H1* and *H4*. With regard to service offerings, we found that the more printing firms focus on data related services, the more likely they will lose jobs to overseas competitors, supporting *H7*. A similar relationship is found for press related services. Digital proofing positively and significantly relates to job loss and the same is found between laminating and mounting and job loss. Therefore, *H6* is supported. Lastly, we could not find a statistically significant relationship between printers that offered non-standard IT services and job loss, so *H8* is not supported.

Analysis and discussion

The interviews complemented and supplemented our survey findings, providing a richer and thicker description of offshoring in the print industry. Some of the results indicate that individual printers may be making strategic mistakes as they respond to offshoring.

The survey data results, descriptive and regression statistics, suggest that printers are aware of the offshoring trends and are being impacted by it, mostly adversely.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Mean	0.42	0.60	2.53	75.60	14.14	0.82	0.89	0.72	1.16	0.51	0.72	1.34	1.91
Standard deviation	0.50	0.49	1.46	18.80	17.54	1.14	0.51	0.50	0.55	0.69	0.66	0.73	0.74
1. JOBLOSS	1												
2. OUTSOURCE	0.07	1											
3. SIZE	0.02	-0.05	1										
4. REPEAT	-0.12	0.10	-0.12	1									
5. INNOVATION	0.02	-0.10	-0.08	-0.09	1								
6. SOURCESERV	-0.04	0.29***	-0.02	0.02	-0.01	1							
7. BOOKS	0.22**	0.05	-0.03	-0.01	-0.11	0.08	1						
8. QUICKVAR	-0.13 [†]	0.05	-0.00	-0.10	0.16*	0.01	0.11	1					
9. ADVERT	0.17**	-0.05	0.04	-0.07	-0.13 [†]	0.08	0.39***	-0.10	1				
10. PACKAGE	0.18*	-0.04	0.05	-0.15*	0.08	-0.02	0.08	-0.08	0.09	1			
11. DIGSERV	0.05	-0.00	0.09	-0.10	0.17*	-0.01	0.03	0.00	0.17*	0.11	1		
12. DATSERV	0.15*	0.04	0.02	0.05	-0.02	0.03	0.22**	-0.00	0.42***	0.04	0.34***	1	
13. PRESSERV	0.33***	0.00	-0.04	0.00	0.19*	0.02	0.21**	0.06	0.26***	0.27***	0.32***	0.26***	1

Note: ***Coefficient is significant at the 0.001 level (2-tailed); **coefficient is significant at the 0.01 level (2-tailed); *coefficient is significant at the 0.05 level (2-tailed)

[†]Coefficient is significant at the 0.1 level (2-tailed)

Table II.
Mean, standard
deviation, and
correlation

Product	Model 1	Model 2	Service	Model 3	Model 4
<i>Control variable</i>					
SIZE	0.02 (0.11)	0.03 (0.12)	SIZE	0.07 (0.12)	0.06 (0.12)
REPEAT	-0.01 (0.01)	-0.01 (0.01)	REPEAT	-0.02 (0.01)	-0.02 (0.01)
INNOVATION	0.00 (0.01)	0.01 (0.01)	INNOVATION	-0.01 (0.01)	-0.01 (0.01)
SOURCESERV	-0.08 (0.14)	-0.13 (0.15)	OUTSOURCE	-0.12 (0.15)	-0.12 (0.15)
<i>Independent variable</i>					
BOOKS		1.06** (0.38)	DIGSERV	-0.42 (0.30)	-0.42 (0.30)
QUICKVAR		-0.84* (0.37)	DATSERV	0.46* (0.26)	0.46* (0.27)
ADVERT		0.23 (0.35)	PRESSSERV	1.29** (0.32)	
PACKAGE		0.43* (0.25)	DIGPROOF		0.73*** (0.23)
		LAMMOUNT			0.59** (0.20)
<i>Fitness indices</i>					
Model Chi-square	2.51	22.71**		28.57***	28.82***
d.f.	4	8		7	8
-2 log likelihood	221.79	201.59		195.73	195.48
Nagelkerke's R^2	0.02	0.17		0.21	0.22

Table III.

Logistic regression result of job loss (JOBLOSS)

Notes: Coefficients are regression coefficients (B); numbers in () are standard error; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, one-tailed test

A surprisingly large share, 49 per cent, of printers claim to have lost a job to an offshore competitor.

Based on the interviews, there were three main ways the printers are improving their competitiveness vis-à-vis offshore competitors. The first approach was to stick to specific niches or product areas that are considered “safe”. Some of these areas were deemed safe by printers because the markets are small with a specific customer base that few large printers would be interested in targeting. Two examples from our interviews included a firm that specialized in high-end stationary and another that targeted the funeral service industry, an industry that is also highly fragmented. Other areas printers believed are less vulnerable to offshoring include jobs that involve quick-turn around time and high shipping costs. As expressed by one printer who did not feel threatened by the offshoring trends:

Yes, if I was book printer, I'd be dammed scared. But if I'm a magazine printer, a direct mail printer or other things that are more timely, I see much less of a threat.

Our survey results suggest that this view is mostly correct, but printers have to be careful about what products they assume are “safe”. We found, for example, that printers who were involved with the printing of periodicals, generally considered a quick turn product, were more likely to be experiencing job loss. Another comment we heard in the interviews was that short runs were safe, a common assumption in the industry (Bauer, 2006). But it is not clear that this will continue to be the case. Much of the assurance is based on the high weight-to-value ratio of printing, driving up shipping costs, coupled with time sensitivity, both working in favor of domestic printers. But these characteristics are subject to change through technology. For example, China is heavily investing in its airfreight infrastructure with the hopes of lowering shipping costs for time-sensitive materials. Additionally, customers could reduce their time sensitivity by re-engineering internal processes. We heard one

example of a catalogue customer that re-engineered its processes to accommodate the six-week shipping delay in order to source from China. It saved more than \$1 million by doing so.

In addition, it may be the case that printers may not understand the reason for the lower costs overseas, and thus cannot respond appropriately. The common story is that labor is cheaper, therefore print is cheaper. One of our sources suggested that this may not be the case, and that material and equipment supplies may also contribute to lower costs.

A second way printers told us they were remaining competitive was by offering creative value added services. Several people we spoke discussed how they were moving into services such as data management, supply chain management, and other IT related services. Some examples in our interviews included a printer of real estate books who expanded into areas such as real estate advertising design, mailing and fulfillment, and even invoice billing. Another participant told us about how his company moved from printing menus for a restaurant chain, to using menus to develop detailed supply chain information. This was summed up by one printer who said:

You know five years ago or seven years ago if somebody were to say, you know, what business are you in? I'd automatically say commercial printing. But not so much anymore. A lot of our printing is driven from some of the other services we offer.

This particular printer outsourced much of his printing work now, but was adamant about not moving offshore for reasons of patriotism. Interestingly, our survey findings suggest that offering data management services alone probably will not protect printers from job loss. Those printers offering less standard services, such as web page design, hosting and digital photography do seem to be less susceptible to job loss. It may be that these types of services require creative content and therefore greater levels of communication and embeddedness. As India's booming IT industry becomes more involved with the printing industry, however, these services may also move offshore.

Another area of service that we did not explore in the survey, but was mentioned in two interviews, was the hope to retain some customers by offering "green" printing. As explained by one printer who was Forest Stewardship Council (FSC) certified:

We're finding a lot of [government] agencies insisting on that. I guess what the trend is there are people that are concerned about the environment and it's difficult to say that you're an environmental company and yet use outsourcing.

They also described how several large retailers, such as Target, were also looking into sourcing print from green printers.

The final way that printers were staying competitive was by offshore outsourcing themselves. In our survey, we found that while many printers are outsourcing, they are not yet doing this on a global scale. But, there are many fears about moving offshore, some of which are well founded, while others seem less so. Our survey suggests that shipping delays were the greatest problem for those that did offshore outsource. Overall, however, the benefits of moving offshore were rated higher than the costs. Firms that offshore outsourced were able to lower cost, use new technologies, and even increase product quality. Our interviews suggest that firms with connections overseas are first-movers in the process. While some have argued that large firms have an inherent advantage in this regard, we found that this was not necessarily the case. For

example, we had one firm's CEO tell us he made contacts in China on a trip that was part of his MBA program. The result was he experimented with outsourcing some of his work to Chinese firms. He got multiple bids and his results were excellent and he is planning to expand his overseas operations.

As one print broker observed, however, feeling comfortable making these types of contacts may pose a challenge for American printers in particular. Reflecting on his global experience, he stated:

I think also one of the things that may be hitting the United States more than other countries is the fact that we're more provincial. We're less used to travel, language, currencies and other things and so when we see other people tending to do what we think we should be doing, we're less tolerant of it and I think we're also less understanding of the fact that it can be our benefactor as well as a detrimental thing is we want to fight it.

One area where companies derive competitive advantage is by differentiating through better quality. Based on our interviews most, though not all, thought that overseas print material was equal to or better than the quality of domestic printers. Not only did they think the foreign competitors were just as good, quality-wise, they did not believe there was any hope to create a comparative advantage in quality because those advantages were embedded in the equipment, and the equipment vendors are not discriminating between developed and emerging markets when they sell their advanced technology. Put simply, printers in China have access to the latest equipment as a US printer.

Conclusions

In this paper, we found that printers are aware of the offshoring threat and are being affected by it. In terms of products and services, quick and variable printing, as well as non-standard IT services (with the exception of data management), are the areas that are less likely to suffer from job loss due to the offshoring. To respond to the challenges from offshore outsourcing, printers are trying to focus either on "safe" products, introduce new services, or take advantage of offshoring themselves. For the former two strategies, comparing our interviews with the survey data, it seems that printers have not identified the "safe" products and services very well. For the latter strategy, very few printers are taking advantage of lower offshore costs. This is due to fears about its implications for customer and employees, lack of knowledge about how to explore this option, and overall feelings of patriotism. Those that have offshored have enjoyed benefits above and beyond lower costs, including increased quality.

Complicating this picture is the fact that the costs and benefits of offshoring are likely to change. India and China, for example, are both working on improving transportation, particularly airfreight. Customers are becoming increasingly global and even changing their business models to mitigate the downsides of offshoring.

While the macro trade numbers indicate that offshoring is a relatively small phenomenon, the effects are probably amplified in an industry that has a shrinking market and low barriers to entry. Overseas printers will likely pick off certain market segments, forcing domestic firms, incumbent in those segments, to crowd into the "safe" segments. This leads to increased competition even for firms in those "safe" segments. The primary barrier to entry for printers is the capital equipment needed. As some firms go out of business due to increased foreign competition, their equipment is generally sold on the secondary market at a steep discount. This makes it even easier

for firms, both foreign and domestic to enter the market, escalating competitive pressures.

Clearly, this paper is just the beginning of understanding the dynamics of offshoring in the printing industry. Given the low response rate and the nature of our dependant variable, we are limited in understanding the complicated nature of the issues involved. In the survey, we did ask for performance data, but the response rate was so low that we were unable to use those questions. This is a limitation that researchers in this industry will have to find a way to overcome given that for a large percentage of the industry there is no public data available. The interviews were one method to get to some more detailed understanding, and there is a need for additional qualitative data. In spite of these limitations, however, this paper offers some answers regarding offshoring and the future of print and raises a number of questions for future study.

Note

1. In this paper “job loss” refers to print jobs, and not worker jobs.

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Appendix. Statistical methodology

Survey measures

In this section, we describe the variables used in the survey instrument. (Please contact corresponding author for more details on the methodology.)

Independent variables

Product type. A twelve-item list covered common printing industry product types. EFA analysis with eigenvalue equal to 1 and oblique rotation shows four product types: ADVERT including advertisement, catalogs, and periodicals; BOOKS including color books, black and white books, direct mail, and directories; QUICKVAR including forms, quick printing, labels, and transaction statement; and PACKAGE for a single item factor – packaging. A 61.65 per cent of the total variance was explained. The Cronbach's Alpha for QUICKVAR, BOOKS, and ADVERT were 0.71, 0.69, and 0.58, respectively, and the arithmetic averages of grouped items were entered into regression.

Service type. Using a similar process, we developed a nine-item list for printing industry services. EFA analysis results in three service types: DIGSERV including web development and hosting, CD-ROM production, digital photography, and online template development; DATSERV including mailing and fulfillment, variable data printing, and supply chain management; and PRESSSERV including digital proofing and laminating and mounting. A 55.96 per cent of the total variance was explained. The Cronbach's Alpha for DIGSERV, DATSERV, and PRESSSERV were 0.61, 0.60, and 0.22, respectively. Therefore, besides using the arithmetic averages of grouped items as the independent variables, we also broke the low-reliability factor – PRESSSERV – into two single-item factors: digital proofing and laminating and mounting. The direction and significance of the regression coefficients do not change and therefore, our conclusion is robust to the service structures.

Dependent variables

JOBLOSS. Three questions from the survey were combined to measure if the firm suffered job loss to foreign competitors. If a printing firm lost jobs, the case was coded as "1" otherwise "0".

Control variables

Four control variables were included in regressions: (1) SIZE, measured by the number of employees; (2) REPEAT, the percentage of total business from repeat customers (the greater percentage of repeat business, the greater the likelihood customer stickiness); (3) INNOVATION, measured as a percentage of sales in FY 2004 from products not offered three years ago; (4) SOURCESERV, whether the firm offshore outsources some of its own inputs like finance/accounting. The Cronbach's Alpha

for these four items was 0.72. The arithmetic averages of the four items were entered into regressions to measure experience with outsourcing in internal service areas.

Tests

We conducted two ANOVA tests to detect any non-response bias and missing-value bias. The first ANOVA was conducted to see if there is geographic bias between the respondent cases and non-respondent cases. Another 50 printing firms were randomly selected from the non-respondent pool. The ANOVA test did not find any significant bias in the geographic location between the 145 respondents and the 50 non-respondent firms. The second ANOVA was employed to test if there is any bias between the final sample and the cases that were deleted for missing values. No bias was found among our key variables such as employee number, job loss, product types, and service types.

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