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COMMENTARY

THE “CLUSTERS” CHALLENGE TO RURAL DEVELOPMENT

(Based partly on remarks given at a roundtable at the 13th annual Kansas Center for Community Economic Development Conference, April 18-19 2001, Manhattan KS)

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“Clusters” are currently a hot topic in economic development. In Kansas, this idea is being proposed as an organizing basis for the revised Kansas Strategic Economic Development Plan.¹ This approach raises some serious concerns for rural areas.

Some 60 percent of Kansas counties are rural areas that have suffered from persistent and long-term decline. There is nothing mysterious about this decline — it is the natural result of the ongoing agricultural revolution, which has eliminated all but a tiny percentage of the farm labor force that was once needed to feed the country. The strategic question Kansas faces is whether to let this decline run its course, or to intervene so as to ameliorate rural conditions. An unvarnished “clusters” strategy is a recipe for unrelieved rural decline. The strategy could make sense, however, if combined with other features aimed at rural areas.

How does economic development work?

To understand the problem, we’ll need a running start—so let’s briefly review modern theories of economic development.

The main way, and almost the only important way, to develop a small region is to find a way to continuously bring in dollars from outside the region. Those

dollars could come from government, for example, in the form of social security payments, or they could come from gifts or family remittances, or from investment income or retirement money. In practice, however, most of the dollars come from selling goods and services to people outside the region. These sales are referred to as “regional exports,” so this idea is generally known as “export base theory.”

Absolutely the only other way to develop economically is known as “import substitution,” which means you try to develop new local businesses that sell to local customers. This turns over the dollars and keeps them in the region for a while before they leak away. (Another way to look at this is, you are trying to increase the local economic impact multipliers.) Empirically, this approach is pretty much a non-starter for small regions — it just doesn’t get you very far. When we have estimated economic impact multipliers for small towns and counties in Kansas, we find the income-income multipliers are around 1.1 or 1.2 (which is much smaller than the rosy numbers some economic developers like to quote). That means that well over 80 percent of local income comes from outside, and less than 20 percent is generated by local sales to local residents. Moreover, import substitution gets you nowhere at all unless you can keep bringing in those outside dollars for the multiplier to work its magic on.²

The export base theory means that every place in the world has to be in the business of looking for outside dollars, mainly by selling something. This makes for an extremely competitive world out there. Even if you have something to sell now, there is a competitor somewhere just waiting to steal your market from you. So the problem of economic development is the problem of finding *and holding onto* a competitive edge, no more and no less. But how can that be done?

There are just two ways to keep a competitive edge. One approach is on the marketing side: you try to find a niche product that is better than anyone else's product. Then you defend your niche by means of patents or marketing or continued R&D and so on. (If your niche depends on scarce natural resources, such as mineral extraction, you may not need to defend your niche very much. But most communities are not as lucky as that.)

The other approach is on the production side: you try to produce at a lower cost than anyone else. This means lower cost in a very general sense, not just what you pay your workers, but much more importantly things like how quickly can you respond when things change, and how well have you organized your system of production, and how cheaply and quickly can you develop new products.

So how do you get low costs? In the short run, you might have low costs because you have clever ways of organizing your business, but that can always be copied, and sooner or later it *will* be copied. Or you might have access to cheap labor or cheap natural resources — but that is not stable against changes in prices.

In the long run, the *only* reliable way to maintain a cost advantage is to enjoy some kind of localized economy of scale or economy of agglomeration — in other words, you are producing cheaper per unit because you produce more units than your competitor, or because you produce more kinds of related stuff in one place. Once you get on the right side of economies of scale, you get explosive positive reinforcement. Cheaper production means more sales, and more sales means more economies of scale, which means yet cheaper production. The only natural limit happens when you have monopolized the entire market.

There are many kinds of localized economies of scale. Some have to do with making a single factory or business larger ("firm-specific economies of scale"). Some have to do with putting many factories in the same industry close together ("industry-specific economies of scale"). Some have to do with grouping together many varieties of activity in a large city ("economies of urbanization").

What are clusters?

Clusters have to do with yet other kinds of economies of scale. The term "cluster" is non-standard in regional science, and there is no completely accepted definition. I'll propose what I think is the best definition. In general, a "cluster" is a group of related or *linked* businesses and activities that work together and support each other in a particular geographical region. The linkages consist in specialized resources that are shared between businesses. Major types of linkages might include:

- common customer firms
- common supplier firms
- common infrastructure (specialized transport, communications, utilities)
- common service-providing firms
- common skilled labor market
- common education and worker training facilities
- common university research specializations
- common risk capital markets.

These linkages are important because they allow economies of scale in production or utilization of these specialized resources.

I think there should be one other requirement for defining a true cluster: it should link together unlike industries, or at least industries that are not directly competing. Otherwise, what you have is ordinary localized industrial economies of scale. "Industrial economies of scale" is old-hat idea. More importantly, developing a concentrated industry is not a very attractive economic development strategy, because it puts all of your eggs in one basket. If you are Detroit and the American auto industry tanks, then it is extremely hard to recover. But if you have a diversified industrial base, then you have a lot of protection against shocks in any one industry. What makes a cluster strategy attractive is this built-in protection against market risk.

From the point of view of state development strategy, there is another reason to omit a concentrated industry from the cluster concept: concentrated industries tend to need less help from the state than true clusters. I'll return to this point below.

What are some existing and potential clusters in Kansas?

Some existing and possible Kansas clusters that have been suggested include:

- Biomedical technology (Lawrence and Kansas City Metro Area)
- Bio-agricultural technology (Manhattan)
- Information technology (Lawrence and Kansas City Metro Area)
- Tourism (I70 and I35 corridors).

However, some other Kansas possibilities that have been discussed are probably not clusters under my preferred definition:

- A row or field crop such as wheat would not be considered a cluster because it is both too narrow an industry and too widespread geographically.
- Printing is not a cluster, for the same reasons.
- Agricultural value-added (e.g. speciality products and branding) may generate few economies of scale because it is geographically wide-spread and includes diverse production techniques that may have little in common.
- Livestock, feed, and meat products (Southwest Kansas) might be viewed as midway between a concentrated industry and a cluster. These industries do employ a variety of different production techniques. However, since the fortunes of these industries rise and fall rather uniformly with the prices of beef and pork, there is not much risk sharing.
- Aviation and avionics (Wichita) involves a single form of production, implying it is an old-fashioned industrial concentration, not a cluster. On the other hand, the aviation industry serves three relatively independent markets: commercial aviation, general aviation, and military aviation, leading to some degree of diversification against market risk. At the same time, it is hard to see why a Fortune 500 aviation company would stand in much need of

assistance from the Kansas economic development strategy.⁴

Why are clusters important for economic development strategies?

To summarize, we have identified just three sustainable modes of economic development that are available for small regions:

- develop a niche market;
- develop an industrial concentration; or
- develop a cluster.⁵

Industrial concentrations are subject to industrial risk. Niche markets are subject to industrial risk and are limited by the size of the niche. Only cluster development offers potentially unlimited growth with some insurance against industry-specific risk. Therefore, the case for a cluster-based development strategy seems compelling, at least on its face.

Resources are limited. Economic development initiatives use up scarce time and scarce tax dollars. We can't do everything. Strategy *means* making hard choices. So we need to maximize bang for the buck. It would appear that promoting successful clusters can maximize bang per economic-development buck.

When should government provide special assistance to clusters?

It would seem to make sense for government to provide targeted assistance:

- to help get a new cluster off the ground;
- to help an existing cluster that faces temporary difficulties;
- to help a cluster expand into related but new areas; or
- to provide ongoing and needed government services to an established cluster that more than pays its own way in taxes.

On the other hand, it makes very little sense to provide assistance:

- to prevent the death of an economically obsolete cluster;
- to assist an established cluster that does not pay its own way in taxes;

- or
- to help a cluster that does not pay good wages.

Thus the cluster idea logically doesn't justify a blank check for assisting clusters. Instead, it offers an invitation to detailed strategizing. It is open to debate whether a state like Kansas is well equipped to make and implement the kind of fine judgements that are needed — more on this below.

Note that the exact same arguments apply for assisting ordinary industrial concentrations. It might make sense to help them get off the ground, and some ongoing specialized government services may be appropriate. It also might make much sense to assist expansion into diversified products. It does not make sense to subsidize them if they can pay their own way. However, depending on a concentrated industry is inherently risky for the local economy, while it is a major goal of economic development to reduced market risk. Also, concentrated industries usually include large firms that can well afford to get by without government help, whereas clusters in small regions generally don't include large firms. Therefore, the "threshold of justification" should typically be set higher for concentrated industries than for clusters — that is, you should have to make a very strong case before the government intervenes in favor of concentrated industries.

What is the downside of a cluster development strategy?

A successful cluster strategy depends on paying concentrated state attention to a small number of industries. That approach demands very good long-term judgement about which industries to back on the part of economic development officials. Unfortunately, economic developers nearly always operate in a highly political environment that is sensitive to short-term-payoffs. Developers have to keep pleasing a majority of the legislators during each legislative cycle, even while addressing long-run concerns. It is very difficult to reconcile the two roles.

A cluster strategy implies that government must "pick the winners." If

the strategy has any teeth, then political issues of fairness between industries and places will *necessarily* arise. The natural political temptation is to try to spread the economic development wealth over a wide variety of industries. But that means giving up the fact (if not the rhetoric) of a cluster strategy.

Existing clusters are always politically powerful. Industrial concentrations tend to be even more powerful, because their interests are more coherent. It will be very hard for Kansas government to do the "right" thing.

If Kansas lacks the kind of discipline that an effective clusters strategy demands, then there do exist practical alternatives. Among the possibilities are:

- A focus on high-tech startups across the board: support all types of technology-related efforts by startup firms and small firms (as in some respects KTEC does now). High tech can produce both high wage jobs and defensible niche industries. Geographical fairness can be achieved by efforts to spread grants and benefits widely. This strategy could be improved by requiring that firms receiving benefits remain in Kansas for a certain number of years.
- A high-wage focus. The results would be very similar to a high-tech focus.
- No economic development strategy at all. At present, every state in the US has an economic development effort. However, it has not been conclusively shown that these efforts benefit average citizens on net.⁶ (In contrast, there is overwhelming scholarly evidence that conventional programs like highways and education provide hugely positive net benefits to citizens.)⁷ Trying to make do without formal state-level economic development would be a worthy experiment (though one might well prefer that some other state try it first).

How do clusters affect rural areas?

The most important fairness issue is that cluster development offers very limited benefits to rural areas. Clusters depend on concentrations of industry that can share resources. Most rural areas are not concentrated enough.

Rural areas could be positively hurt if they are ignored by the state economic development strategy. Such a strategy would tend to use rural tax dollars to aid urban development. Cluster policies could also accelerate the migration of existing rural industry to cities where clusters exist. Rural areas could conceivably be better off if Kansas had no economic development strategy at all rather than a cluster strategy.

However, cluster development does potentially offer some secondary benefits to rural areas. For example, some rural areas are on the fringes of a cluster and could benefit from it. Some rural areas may be able to develop small-scale components of larger clusters, especially local tourism. Also, rural areas could be helped through "trickle down" economics. For example, many rural workers commute to good jobs in economic clusters in urban areas. Finally, if the net fiscal incidence of state-wide development strategies is positive, then that could lead to lower tax rates that benefit rural as well as urban areas. I would suggest, however, that these secondary effects are likely to be small for most of the impacted rural areas in Kansas.

What can the strategic plan do for rural areas?

If the Kansas strategic plan adopts a pure cluster strategy, then in my opinion that is tantamount to planning for unrelieved rural decline. I hope that Kansas will take a different tack.

- The plan should emphasize those clusters that have the most linkage to rural areas. That especially means the tourism cluster.
- The grain-livestock-meat complex might deserve some notice because of its rural connections, but it is important to realize that this industrial concentration is strategi-

cally inferior in terms of concentrated market risk, low growth prospects, and relatively low real wages.

- The plan should include a program to support rural agricultural value-added niche businesses, whether or not they are viewed as part of a "cluster."
- The plan should emphasize ways of connecting rural areas to the benefits of urban clusters. That includes improving rural transportation, not so much by building new highways as by finding replacements for the vanishing buses and rail systems, perhaps by thinking about air taxis. It should also include bringing fiber optic telecommunications technology into every community.
- The plan should emphasize ways of sustaining the positive qualities of rural life. The economic development potential of rural areas always depends on the willingness of entrepreneurs to live there. It is important to make sure that decent health care and good education are available everywhere in Kansas.
- The plan should include specific programs to support rural start-ups in niche industries that can bring in new dollars from outside of Kansas, without reference to clusters.

How can rural areas develop without true clusters?

Even in the absence of intensified help from state sources, the situation in declining rural areas is not hopeless. Given leadership and vision, there are many strategies that rural communities can pursue on their own with reasonable hopes of success. Some of the possibilities include:

- develop niche industries (e.g. organic farming);
- provide infrastructure (e.g. fast Internet) for a collection of niche industries;
- develop one major industry (e.g., resource extraction);
- capture one big operation (e.g., a state prison);

- become part of larger cluster (e.g. regional tourism).

But of course, each community must tailor its strategy to its unique conditions. Help is already available from many sources, including the Kansas Center for Community Economic Development and the Cooperative Extension Service. Additional help from the state economic development plan would improve the odds of success.

Notes

1. While the draft strategic plan had not yet been released when this was written, the consultants assisting its formation have endorsed cluster concepts (www.ecgroup.com/).
2. Regional autarky, a theoretical development strategy that does not depend on any export base, is the extreme polar case of import substitution. Autarky is not a practical development strategy, because no large group of citizens is willing to live without access to the wide range of modern goods that global specialization makes possible.
3. A detailed discussion of Kansas clusters is given by Kansas Technology Enterprise Corporation (2000). However, that report focuses exclusively on technology-related clusters and does not distinguish between clusters and concentrated industries.
4. The answer usually given to this question is that incentives are needed to keep the industry from moving away. In more common language, this is industrial blackmail. I believe that surrendering to this logic is self-defeating. In a blackmail relationship, the blackmailer's imperative is to wring all of the surplus out of the relationship. In other words, the price keeps increasing until there is no profit left to the victim. In particular, Pat Oslund and I (1999, p.66-72) have reviewed literature showing a number of cases where competitive industrial incentives were set so high that the local community was clearly made worse off by assenting to the transaction. Often the best response to a blackmailer is to refuse to pay.
5. A fourth mode of development is available for large cities, namely one which utilizes economies of urbanization. That mode does not lend itself to state economic development strategies, because it does not suggest any particular way to focus government

efforts.

6. Specific state-level economic development programs have received positive benefit-cost evaluations; for example, KTEC in Burress and Oslund (1998). The best benefit-cost discussion I have seen for state and local economic development programs in aggregate is by Bartik (1991, p.182), who concludes: "The range of plausible estimates is wide enough that it is impossible to say whether state and local economic development policies will generally benefit the residents of the targeted metropolitan area."
7. For an example from my own work, see Burress and Oslund (1999).

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CONSUMER DEMAND FOR DIGITAL VIDEO PRODUCTS

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Overview

This article, which is comprised of the Survey of Consumers, and the Conclusion of the fifth report, is part of a series of reports on the economic impacts of the Digital Video Focused Program Area. The series is being prepared by the Policy Research Institute (PRI) at the University of Kansas. Four previous reports in this series have provided a preliminary analysis of the digital video (DV) market place and its economic impacts:

- Burress *et al.* (1998) establishes an approach for mapping complex marketplaces in terms of the general attributes of goods. The approach is then applied to provide a detailed empirical description of existing and potential DV-related markets.
- Burress *et al.* (1999a) extends this approach to provide a map of technologies needed to implement the identified types of DV goods. It also provides theoretical and empirical maps of the spillovers and other channels through which innovations in digital video technology could potentially affect the US economy and proposes a Computable General Equilibrium (CGE) model of the US to be used as an accounting frame and aggregation method for summarizing

economic impact channels. (A CGE model is one that numerically calculates the effects of all interactions of all markets in the economy, based on moderately to highly aggregated markets.)

- Burress *et al.* (1999b) proposes general methodologies for the entire study, including possible follow-ons and *ex post* economic impact analyses. It also proposes specific methodology for gathering the baseline data (but not the detailed protocols), and proposes a research plan for gathering and analyzing the baseline data needed for the over-all study.
- Burress *et al.* (2000) describes methods and protocols for gathering the baseline data and also analyzes some of the test data so gathered.

It is anticipated that follow-on research will track the Digital Video Focused Program Area over time, and then provide comprehensive *ex post* (i.e., retrospective) measurements of its economic impacts on the US.

Survey of Consumers

During the spring of 2000, the University of Kansas Policy Research Institute conducted a telephone survey of households to gather information on potential consumer demand for digital video products and services. At the time that the survey was conducted, most of the effects of ATP-supported digital video technologies had not yet been incorporated into products available in the market place. Therefore, our primary approach was to look at consumer valuation of various functions and characteristics of video technology, functions and characteristics that may be actualized in consumer products available in the future. Our concept of valuation involves both the monetary payments that might be made by the consumer and the expenditure of the consumer's time.

Concretely, the survey asked for three categories of information:

- Demographic characteristics;
- Current household consumption of video technologies and entertainment services;
- Preferences for and evaluation of

potential new digital video entertainment goods and services.

This section provides descriptive information on consumer responses to many of the survey questions.

Characteristics of the survey sample

Cooperation rate

During April - June, 2000, the Survey Research Center (SRC) at the Policy Research Institute conducted a survey of households throughout the US. The SRC started with a list of randomly-generated telephone numbers drawn from active telephone exchanges across the country. Because the numbers were random, some of them proved to be out of service. Other numbers belonged to businesses rather than households. If a valid telephone number could not be reached on the first try, the SRC called the number back at least four times at various times of the day. The SRC reached 1,052 households. A total of 315 households initially agreed to participate in the survey. Of these, 288 actually completed the telephone interview process - fewer than 6 percent of participants stopped the survey midway. The cooperation rate for the survey is (288/1052) or 27 percent.

We were concerned about the fairly low cooperation rate for the survey (the SRC generally achieves cooperation rates over 50 percent). We spoke with the individual surveyors, who told us that potential respondents seemed to be suspicious of the topic of the survey (use of technology). Potential respondents often commented that they thought we were trying to sell them something (despite our claims to the contrary). Similarly, several potential respondents commented that they were "tired of telemarketers."

Despite the fairly low cooperation rate, a very high percentage of respondents finished the survey once they started it. This indicates to us that the survey is appropriate in length (it takes about 12-15 minutes to complete) and that the subject matter and wording can be understood by the participants.

Most individual survey questions have an item response rate of at least 95 percent (respondents who actually answer question/respondents who are eligible to answer question). This reinforces the idea that the questions are appropriate and understandable.

Demographics and representativeness

The survey asks a number of demographic and income questions. These questions serve two purposes: a) to test if the resulting survey sample is representative of the population in terms of measurable characteristics, and b) to provide explanatory variables for the regression models estimated in another part of the project. Key demographic and income variables include:

- Respondent age
- Gender
- Employment
- Home ownership
- Household income before taxes
- Household size
- Hours worked

We were able to find up-to-date counterparts from widely-available U.S. data sources for all of the variables except hours worked.

We found that the survey sample is similar to the U.S. population with regards to several measurable criteria (see Tables 2.1-2.4). The sample represents the age distribution of the U.S. population fairly well (note that only people age 18 and older were included in the group of potential survey respondents). The sample does not significantly differ from the U.S. population in gender distribution. The percentage of respondents employed (69%) is close to the employment percentage for the U.S. adult population as a whole (66%). Approximately 70 percent of respondents own their own homes, in comparison to 67 percent nationwide, a difference that is not significant.

The survey does significantly under-represent low income households - those with incomes under \$15,000 per year (see Table 2.5). Fewer than 10 percent of the surveyed households fall into this income

category, in contrast with over 16 percent of households nationwide. Similarly, the survey over-represents middle income households in the \$50,000-\$80,000 per year income category. Under-representation of low income households in the survey sample may be due in part to lack of telephone service. Recent data from the Federal Communications Commission indicates that about 15 percent of households with incomes under \$15,000 lack phone service. In contrast, only about 2 percent of households with incomes over \$60,000 lack service.

The average size of households in the survey sample is somewhat larger than for the U.S. as a whole (2.93 persons versus 2.61 persons). The number of employed people per household (1.65) exceeds the national average (1.34), due mainly to the larger than average household size. Although these differences are statistically significant, they are small in size (see Table 2.6).

As mentioned earlier, the demographics and income section of the survey also contains questions on hours worked. We could not find recent U.S. data for these variables, so they do not contribute to the discussion of representativeness. For those respondents who are employed, full time employment (35 to 50 hours per week) is the most common choice. Fully 18 percent of employed respondents work more than full time, that is, more than 50 hours per week. On average, the respondent plus other household members together work about 57 paid hours per week (see Tables 2.7 and 2.8).

To summarize, the survey sample appears to be representative of the U.S. population in age, gender composition, employment, and home ownership. The most important characteristic for which the sample is not representative is income - low income households are significantly under-represented.

Current household consumption of video technologies and entertainment services

A central hypothesis discussed is the common-sense notion that those

Table 2.1
Age of Respondent

age	18-25	26-44	44-64	65+
% of survey respondents	15.4	36.4	32.5	15.7
% of U.S. population age 18+	14.5	39.2	29.2	17.1

N = 286

Source: PRI consumer survey U.S. Bureau of the Census (2000a). Comparison data from 1999.

Significance: A chi-square test of the age distribution of the survey respondents against the age distribution of the general population shows that the survey distribution is not significantly different from the population as a whole ($p = .55$).

Table 2.2
Gender

gender	male	female
% of survey respondents	43.7	56.3
% of U.S. population age 18+	48.1	51.9

N = 286

Source: PRI consumer survey and U.S. Bureau of the Census (2000a). 1999 comparison data.

Significance: A chi-square test of the gender distribution of the survey respondents against the gender distribution of the general population shows that the survey distribution is not significantly different from the population as a whole ($p = .14$).

Table 2.3
Employment of Respondent

employment	employed	not employed
% of survey respondents	68.8	31.2
% of US Population age 20+	66.0	34.0

N = 286

Source: PRI consumer survey and U.S. Bureau of Labor Statistics (2000b). 1999 comparison data. The consumer survey includes respondents age 18 and over, while the BLS data includes persons age 20 and over.

Significance: A chi-square test of the gender distribution of the survey respondents against the employment distribution of the general population shows that the survey distribution is not significantly different from the population as a whole ($p = .32$).

Table 2.4
Home Ownership

ownership	own home	do not own home
% of survey respondents	70.3	29.7
% of U.S. households	66.2	33.8

N = 286

Source: PRI consumer survey and U.S. Bureau of the Census (2000c). 2000 comparison data.

Significance: A chi-square test comparing the home ownership distribution of the survey respondents against the home ownership distribution of the general population shows that the survey distribution is not significantly different from the population as a whole ($p = .28$).

Table 2.5
Household Income before Taxes

income	under \$15,000	\$15,000-29,999	\$30,000-49,999	\$50,000-79,999	\$80,000+
% of survey respondents	09.4	18.5	23.6	26.8	21.7
% of U.S. households	16.5	20.5	22.2	20.6	20.2

N = 253

Source: Consumer survey and U.S. Bureau of the Census (2000d). Interpolation was necessary to make income categories match.

Significance: A chi-square test shows that the income distribution of households participating in the survey differs significantly from the income distribution of households in the U.S. as a whole ($p = .01$). In particular, the survey under-represents low income households and over-represents households in the upper middle income category (\$50,000-79,999).

Table 2.6
Household Size and Employment per Household

household size	mean # people	Standard error of mean	Mean employed people	Standard error of mean
Survey respondents	2.93	.09	1.65	.07
U.S. households, 1998	2.61	-	1.34	-

N = 288

Source: PRI consumer survey; U.S. Bureau of the Census (1998); and U.S. Bureau of Labor Statistics (2000a).

Significance: T tests ($t = (2.93-2.61)/.09$ and $t = (1.65-1.34)/.07$) show that both the average household size and average employment per household are significantly greater for the survey respondents than that for the US as a whole. But although the differences are statistically significant, they are small (about 1/3 of a person).

Table 2.7
Hours Worked by Respondents

	Number of respondents	Percent of employed
15 hours or under	10	05.1%
16 to 34 hours	44	22.3%
35 to 50 hours	107	54.3%
more than 50 hours	36	18.3%
not employed	90	

N=287

Source: PRI consumer survey. Most of the respondents who worked at paid jobs or in their own businesses reported full time employment, working between 35 and 50 hours per week.

Table 2.8
Total Hours Worked by Household

	Mean	Standard Error
Total household work hours	56.6	2.0

N = 287

Source: PRI consumer survey. Total hours worked by household members are calculated using the midpoints of reported ranges of hours.

Table 2.9
Market Penetration of Video Goods and Services

Good or Service	% owning or receiving	Number of respondents
Color TV	99.0%	288
VCR	97.6%	288
Cable or satellite TV	79.7%	286
Cable TV	67.0%	286
Internet access at home	57.8%	287
Premium channels	33.0%	288
Satellite TV	16.2%	284
DVD player	14.8%	283
HDTV	01.9%	280

Source: PRI consumer survey

consumers who currently are intense of video goods and services will also have the highest willingness to pay for advanced goods and services that are just coming into the market place. In order to test this hypothesis, we asked consumers about their ownership and use of a number of video, electronic, and entertainment goods and services. The survey focuses on television, movies, and video entertainment.

Market penetration of video goods and services

Market penetration of color TVs and VCRs is almost universal among the households that we interviewed (see Table 2.9). Cable or satellite service is also very common - fully 80 percent of households receive cable or satellite TV service, and a few households receive both. A majority of the households have Internet access in the home. About one-third of households currently have access to one or more premium channels such as HBO. About 15 percent of households in

the sample currently own DVD players. About 3 percent (8 respondents) report that they already own HDTV. Although the survey questionnaire briefly explained what we meant by HDTV, we found that only 3 of the 8 households reporting HDTV also reported a TV price (>\$2000) consistent with owning HDTV. We adjusted our statistics accordingly.

Equipment ages and prices

We asked consumers about the prices and ages of the video equipment that they owned (see Table 2.10). In the case that the consumers had more than one TV, more than one VCR, or more than one DVD player, they were asked to report on their best piece of equipment. We report median as well as mean values for age and price, because outliers (such as a TV costing \$7500 or a TV 30 years old) have a large effect on means but almost no effect on medians.

To generalize, mean expenditures and mean equipment ages exceed medians of the corresponding variables. Consumers

who have purchased HDTV pull up the average TV expenditure. Similarly, early adopters of DVD players, who paid a high price for their equipment, pull up the DVD expenditure average. For each equipment type, considerably more consumers are able to recall approximately when they acquired their equipment than what the equipment cost.

As mentioned earlier, the overwhelming majority of households report owning TVs and VCRs. The median expenditures on these items are modest (\$400 and \$200 respectively). Half the households purchased their best TV more than four years ago. Only around 15 percent of households have DVD players — the median expenditure on DVD players is \$300, and the majority have been purchased within the last year.

Equipment quality

Consumers were asked a few questions assessing the quality of video equipment and services. Most

**Table 2.10
Equipment Expenditures and Ages**

	mean	median	number of responses
TV expenditure (\$)	642	400	213
TV age (years)	4.7	4.0	271
VCR expenditure (\$)	204	200	202
VCR age (years)	3.8	3.0	263
DVD expenditure (\$)	516	300	26
DVD age (years)	.85	.67	41

Source: PRI consumer survey.

**Table 2.11
Screen Size of Best Color TV**

	Number of respondents	Percent
21 inches or under	61	21.9
22 to 27 inches	132	47.3
28 to 36 inches	60	21.5
37 to 49 inches	9	3.2
larger than 49 inches	17	6.1
Total	279	100.0

Source: PRI consumer survey.

Table 2.12
Number of TV Channels with Good Reception

	Number of respondents	Percent
under 20 channels	73	26.0
20 to 49 channels	72	25.6
50 to 99 channels	91	32.4
100 channels or over	45	16.0
Total	281	100.0

Source: PRI consumer survey

Table 2.13
Features Wanted in Next Color TV Purchased

Desired Feature	Number mentioning	Percent mentioning
Bigger screen	79	27.5
Better sound	65	22.6
Sharper-clearer image	56	19.5
Easier controls	52	18.1
Better color	41	14.3
High definition or digital	41	14.3
Cable ready	22	07.7
Picture within picture	10	03.5
Built-in VCR/DVD	8	02.8
Wide-screen/letter-box	6	02.1
Flat screen	6	02.1
More reliability	4	01.4
Better programs	4	01.4
N = 286		

Source: PRI consumer survey.

households have small- or modest-sized TVs. About 31 percent of the households currently own large screen TVs with screen sizes greater than 27 inches (see Table 2.11). Most households receive fewer than 50 TV channels, and about one-fourth of households receive fewer than 20 channels. About 16 percent of households receive more than 100 channels (see Table 2.12).

Desired characteristics of TV purchases

Consumers were asked an open-ended question about the TV features that they desired (see Table 2.13). The question was worded as “What features will be important to you in the next color television that you purchase?” The answers were then coded into categories. Over one-fourth of consumers want a

“bigger screen.” This is followed closely by “better sound” and “sharper-clearer image.” “Easier controls” are mentioned by 18 percent of respondents, and “better color” and “high definition” are each mentioned by 14 percent of respondents.

Intensity of use of video entertainment

The average consumer spends a considerable amount of time each week watching TV, going to movies, and renting videos (see Tables 2.14-2.16). More than half of consumers spend at least 11 hours per week watching television programs. More than 40 percent of consumers go out to the movies at least once a month. Fully 36 percent of consumers rent a video at least once per week, and another 30 percent rent at least once per month.

It is interesting to ask whether those consumers who watch TV a high number of hours also rent videos and go the movies frequently. To assess this, we divided each type of entertainment into two groups - intense consumers and less-intense consumers. Intense TV consumers are defined as those watching at least 11 hours per week, intense high movie goers are defined as those going to the movies at least once per month, and intense video renters are defined as those renting at least once per month. We created three 2-way tables (movies versus TV; videos versus TV, and videos versus movies) and performed chi-squared tests. We found that:

- Going to the movies is unrelated to hours of TV watched. That is, intense movie goers are just as likely to be intense TV watchers as are less-intense

Table 2.14
Hours of TV watched per Week by Respondent

Hours	Number of respondents	Percent
zero	5	1.7
1 to 5	43	15.0
6 to 10	77	26.9
11 to 20	97	33.9
21 to 30	33	11.5
31 to 40	20	7.0
over 40	11	3.8
Total	286	100.0

Source: PRI consumer survey.

Table 2.15
Frequency of Going to the Movies

Frequency	Number of respondents	Percent
At least once per week	22	7.7
At least once per month	101	35.2
A few times per year	81	28.2
About once per year	17	05.9
Almost never	66	23.0
Total	287	100.0

Source: PRI consumer survey.

Table 2.16
Frequency of Renting Videos

Frequency	Number of respondents	Percent
At least once per week?	103	36.0
At least once per month?	87	30.4
A few times per year?	37	12.9
About once per year?	8	2.8
Almost never?	51	17.8
Total	286	100.0

Source: PRI consumer survey.

Table 2.17
Intensity of Movie Going Versus Intensity of TV Watching

Intense TV watcher		Intense movie goer	
		no	yes
no	Count	71	93
	%	43.3	56.7
yes	Count	54	67
	%	44.6	55.4

Source: PRI consumer survey.

Table 2.18
Intensity of Video Renting Versus Intensity of TV Watching

Intense TV watcher		Intense video renter	
		no	yes
no	Count	28	67
	%	29.5	70.5
yes	Count	95	94
	%	50.3	49.7

Source: PRI consumer survey.

Table 2.19
Intensity of Video Renting Versus Intensity of Movie Going

Intense movie goer		Intense video renter	
		no	yes
no	Count	66	29
	%	69.5	30.5
yes	Count	97	93
	%	51.0	49.0

Source: PRI consumer survey

Table 2.20
Tradeoffs of Size and Image Quality

Choice	Number of respondents	Percent
Prefers 49" conventional TV over 27" movie quality	50	17.6
Also prefers 49" conventional over 36 inch movie quality	10	
Also prefers 36 inch conventional over 27 inch movie quality	17	
Prefers 27" movie-quality TV over 49" conventional	234	82.4
Total	284	100.0

Source: PRI consumer survey

Table 2.21
Activities that Decrease as TV Viewing Increases

	Number mentioning	Percent mentioning
Active sports and hobbies	30	25.0
Other entertainment	22	18.3
Paid work	20	16.7
Sleep	13	10.8
House and yard work	13	10.8
Computer and Internet use	9	07.5
Reading	8	06.7
Studying	4	03.3

N = 120 = number increasing in TV viewing as result of big package.

Source: PRI consumer survey.

movie goers (Table 2.17).

- Renting videos is *negatively* related to watching TV programs. About half of intense video renters watch TV 11 hours or more per week; in contrast, 70 percent of less intense video renters watch TV 11 hours or more. Differences are significant at the 1 percent level. It appears that video renting is a substitute for watching TV programs (Table 2.18).

- Renting videos is *positively* related to going to movies. About half of the intense video renters are also intense

movie goers. In contrast, only 30 percent of the less-intense video renters are intense movie goers. The results are significant at the 1 percent level. It appears that the underlying preferences that make a person want to go to the movies also influence the person to rent videos (Table 2.19).

Willingness to pay for advanced video products and services

The final section of the survey

focuses on consumer preferences for and willingness to pay for advanced video products and services. Some of these products (for example, large screen TV) are already well established in the market place. But many of the products and services are just emerging. Because survey respondents might not be familiar with the goods and services we were trying to evaluate, the survey provides brief descriptions of what the products and services can do in terms that consumers can understand. Among the

goods and services covered by the survey are:

- TVs with movie-quality screens defined as “as crisp, clear, and colorful as what you would see in a movie theater.” Consumers were asked about their trade-offs between screen size and picture quality, and also about their willingness to pay for a movie-quality picture.
- Advanced DVD players that would also allow the consumer to record. Consumers were asked about their willingness to pay to own the device.
- Instant replay devices that would “allow you to stop what you were watching, even if it were a live telecast, and go back and watch part of the telecast again. ...At the same time, the device would record anything you were missing.” Consumers were asked what monthly fee they would be willing to pay to rent such a device.
- Video on demand that would make “a huge library of movies, documentaries, and educational programs” available within 5 minutes for a fixed monthly fee. Consumers were asked about their willingness to pay for monthly service.
- The “big package” providing a large screen TV with movie picture quality, a DVD player and recorder, instant replay, and video on demand services. Consumers were asked about their willingness to pay for monthly rental of the “big package.” They were also asked if, given the big package, they would watch more TV. If so, they were asked what they would do less. The idea here is that the big package (as well as other video services) have a “time use” cost as well as a monetary cost.

Tradeoff of image quality and screen size

Consumers were asked explicit questions about their trade-offs

between TV screen size and image quality (see Table 2.20). Consumers initially were given two hypothetical choices: a 49 inch TV with conventional picture quality or a 27 inch TV with a picture quality “as crisp, clear, and colorful as what you would see in a movie theater.” The consumers were asked to imagine that one of the TVs was available to them without cost. The overwhelming majority of consumers - 234 of 284 answering the question - chose the 27 inch movie quality TV. This result is not inconsistent with the previous result that consumers desired “larger size” more than any other feature in a new TV. For the previous question, consumers were talking about TVs of existing quality. For most people, this means conventional TV because they have not even seen HDTV. In this question, consumers are asked to imagine a TV of higher quality than they have actually seen. Consumers are clearly willing to sacrifice size if the image is clear enough and if no price differentials are involved.

The 50 respondents who chose the 49 inch TV in the initial stage were given one of two other questions: a) choice of a 49 inch TV with conventional quality or

36 inch movie quality (asked to 25 respondents); or b) choice of a 36 inch TV with conventional quality or a 27 inch TV with movie quality (asked to 25 respondents). Ten respondents (40% of those asked) said that they would also choose the 49 inch conventional TV over a 36 inch movie quality TV. Seventeen respondents (68% of those asked) said they would choose a 36 inch conventional TV over the 27 inch movie quality TV.

Willingness to pay for image quality

We then asked consumers how much they would be willing to pay to get a movie-quality TV. Consumers were asked to compare two TVs of the same size (49 inch), one with conventional quality picture and one with a movie quality picture. Consumers were given one of four price differentials (\$50, \$200, \$500, and \$2000) and asked which TV they would buy. At a price differential of \$50, about 90 percent of consumers would choose movie-quality TV. For a price differential of \$200, that percentage falls to 64 percent. About 40 percent of consumers say they are willing to pay a

Willingness to Pay for Movie-Quality TV

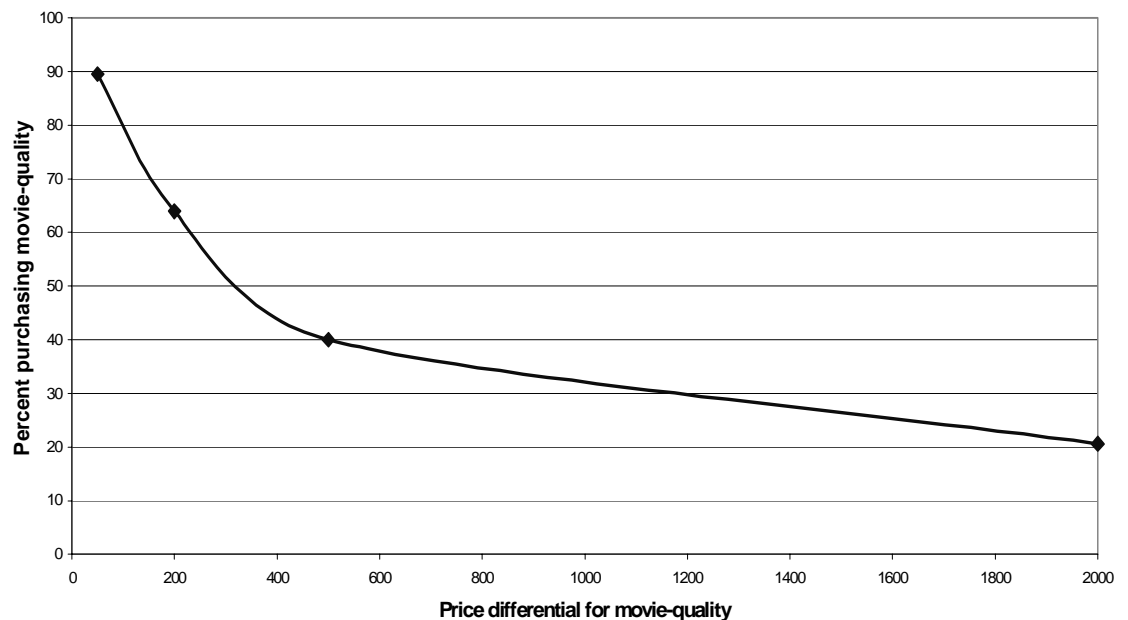


Figure 2.1

price differential of \$500 and about 20 percent say they are to pay \$2000. The graph below (Figure 2.1) shows the tradeoff between the price differential for movie quality and the percentage of consumers who say they are willing to pay that price.

Willingness to pay for advanced DVD device

Consumers were asked to place themselves in a situation where they were going to buy a new video recorder and player. They were asked to choose between an advanced DVD player that allowed recording and a conventional VCR. Consumers were told that the advanced DVD player would cost more than the VCR - consumers were presented with one of four price differentials (\$50, \$100, \$250, and \$500). They were asked whether they would buy the more expensive "super DVD" player or the conventional VCR. A large majority of consumers (84 percent) were willing to pay a price differential of \$50 for the super

Willingness to Pay for "Super DVD" Player

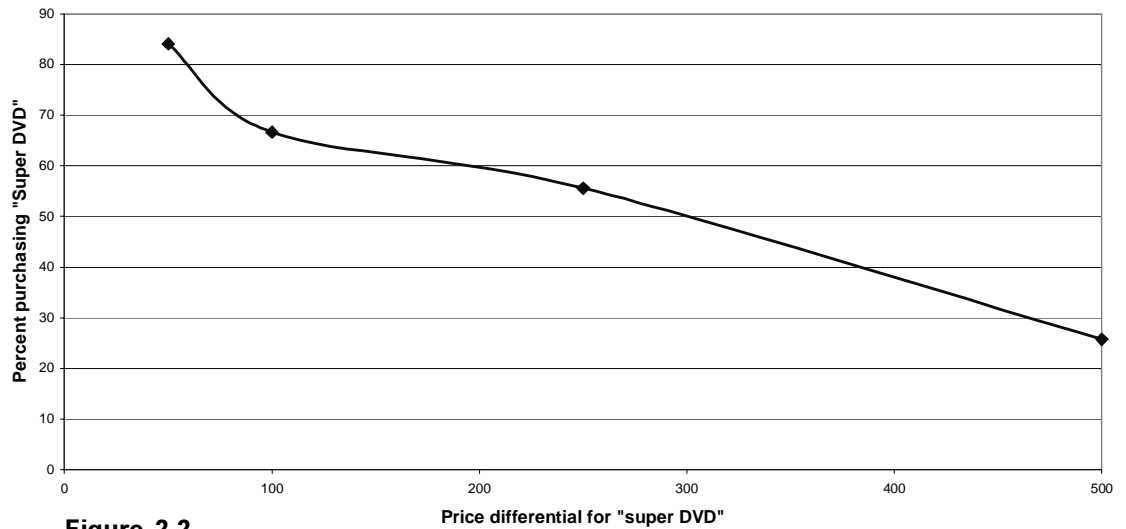


Figure 2.2

VCR. Slightly more than 25 percent of consumers were willing to pay a \$500 price differential (see Figure 2.2).

Willingness to pay for instant replay

Consumers were asked to place themselves in a situation where they could rent an instant replay device without installation charges or long term commitments. Consumers were told that the monthly rental fee would be one of four dollar amounts (\$3, \$7, \$15, and \$30).

They were asked whether they would rent the device. About 75 percent of consumers said they are willing to pay \$3 per month. Willingness to pay drops off slowly, with 33 percent of consumers saying that they would pay \$30 per month (see Figure 2.3).

Willingness to pay for video on demand

Video on demand (VOD) services were described to consumers. Consumers were asked to imagine that VOD services were available for a monthly fee, without installation charges or long term commitments. Consumers were told that the monthly fee would be one of four dollar amounts (\$8, \$16, \$40, and \$80). They were asked whether they would subscribe to the VOD services. About 71 percent of consumers say they are willing to pay a monthly subscription fee of \$8. Willingness to pay drops off rapidly, with 28 percent of consumers willing to pay \$40 per

Willingness to Pay for Instant Replay

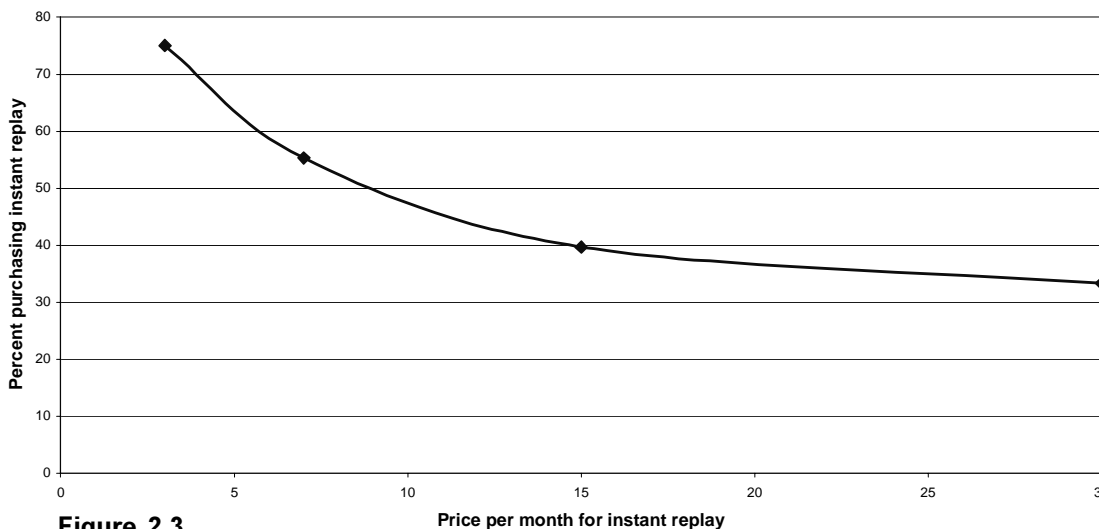


Figure 2.3

month and only 6 percent of consumers willing to pay \$80 per month (see Figure 2.4).

Willingness to pay for the "big package"

Finally, consumers were asked about their willingness to pay for a package of video goods and services. Consumers were asked to imagine that all of their video goods and services could be provided by a subscription service, again without installation fees or long term commitments. The subscription service would provide a large screen TV with a movie quality picture, a recordable DVD, instant replay, video on demand, and at least 100 cable channels. Consumers were asked about their willingness to pay for such a subscription service. They were presented with one of four possible monthly subscription fees (\$16, \$40, \$80, and \$160). Over three-fourths of consumers are willing to pay \$40 for the all-inclusive package. About 40 percent are willing to pay \$80 per month, and 13

Willingness to Pay for Video on Demand Service

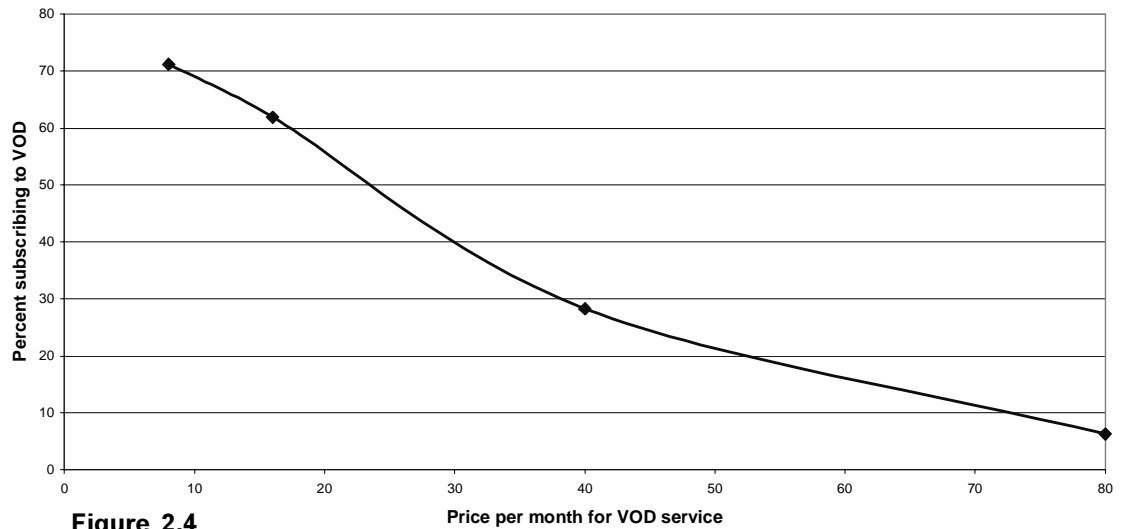


Figure 2.4

percent are willing to pay \$200 (see Figure 2.5). Valuations for the big package appear to be on the low side, given that the great majority of households are already paying \$20 to \$30 per month for cable or satellite TV.

The willingness to pay assessment for the "big package" also included a second round of pricing. If a consumer answered "no" to a given price, she or he was then presented with a price half as much; if the consumer answered "yes," she or he was

presented with a price twice as much. The results were generally consistent with the relationships shown in Figure 2.5. However, there are a few anomalies: for example, 77 percent of consumers are willing to pay \$40 for the package, but only 63 percent are willing to pay \$32. In the second-round pricing, some consumers were asked if they would pay \$400 per month - no one said "yes."

Increased time spent watching TV

Consumers were asked whether they thought they would spend more time watching TV if they had the "big package" available. Only 44 percent of those responding (120 respondents) anticipate that their viewing time will increase. Among those who will spend more time viewing, the average anticipated increase is 8.5 hours.

Additional time spent watching TV must come from somewhere. Those consumers who reported they will spend more time watching TV

Willingness to Pay for the "Big Package"

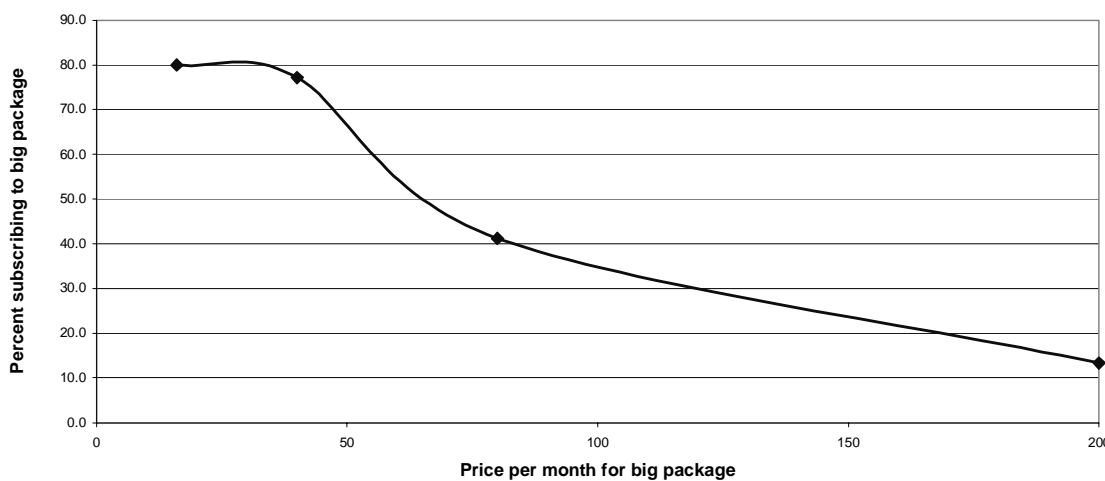


Figure 2.5

were asked an open-ended question about what they would spend less time doing (Table 2.21). The most frequent response is active sports and hobbies, followed by other entertainment and paid work.

Summary

The consumer survey described in this chapter was successful in gathering information about:

- Respondent and household demographic and income characteristics;
- Current ownership and use of video goods and services;
- Consumer valuations of new and emerging video goods and services.

Key findings include:

- Market penetration of color TV and VCRs is almost universal.
- The great majority (80 percent) of households currently get satellite or cable TV services.
- Most consumers spend at least 11 hours per week watching television.
- People who rent videos frequently spend less time watching TV programs. On the other hand, people who rent videos frequently also spend more time going to the movies.
- Most consumers currently make only modest expenditures for video equipment and their equipment is fairly old (median age of TVs is 4 years).
- Over three-fourths of consumers claim that they are willing to pay \$40 for an all-inclusive package including cable, rental of a "movie quality" TV and DVD, and advanced services such as video on demand. About 40 percent are willing to pay \$80 per month, and 13 percent are willing to pay \$200. Valuations for the big package appear to be on the low side, given that the great majority of households are already paying \$20 to \$30 per month for cable or satellite TV.

CONCLUSION (To the Fifth Report)

This report focuses on a single question: how can we measure the *ex post* (or retrospective) economic impacts of the ATP Digital Video program, either now or

in the future? Within that question, it addresses four topics that employ relatively discrete research methods:

- survey and analysis of consumer demands for video-related goods;
- an event study of the effects of digital video patents on market values of firms;
- a survey and analysis of the activities of client firms assisted by the ATP DV program;
- a computable general equilibrium (CGE) model, showing how activities of client firms have effects that trickle through the US economy, together with a Monte Carlo model that shows the interaction of various measurement errors.

Within each topic, this report provides baseline data, gives concrete examples of the empirical successes that can be achieved using that methodology, analyzes empirical problems in the methodology, and makes suggestions for further research. Performing a complete *ex post* evaluation of the DV program was *not* a major goal of this report, because insufficient time has passed for much meaningful impact to have occurred (many of the projects are still in the R&D stage). However we did arrive at a number of substantive findings. These findings are based either on *ex post* data, or on reasonably well founded short run expectations for three DV innovations that have actually reached the market.

The consumer survey

Data from a telephone survey of US consumers show a coherent pattern in which video-related market goods act like necessities. That is, even the poorest household purchases them to some extent and the budget share declines with income. Expenditure amounts probably increase rather than declining when prices increase. Purchases increase with number of family members, though often at a low rate which suggests there are economies of scale in consumption. (More technically, estimated income elasticities are around .1 to .5; price elasticities are around -.5 to -.9; family size elasticities vary more widely, between .1 and .9.) The coherency of this pattern suggests that it can be extrapolated to demands for new

DV-related goods.

When measured in terms of economic value, households make a vastly larger commitment of time than of dollars to the consumption of video goods. It follows that efforts to evaluate new video goods are likely to be seriously mis-specified if they ignore time usage. However, relatively subtle modeling of time seems to be needed. We found for example that video time use falls with factors that make time more scarce, such as work and family commitments, while expenditures on DV goods tend to rise with these same factors, even after controlling for income. Evidently, people whose time is scarce tend to substitute quality of viewing for quantity.

We constructed an aggregate video goods consumption index, which takes into account qualitative as well as quantitative characteristics. Its demand properties are entirely similar to those of disaggregated goods. We have estimated a utility system that incorporates both time usage and the consumption index. This or a similar construct could be used in evaluations of consumer goods influenced by ATP's DV programs.

We had originally planned to use the consumer survey data in the CGE model described below. As it turned out, none of the ATP-supported DV innovations have reached the stage of actually affecting consumer goods or consumer benefits provided in the marketplace. Accordingly, simulations of the CGE model could not be influenced by the consumer survey data. Therefore we left these results out of our CGE model.

The event study of patent announcements

There is some evidence from the event study that digital video patenting has a positive effect on market value of the patenting firm and a negative effect on the value of competing firms. This evidence is important because it is the *only* method we are aware of that attempts to measure the aggregate impact of *all* spillovers from an innovation. (However it does so only with respect to selected competitors, and does not evaluate effects on other actors.) It does so in an *ex ante* (predictive) sense, but

according to rational market theories accepted by many economists, those implicit market predictions are based on efficient use of knowledge about historic market relationships that is widely distributed among market actors. Consequently, with a sufficiently large sample those *ex ante* measurements would (arguably) provide an unbiased and reasonably accurate measurement of average spillover effects.

To make the evidence more persuasive, a larger sample that includes a longer time series of relatively small DV-related firms will need to be constructed. Also, a citation study of patents was used to select out "important" patents for the event study, and to select an appropriate set of competing firms. This citation study needs to be sharpened.

Most importantly, the event study needs to be respecified to focus on the actual dollar value rather than on the percentage for changes in market value induced by DV innovations. With such a measurement, we may be able to estimate an average ratio between direct effects on the innovating firm (which is relatively easy to measure), and aggregate spillover effects (which is otherwise very hard to measure).

Interviews with client firms

A partial equilibrium approach is developed in Chapters 5 and 6. Baseline data for the approach was gathered through interviews with research staff members at ATP client firms. The interview process was designed to gather information about spillover effects and other project outcomes.

ATP intervention has stimulated the development of a number of potentially beneficial technologies. These technologies will directly affect all aspects of the creation, storage, distribution, and use of DV data. Three technologies have already resulted in marketable products.

We constructed partial equilibrium estimates of the economic impacts of the innovations arising from these projects that have been realized to date, and we made projections about their potential future impacts over a limited horizon. The combined present value of past and

anticipated benefits of these projects is estimated between \$175M and \$120M (for base year 2000), depending on the discount rate. This substantially exceeds the government's investment in the program, and is approximately equal to the combined public and private costs to date. If even a few additional projects result in substantial pay-offs the program's net social benefit will be strongly positive.

In the approach of our interview method we were especially careful to distinguish between impacts of an *innovation* and impacts of an *intervention* such as ATP funding. For the most part, we found that research staff had a clear idea of what would likely have happened in the absence of ATP funding. They were able to formulate impacts in terms of how much their research programs were accelerated. We also found that the researchers were able to identify potential network and knowledge spillovers, although they were not, for the most part, able either to quantify them, or to identify spillovers that had already occurred.

These data gathering and analysis methods would be directly applicable to estimating impacts of ATP programs in later years. Data would need to be updated through further interviews to establish a) whether and what new products have come on line; and b) whether the anticipated impacts of the products already in the market place have been borne out. In addition, network and knowledge spillovers can be verified and perhaps quantified by interviewing researchers at firms in related industries.

The CGE and Monte Carlo models

Technology impact studies are supposed to tell stories about changes in the economy that follow from innovation. Partial equilibrium studies tell only the first part of the story -- what the innovation does to the immediate industry in which it is embedded. To complete the picture, we built a Computable General Equilibrium (CGE) intersectoral model of the US economy and simulated the overall effects of the three successful DV innovations.

Our model described a static, slack-

economy version of the US, based on 1996 data broken out into some 15 sectors. We solved the model separately for each year during 1996-2005, and separately for the actual world (including ATP interventions) and the counterfactual world (without ATP). Impacts of ATP are defined as differences between the two worlds. Different states of the world have differing R&D commitments and differing amounts of production cost savings induced by ATP-backed innovations.

We found that solutions of the model are highly sensitive to certain parameters, especially the amount of imported goods used by various industries. Import data of this kind are not measured directly in the US, so we had to infer them from import data by type of commodity demanded, aggregated across user industries. Moreover, the source data are themselves known to be relatively inaccurate. In consequence, the model is most sensitive to the parameters that are least well known. Therefore we were able to draw only qualitative conclusions from the model, not quantitative ones. These conclusions are discussed further below.

We believe that this problem is not specific to our particular specification, but rather general to intersectoral Keynesian models. All such models are sensitive to import data. Until better data become available, it will be hard to make predictions about slack economy multipliers.

We also built up a Monte Carlo model that made detailed but conservative assumptions about measurement uncertainties in the direct effects, and then aggregated them to determine overall effects on the portfolio of three established innovations. We found a surprisingly high rate of uncertainty. According to the model, the undiscounted net present value (NPV) of effects on real income has a 95% confidence interval ranging from \$50M to some \$600M. (Of course, the relative size of the confidence interval would tend to be reduced if the portfolio of successful innovations grew to include more innovations.)

Implications for ATP's Digital Video Program

The basis of evaluation of government programs is usually restricted to partial equilibrium data - that is, to data on the relatively direct and easily measured effects of the program. Applying that standard, we believe the probabilities are substantially greater than 50% that the ATP program on net will produce a positive social profit. In other words, the real income of Americans will be greater (in a net present value sense) with the program than it would have been without it. This conclusion holds for a reasonably wide range of social discount rates.

We based this conclusion on conservative data. We asked our interviewees to give lower bound estimates of benefits. We included social gains only from three innovations that have actually reached the market, omitting many R&D projects still in the pipeline. We projected no more than 5 years into the future. We omitted any profits received by the innovators, since that might be offset by unmeasured losses to competitors. We omitted any gains that households may eventually derive from, for example, greater access to high definition TV. And we made conservative assumptions about the accuracy of our interview data.

This finding does *not* by itself imply that the ATP DV program is socially justified (or even that it is justified with a probability of 50%). First, merely having a positive social net present value (NPV) does not pass a high enough hurdle to justify a government program. In a perfect world with lump sum taxes and with fully rational trade-offs being made in all choices between public and private consumption and investment, then it is true that every program with a positive NPV should and would be implemented. But in our world, the taxes used to finance programs always induce distortions and external costs on the economy, and these costs need to be covered by the social profits of the program. (These costs conventionally are not included in NPV calculations.) Also, there exist political limitations on the size of the government budget. This raises the hurdle by putting

each government program into direct competition with other programs that also have high NPVs.

Second, much of this report is concerned with overcoming the limitations of the partial equilibrium approach. In a complex and interconnected economy, many things happen which can either augment or reduce the measured direct effects of an innovation. Our event study produced at least limited evidence that innovations do in fact reduce the profits of competing firms (but measuring the amount of lost profits will have to await further research). And our CGE model produced strong evidence that the unmeasured indirect effects of an innovation can be quite large, and can be of either sign.

What then can we say about the reliability of our partial equilibrium result when it is extended into a general equilibrium world? This report addresses only a limited situation, namely that of an economy in disequilibrium leading to a period of recession or slow growth. We assumed that the economy responds in a Keynesian fashion (there being no other coherent and operational approach to modeling disequilibrium). Under those conditions we found that indirect effects of a cost reduction are quite likely to be negative-- that is, the total effect of an innovation on the economy is less than would be predicted from partial equilibrium data. The indirect effects from diverting consumption dollars into R&D are indeterminate - that is, the lost consumption may on net be either greater or lesser than the amount of income that is diverted to R&D. Because of innate uncertainties in the CGE model, we are unable to quantify these various indirect effects with any precision. The uncertainties result from ill-measured data on imported goods by sector of use, and are unlikely to be resolved until better data can be gathered at the national level.

In future work it would be desirable to address CGE effects under conditions of full employment of factor resources. In the particular case of cost reductions, we anticipate that indirect effects will be positive rather than negative, for reasons explained in Chapter 8. We also anticipate that multipliers will be much less sensitive to import data, hopefully leading to an

acceptable level of precision. And, while the sign of the indirect effect of a transfer from consumption to R&D cannot be predicted in advance, we anticipate that it will be relatively small.

Based on these initial findings, we will propose a tentative and limited general equilibrium interpretation of our partial equilibrium results. The ATP DV program started in 1996. During 1996-2000 the US economy has experienced a period of generally full employment, while the DV program was mainly engaged in R&D. We anticipate that indirect general equilibrium effects for that period of time will be found to be small.

At the time of this writing, there are signs that the US economy may be entering a period of slow growth or recession. If so, then the indirect effects of cost reductions are likely to be negative, though they would probably not completely reverse the positive direct effects. In consequence, conservative data would no longer be able to predict whether or not the DV program will turn a social profit. That is, a full general equilibrium justification of the DV program will have to await future research that can document strong *ex post* gains.

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The Role of Public Libraries in Economic Development

Prepared for the Kansas State Library by

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Introduction

The Policy Research Institute, then the Institute for Public Policy and Business Research, undertook this study in October, 1999, on behalf of the Kansas State Library. The purpose of the study was to determine how Kansas public libraries could play a more active roll in supporting business and economic development in their communities. The study focused on three primary questions: (1) What is the current level of support for business and economic development by Kansas public libraries? (2) What are the ways in which Kansas public libraries might be helpful to local businesses and economic development? (3) What specific steps can Kansas libraries take to develop more active economic development and business assistance programs?

The research employed three main tools: (1) focus groups with librarians and businesses, (2) case studies of four local libraries, and (3) surveys of public libraries, businesses, Chambers of Commerce, and Small Business Development Centers.

Focus groups were used to explore the underlying issues and concepts as seen by participants in the relationship between libraries and business. Ten focus groups were conducted in all, five with librarians and five with business persons. The focus groups were held in Hays, Dodge City, Wichita, Topeka, and Iola.

The library focus groups

explored librarians' interest in and understanding of their ability to provide resources for their business communities. The business focus groups probed businesses to discover what public libraries can do to support them in their local communities. The focus group results, aside from being of interest in their own right, were important in designing the questionnaires for the surveys and in interpreting the survey results.

Case studies were undertaken of public libraries in Johnson County, Wichita, Hutchinson, and Meade County to provide an in-depth look at how selected libraries provide economic development and business resources to their communities. The case studies included interviews with librarians as well as local businesses, Chambers of Commerce, and Small Business Development Centers.

Finally, surveys of Kansas public libraries, businesses, Chambers of Commerce, and Small Business Development Centers were conducted. These surveys were designed to assess the current capacity of the state's public libraries to serve the informational needs of the business community and the extent to which businesses and other economic entities currently make use of public library facilities. In addition, the surveys attempted to explore public libraries' perceptions of their role in serving the business community, and where such service fits into their overall priorities. The surveys were designed to gather together the attitudes of the business community and economic development agencies about the use of the public library for business purposes and possible changes that would allow libraries to better serve the needs of the business community.

This report presents the results of the library survey and the survey of businesses, Chambers of Commerce, and Small Business Development Centers. It then presents conclusions and recommendations based on a synthesis of the results of the focus groups, case studies, and surveys.

Survey of Public Libraries

Methodology

A telephone survey of Kansas public libraries that provide at least 25 hours of public service a week was conducted during late November and early December of 1999. The Kansas State Library provided a database of all such libraries. The sample consisted of the entire population of 173 such libraries. A total of 143 surveys were completed.

The survey questionnaire was developed based partly on the results of the focus groups and case studies. It was submitted to the Kansas State Library and reviewed by several public libraries throughout the state. Revisions in the survey were made based on this review.

Summary of Findings from the Library Survey

1. Profile of Public Libraries

When considering the possible role that public libraries can play in aiding businesses and community economic development, the wide range of size and resources among the state's public libraries must be kept in mind. One special feature of the size distribution of public libraries in the State of Kansas is that it is strongly skewed towards small libraries. Only 24 of the 143 libraries surveyed have budgets of more than \$300,000, only 26 serve populations of more than 10,000, and only 21 have more than 10 full-time equivalent staff. Even within the smaller group the distribution is skewed to the relatively small libraries. Among the 119 libraries with budgets of less than \$300,000, 84 have budgets of less than \$100,000. Among the 117 libraries that serve populations of 10,000 or less, 97 serve populations of 5,000 or less, and among those with 10 or fewer full-time equivalent staff, 57 have 2 or fewer full-time equivalent staff.

2. Training of Library Staff to Serve the Needs of the Business Community

Most libraries, including most small libraries, have staff trained in general skills. These general skills include using electronic resources in the library

and using the Internet. These skills could be used specifically to aid in finding information for businesses. However, a majority of libraries do not have staff specially trained to help members of the business community.

3. Types of users of business-related materials

Currently the most frequent users of business-related materials are individuals seeking personal investment materials (especially prevalent in larger libraries) and students seeking information about business-related subjects (common to libraries of all sizes). Various types of business users are less prevalent. Among the most often cited types of business users, entrepreneurs and start-up companies are cited as frequent users by nearly twice as many libraries as small and medium-sized businesses.

4. Facilities, resources and materials for serving the business community

Slightly more than a fourth of the libraries have a special reference or service area devoted to business and economics. Larger libraries are much more likely to have such an area than smaller libraries. Most of these areas are in the nature of a business information area located in the main library.

Only about a third of public libraries have a specific person, or persons, who primarily handles requests for information and services made by the business community. The business information and reference materials that public libraries are most likely to have available are legal indexes, dictionaries and encyclopedias; employment, occupation and job training resources; and local and state regulations and reports.

About one fourth of the public libraries' holdings contain CDROM/DVD databases. All large libraries have such databases, but only 13 percent of the smallest libraries have such databases. The most commonly held CDROM/DVD databases are Standard and Poor's register and Thomas Register. ABI/INFORM, CIRR, Compact Disclosure, and American Business Disc are available at a handful of libraries.

Just over one fourth of the public libraries have on-line vendor systems available in the library. Such availability increases with library size. First Search was the most commonly mentioned on-line vendor system, with a handful of libraries having The Dow Jones News Retrieval, DIALOG, and WILSONLINE.

More than a third of the libraries subscribe to online database services. Larger libraries are much more likely to subscribe to online database services than smaller libraries. The most frequently subscribed-to online database services are OCLC and INFOTRAC. The online databases most commonly searched by library staff or patrons looking for business or industry information are ABI/INFORM and the Business Periodicals Index.

The two restrictions that libraries regardless of size are likely to place on online searching by business patrons are fees for printing and time limits on searches. A small number of libraries have developed specific programs to meet the needs of the business community. Most of these programs involve computer labs, Internet use, or Web page development.

Two-thirds of public libraries have special services or resources designed to help a person who is trying to start a small business. Most such resources or services consist of books or other media that provide guidance on small business startups.

For most libraries, interlibrary loan requests for business or economic information make up no more than 10 percent of inter-library loan requests. Resources in other related subject fields and back-file periodicals are the most important types of interlibrary loan requests for supplementing business collections.

More than 90 percent of public libraries of all sizes allow patrons to use the Internet in the public library. Most do not charge for Internet access and most allow patrons to have e-mail accounts.

5. The marketing of public libraries' business resources and the libraries' interaction with the business community

About a fifth of public libraries actively market their business resources to members of the business community. Large libraries are most likely to use a newsletter or e-mail, while small libraries are most likely to use newspaper or radio advertising or promotional events like book sales to promote their business information and reference services. More than three-fourths of libraries have met with representatives of the Chamber of Commerce or attended meetings with members of the business community to explain what resources the library has. Nearly as many libraries reported having a representative become a member of a business organization such as the Chamber of Commerce or Rotary.

6. Recent changes experienced by libraries

Most libraries' budgets have increased during the past few years; only about 5 percent of libraries' budgets have decreased over the period. In nearly two-thirds of public libraries the amount of resources committed to purchasing materials or providing services for the business community has remained the same over the last few years. In a few libraries such resources declined.

The number of business patrons seeking materials or services has remained the same over the past few years in more than 60 percent of public libraries and increased in more than 30 percent of public libraries. The number of all patrons requesting business, economic, investment, or industry-related materials has increased in 44 percent of public libraries but remained the same in slightly more than half of the libraries.

7. Priorities of public libraries

Technology improvements (new and upgraded computers, automation of the library, adding or improving Internet access, and web page development) is the most frequently-cited high priority for public libraries over the next five years.

Adding to collections and capital improvements are also high priorities of a significant number of libraries.

The libraries were asked how they would spend a hypothetical 25 percent increase in their budgets. The responses indicated it would be spent at least in part on adding to collections in nearly two-thirds of public libraries, technology upgrades in more than a third of the libraries, and staff (salary increases, increased staff, or staff training) in about a fourth of the libraries. In slightly less than a third of the public libraries the budget process takes into account special needs for services or materials for the business community. Nearly two-thirds of public libraries think that adding, or adding to, a business or economics section is at least somewhat important.

8. Barriers to and opportunities for improving service to business.

Most libraries believe that:

- (1) the high cost of business materials relative to their usage rates,
- (2) lack of funds or staff time to promote library resources,
- (3) attracting an insufficient number of business patrons to warrant expanded services,
- (4) inadequate budget to purchase materials and services requested by business patrons, and
- (5) staff insufficiently trained to meet the demands of the business community are important barriers to providing effective service to the business community.

The three steps that libraries are most willing to take to improve their service to business patrons are (1) establish a strong cooperative working relationship with the local Chamber of Commerce, (2) obtain resources from a centralized site with specialized resources and personnel, and (3) establish strong working relationships with regional Small Business Development Centers. Most libraries are also willing to allocate some resources to advertise or market their services to the business community. Libraries are much less willing to either redirect their library budget to add additional business resources or services

or hire individuals with business experience, but no significant library expertise, to assist in the requests of business patrons.

Survey of Businesses, Chambers of Commerce, and Small Business Development Centers

Methodology

In order to characterize the role of libraries in providing information to business, a telephone survey of businesses, Chambers of Commerce, and Small Business Development Centers (SBDC) was conducted. The business sample was drawn from the state's unemployment insurance database (ES202). The sample was stratified to include equal numbers of firms in each of the eastern, central, and western areas of the state. A list of Chambers of Commerce and Small Business Development Centers was developed from searching the Internet. A survey instrument was developed based on the focus groups, the case studies, and the library survey. The Kansas State Library and several public libraries from around the state reviewed the survey instrument. Revisions and additions were made based on that review. A total of 193 surveys of business, 58 surveys of Chambers of Commerce, and 11 surveys of Small Business Development Centers were completed.

Summary of Findings from the Business, Chamber of Commerce, and Small Business Development Center Survey.

1. Profile of Businesses Surveyed.

A significant number of Kansas firms sell their products outside of their local areas. Nearly half of the firms sell their products regionally, while a fourth have statewide markets. Fourteen percent compete in national markets and 6 percent sell internationally.

2. Businesses, Chambers of Commerce, and Small Business Development Centers with their own libraries.

About a third of businesses of all sizes, and slightly less than a third of Chambers of Commerce, have their own in-house libraries. Most SBDCs have an in-house library. Service firms are the most likely type of firm to have an in-house library. For most firms, their in-house library is modest, consisting of a wall or a cubicle. About a fourth of the in-house libraries of firms consist of a single room or more. The libraries of Chambers of Commerce and SBDCs are uniformly small.

Firms' libraries are most likely to contain specialized books pertaining to the company's field of business and trade journals and magazines. Internet access is generally a feature of business libraries. Government documents and reports and CDROM and on-line database access are also commonly found. Chamber of Commerce libraries most commonly contain materials for business startups, Internet Access, specialized books pertaining to the labor market and economic development, and trade journals or magazines. SBDC libraries are most likely to feature Internet access, materials for business startups, general business or marketing or economics books, and trade journals. Most businesses, Chambers of Commerce, and SBDCs use their in-house libraries on a daily basis.

By far the most common use of in-house libraries by businesses is for operational or technical research. Exploring business startup information and investigating general economic or demographic information are the most common uses of in-house libraries in Chambers of Commerce and Small Business Development Centers.

3. Use of public libraries by businesses, Chambers of Commerce, and Small Business Development Centers.

Just less than a third of businesses and over a half of Chambers of Commerce and Small Business Development Centers use the public library to do research and gather information. Busi-

nesses that have an in-house library are more likely to use the public library for such purposes than businesses that do not.

Most businesses, Chambers, and SBDCs that use a public library use their local library. However, nearly a fourth of businesses use a public library in another part of the state, and more than one in ten uses a public library in another state.

The most common types of research done by firms in public libraries are operational and technical research, industry research, and locating general economic and demographic information. Both Chambers of Commerce and Small Business Development Centers most commonly use the public library for economic development information, and general economic and demographic information.

The public library resources most commonly used by businesses are government documents; Internet or on-line resources; legal indexes, dictionaries and encyclopedias; and state and local government regulations and reports. Public library resources most commonly used by Chambers of Commerce are subject and industry specific newspapers and journals; legal indexes, dictionaries and encyclopedias; and state and local government regulations and reports. Small Business Development Centers most commonly use (1) subject and industry-specific newspapers and journals and (2) industry data, statistics and trends. Currently, most businesses, Chambers, and SBDCs access the libraries' services and resources by going to the public library. The next most common method of access is to telephone the library.

Only about 40 percent of businesses who use the public library use it 10 or more times a year. A smaller fraction of Chambers and SBDCs use the library that often. Businesses are most likely to use the public library during the regular workday; weekday evenings are the next most popular choice.

The overall satisfaction level with the business materials, resources and services that businesses, Chambers of Commerce, and Small Business Development Centers use at the public

library is quite high. Only a handful of respondents of any type indicated a low level of satisfaction with the public libraries.

4. Other sources of information for businesses, Chambers of Commerce, and Small Business Development Centers.

Besides using an in-house library or the public library, the other most important sources of information for businesses are talking to people in their industry, the Internet, and trade journals and magazines. Chambers of Commerce are most likely to get information from local government entities, talking to people in their industry, the Internet, and Small Business Development Centers. SBDCs seek many outside sources of information with regularity.

5. Barriers to use of public libraries and opportunities for change.

Businesses that do not use the public library are much less likely to discern particular barriers to public library use than businesses that do use the library. Business users of the library cite the library staff's lack of familiarity with specific resources or materials that business patrons request and the lack of contemporary technology at the library as the main barriers to business use of the library. The lack of library staff training to meet the demands of the business community is also considered a significant barrier by a large number of businesses.

Businesses that do not use the library find the library's failure to market or communicate its services to business patrons as the most significant barrier. Many firms report that they do not use the public library because they have no need to, or that they find all of the information they need from other sources.

Chambers of Commerce and SBDCs are much like businesses in that those who do not use the library are much less likely to perceive particular barriers as being important than those that do use the library. In general these two groups are more likely to rate any particular barrier as important than businesses are.

The change in public library services that businesses would find most helpful is to make the library resources and staff electronically accessible from the business office. Businesses would also find it useful if libraries would devise special programs such as outreach or training for people interested in business resources. Businesses would also like libraries to have more business-related books and materials available.

Chambers of Commerce and Small Business Development Centers also rate making the library's resources and staff electronically accessible from their offices as the most valuable change that libraries could make.

Conclusions and Recommendations

1. Public Libraries could and should play a larger roll in local economic development, especially in providing resources for existing business and for potential business startups.

Discussion: The case studies of large libraries such as those in Wichita and Johnson County clearly show that those libraries play an important role in providing materials and services to the business community.

Information gathering and research are essential for many (but not all) types of businesses. This is supported by the fact that about a third of businesses have their own libraries, as demonstrated by the survey of businesses, Chambers of Commerce, and Small Business Development Centers. The results of that survey show that nearly a third of businesses and economic development organizations in all parts of the state use public libraries as a resource. These results also show that businesses need general as well as specialized knowledge; a high proportion of businesses that have their own libraries also use the resources and services of public libraries, in most cases their local public libraries. Furthermore, the businesses that do use public libraries as a resource express a fairly high degree of satisfaction with the resources and services that they receive from the libraries.

Beyond the provision of traditional business reference service, public librarians do not always know how to assist in informational activities that would proactively foster local economic development. Many business people do not think of the public library as a source of such help, because although librarians are more than willing to exert extra effort on behalf of businesses, they often lack funds for narrowly-focused collections and the training needed to meet highly-specialized business needs.

2. The question of training for library staff in the area of serving the needs of business and economic development should be addressed explicitly.

Discussion: Although most libraries have staff that are trained in generalized skills, such as the use of electronic resources in the library, that can be made responsive to the needs of the business community, the majority of libraries do not have a staff person who has received training in serving the needs of patrons who request business or economic information. In addition, only about a third of the public libraries have a person who is designated to handle the requests for information and services from the business community.

Public libraries themselves state that an important barrier to providing effective service to the business community is staff who are insufficiently trained to meet the demands of the business community. And businesses that use the public library say that the library staff's lack of familiarity with specific resources or materials that business patrons request is a major barrier faced when businesses use library services.

Currently, it appears that library staff members often get their training in serving the needs of business by getting experience on the job. This may not be the most efficient method for training staff in fulfilling the demands of business; even worse, unless a staff member is given time to learn the necessary skills on the job, he or she may never reach an appropriate level of expertise.

Several methods of meeting the training needs of library staff in satisfying the demands of the business community

could be explored. One avenue might be to have the library school at Emporia State University offer a course in managing business collections for those getting a library science degree. Such a course would prepare librarians with library science degrees to handle the diverse requirements of the business community. Simply making formal training available to those obtaining library degrees would not be sufficient to solve the training problem, however. First of all, it would take some time before such personnel were generally employed in the state's public libraries. But more importantly, there are many libraries in which a high level of formal training is simply not present; nearly two-thirds of the state's public libraries have no staff with a Master of Library Science degree. A complementary training program with the goal of producing one specially trained staff member in each library with an annual budget of \$100,000 per year or more could be developed under the leadership of the Kansas State Library. The actual program could be developed under the guidance of the business librarians from the Johnson County Library, the Wichita Public Library, and perhaps one or two other large public libraries in the state and could be administered and delivered by the state's Regional Library Systems.

Public libraries with annual budgets of less than \$100,000, though less stressed in terms of business-demands, may find themselves met with economic development requests as well. A statewide electronic and telephone referral list of business reference and economic development specialist librarians could be developed for their use by the Kansas State Library.

3. The state library system should investigate the possibility of providing additional business resources on-line for all of the libraries in the state.

Discussion: More than two-thirds of the libraries in the survey cited the high cost of business materials relative to their low usage rates as a very important barrier to providing effective service to the business community. This was higher than for any other barrier. In addition,

almost another fifth cited it as a somewhat important barrier. Only 12 percent of the libraries in the survey felt that it was not a barrier.

Well over half of the libraries felt that having an inadequate budget to purchase materials and services requested by business patrons was a very important barrier to providing effective service to the business community. Another fourth felt that it was a somewhat important barrier. Only 17.5 percent felt that it was not an important barrier.

In most libraries, interlibrary loans are the means of fulfilling business information requests less than 10 percent of the time. One interpretation of this number, born out by the responses of some businesses in the focus groups, is that inter-library loans are often too slow to meet the information needs of businesses.

Even the Wichita Public Library, with its large size and significant history of providing service to business, appears to be struggling a bit with moving to electronic and Internet-based references. The state library system could probably provide basic Internet-based reference services for all libraries in the state at a lower cost than if all of the libraries sought to acquire them on their own. The role of the local library would be to provide computer access along with some trained staff to assist individuals in using the references.

4. The state library system should investigate the possibility of providing funding for computer equipment in libraries across the state.

Discussion: It is clear from the business survey results that the size and resources of public libraries varies widely. A large fraction of the libraries in the state are relatively small and have very limited budgets. About two-thirds of the public libraries impose time-limits on their on-line searching, indicating that the resources for accomplishing such searches are scarce.

On the other hand, technology improvements, including new and upgraded computers, are the top priority for the next 5 years among public libraries across the state. In libraries that have

specific programs or policies designed to meet the needs of the business community, those programs are most likely to involve computing – the creation of a computer lab, Internet use, or Web page development.

Providing funding for computing that is explicitly a part of a state library system program aimed at improving the services and resources that public libraries provide for business and economic development is an example of public support for libraries in this area. On a smaller scale, such support by the Wichita City Commission for business references and information was the impetus for the public library to really get started in the business area. Perhaps statewide support would provide impetus to public libraries across the state. This impetus would be even stronger if the state library system provided additional support for business and economic development resources through setting up a training program and providing electronic databases for public libraries.

5. The state library system should investigate the possibility of a centralized phone reference service for business questions.

Discussion: In terms of the resources available for improving service to business patrons, most libraries face severe budget constraints. The library survey showed that for most libraries, their highest budgetary priorities did not specifically include a focus on providing resources and information for business and economic development. This is most clearly indicated by the fact that when asked “How important, relative to your budget, would the adding to a business or economics section be?” only 13.3 percent of the libraries responded that it would be very important.

Libraries’ resource constraints are also illustrated by the fact that libraries find the lack of funds or staff time to promote library resources and services to the business community to be one of the most significant barriers to improving service to the business community. More directly on point, libraries also find that having their staff insufficiently trained to meet the demands of the business

community poses an important barrier to improving service to business.

In the library survey, libraries were positive about the possibility of “obtaining resources from a centralized site with specialized resources and personnel” as a way of improving service to business patrons. More than 60 percent of libraries were “very willing” to do so, while another 30 percent were “somewhat willing.”

Although currently most businesses go to the library in order to access business information and services, telephoning the library was the second most frequent method of access. In case studies, the large libraries with business reference librarians reported a high volume of business requests that were handled completely over the telephone. Businesses say that the most important improvement that public libraries could make to improve their service to business is to make the library electronically accessible from the office. Barring that, the next closest thing might be to make library resources and expertise available over the phone.

A telephone reference service requires access to a very extensive set of reference materials. An equally critical part of such a system is highly-trained librarians to interpret business requests for information, to gather the information quickly, and to communicate the information to the businesses and economic development professionals. Supporting such an operation is undoubtedly beyond the capabilities of small or even medium-sized libraries. For smaller libraries especially, the volume of requests would be low enough that such an operation would not be cost efficient.

A centralized telephone business reference system could be operated from a single location. One of the large urban libraries like the Johnson County Library or the Wichita Public Library would already be well along in terms of collections and staff expertise. It might make sense to locate a telephone business reference service in one of those libraries. Or if libraries and businesses would be more likely to call a regional center (a position that was expressed during the focus groups), such centers could be established at both of the libraries

mentioned above as well as at one more location further west.

6. There should be standards for the business resources and services that are provided in libraries of different sizes. These standards cannot be specified completely based on the results of this study, but their general shape can be outlined.

A. Minimal Configurations for Small Libraries:

1. Internet access;
2. Adequate number of sufficiently high quality computers;
3. Local demographic and economic information;
4. Local government regulations and reports;
5. Materials on business startups;
6. Staff training on the business resources, materials, and services available at the library;
7. A plan or schematic for where to send patrons who seek business-related materials when they are not available at the public library;
8. Some training for staff on whom to contact or where to send patrons for business materials that are not available at the public library;
9. A kit for businesses that describes the resources available to businesses at the public library;
10. An ongoing method of informing businesses and potential businesses of the library’s business resources and services;
11. Regular contact with local business and economic development organizations.

Discussion: Both the surveys and the focus groups brought out the growing importance of the Internet to businesses and economic development as a source of information. It is likely that this source of information will become even more important as time goes on. An adequate number of computers as well as computers with sufficient power and features are important not only for providing Internet access but also for giving the library a basis for searching on-line and CD-ROM or DVD databases that may become available to the library. More than 90

percent of public libraries currently allow patrons to use the Internet at the library.

From the surveys, local economic and demographic information and local government regulations and reports are two types of information that are not specific to particular kinds of business that businesses frequently use. It is appropriate for this type of information to be kept at the local library level.

Although the survey of existing businesses could not bring out the importance of materials on business startups, the focus groups and the surveys of Chambers of Commerce and Small Business Development Centers raised the importance of such a resource. Such materials could have a general component that could be common to all libraries in the state and also features that would be specific to the local community, such as local regulations or resources available in the local community. Two-thirds of libraries already have resources for small business startups. Although the resources available at the local library may be minimal, it is important that library staff be aware of what these resources are and how they can be used to answer business questions. It is also essential that they know what questions cannot be answered using local resources, and be able to access outside resources or send businesses to them. Such outside resources may be contained in other public libraries or in regional centers.

Marketing and in general keeping business and potential new businesses aware of the public library's resources for helping business is crucial. Businesses that do not use a public library cite the library's failure to market or communicate its services to business patrons as a significant barrier to the use of the public library by businesses. To the extent that they do so, small libraries today tend to use newspaper or radio advertising and special promotion events to inform the business community of the resources that they have available. Whether these are the most effective forms of marketing and communication, and whether they are extensive enough, should be investigated further.

Public libraries have generally established relationships with local business organizations, either by having

a representative who is a member of such an organization (nearly three-fourths of public libraries), or by meeting with business people to explain the resources that the libraries have. Furthermore, libraries firmly express a willingness to establish strong relationships with local Chambers of Commerce and Small Business Development Centers as a step to improving their services to the business and economic development communities. As some of the focus groups pointed out, such relationships could pay off in broader community support for all of the library's activities.

B. Minimal Configuration for Medium-Sized Libraries — In addition to resources and services listed for the smallest libraries, medium sized libraries should have as a minimum:

12. Most commonly used CD-ROM/DVD databases; such as Standard and Poor's Register and Thomas Register;
13. Most commonly used on-line vendor systems, e.g. First Search;
14. Most commonly used on-line database systems: e.g. OCLC, INFOTRAC, ABI/INFORM and Business Periodicals Index;
15. State government regulations;
16. A more intensive program of marketing services to business than small libraries;
17. A training program for people interested in using business resources in the public library.

Discussion: Some of the features of small libraries might themselves be more extensive in medium-sized libraries. For example, an adequate number of computers for Internet access will be greater as the library gets larger. Furthermore, the amount of staff training that will be necessary so that a staff member knows what business references and services are available at the library will be greater simply because the quantity of references and services will be larger and more varied.

Many libraries have these features, at least in part. One-fourth of the libraries surveyed have CD-ROM/DVD databases. Standard and Poor's Register and the Thomas Register are the most

commonly held. About one-fourth of the libraries provide access to on-line vendor systems. First Search was the one most commonly cited by librarians in the survey. About one-third of the libraries have on-line databases. OCLC and INFOTRAC were the ones most frequently mentioned by libraries that have such systems. ABI/INFORM and Business Periodicals Index are ones that are most commonly searched.

C. Minimal Configuration for Large Libraries — In addition to resources and services listed for the smallest libraries and medium sized libraries, the largest libraries should have as a minimum:

18. A business reference librarian;
19. A "complete" set of business references – including CD-ROM/DVD databases, on-line vendor systems, on-line database systems;
20. A more intensive program of marketing services to business than small or medium-sized libraries.

Discussion: These features are already essentially implemented in the Johnson County Library and the Wichita Public Library. As suggested above, these libraries, with some additional resources, might serve as the basis for regional centers for business and economic development information and services.

7. State-level leadership and resources will determine the nature and extent of improved library services to business and economic development.

Discussion: The core of the above recommendations involves a strong leadership role for the state library system. The budget limitations and competing demands of local libraries make it extremely unlikely that most will undertake changes that involve a substantial reallocation of their limited resources. However, the stated priorities of local public libraries make it at least possible that strong leadership at the state level could guide them. That leadership would have to take the form of providing some resources (computer equipment, staff training programs, and centralized information resources and

services), as well as providing guidelines and a plan for local libraries to move in the desired direction. The examples of Johnson County and Wichita, although they are in many ways atypical, do show that injections of support from their county and city commissions, respectively, have strongly influenced the development of business resources and services at the public libraries. It could be that if the state provides to the state library system some funding dedicated for economic development and business support, public libraries across the state would respond in the same ways that the Wichita Public and Johnson County Libraries have responded to the funding from their county and city commissions.

Note

1. For a complete copy of the report go to the Policy Research Institute Web Site, at www.ku.edu/cwis/units/pri or call 785-864-3701.