Making a Difference

Measuring the Impact of Information on Development

Proceedings of a workshop held in Ottawa, Canada
10 - 12 July 1995

Edited by
Paul McConnell

International Development Research Centre
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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
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Information Factors Affecting New Business Development: Progress Report

Charles T. Meadow and Louise Felicie Spiteri

Introduction

We are conducting a pilot project whose objective is to explore methods of measuring the impact of information on development and, in particular, to develop a mathematical model of the relationships among a number of variables or indicators. Our variables are generally indicative of economic conditions, information availability, and information use. This is in furtherance of a goal of the International Development Research Centre (IDRC) stated as, "What is required is a set of tangible criteria by which the relevance or impact of information on development may be measured" (Stone 1993, p. 53). Stone further added (p. 55) that "little empirical research [had] ever [been] attempted in this area."

We have tried to follow the principles set forth in Menou (1993, p. 63) as to characteristics of indicators. Our indicators are generally used for the purpose he stated (p. 64) as "to evaluate performance relative to a set of objectives, depending on the specific area of endeavor or project." In general, we are concerned with the impact of information and economic variables on the successful establishment of a new business.

The information systems we are concerned with are already in place. The major question is whether or how effectively they are used. We propose to develop a macro model, meaning that we are dealing mainly with variables broadly descriptive of a region, not with individual cases. We are working with new business creation, rather than with expansion of existing businesses.

This project is part of a larger effort directed by Professor Jean Tague-Sutcliffe at the Graduate School of Library and Information Science of the University of Western Ontario with the cooperation of the Institute of Scientific and Technical Information in Shanghai (Tague-Sutcliffe et al., this volume). Our

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part of the project attempts to answer the question, "To what extent does the availability and use of information affect the success of newly-established small businesses in the Canadian Province of Ontario?" Data will be gathered from 15 cities within Ontario. Our "macro" approach, uses variables descriptive of the general area under study, combined with some individual data pertaining to specific businesses. Professor Tague-Sutcliffe's pilot project (1993) focuses more specifically upon the impact of London-based information services upon selected small businesses in London and more on the specifics of individual businesses.

Ontario is not necessarily representative of developing countries. But, our goal in the pilot is to determine the variables needed and a method of collecting data. We are not, at this stage, expecting a complete, predictive model of the development process or even one to be used for post hoc evaluation.

We are attempting to develop the method that, if reasonably successful, would then be used in our next phase in which the focus will be on a community in the Peoples' Republic of China. Our preliminary meaning of "reasonably successful" is that, at the conclusion of the pilot study, we would be confident that we had identified the important variables and methods of gathering the requisite data. In both the Ontario and China projects, we aim to demonstrate the relationship between economic variables pertaining to the selected region and variables descriptive of information availability and use.

As just one example of the kind of difficulty we may face, we talked with a number of people active in support of new or small business development in Toronto. A point of common agreement among them was that the personality of the entrepreneur is the dominant factor in the success of a new enterprise. How do we measure this? Could we administer some form of personality inventory or other psychometric measuring instrument? Suppose this were to turn out to be a good predictor of success. Could we then administer the instrument to a random sample of all applicants for a business licence in Ontario? Very likely, we would find this difficult to impossible for social and political reasons.

Such a testing program could easily be misconstrued as establishing or working toward the establishment of a required psychological profile for anyone starting a new business. Even if we could do this, Ontario has an extremely ethnically diverse population. Is any personality inventory equally effective in categorizing personalities, and using those categories to predict behaviour, across many cultures? Even if this answer were yes, could we use this test in China, i.e., would the government and populace permit it and cooperate in the use of a Western psychometric instrument? We think the reality is that we will have to do without such data.

There is no lack of independent variables in such a study. We have measures of the economy at national, provincial, and city levels and of information
available in a city. We do not have all the information we would like, and sometimes have to make do with indirect measures or gross approximations. By questionnaire we can get some indication of what information sources are being or were used by entrepreneurs and their indications of what types of information are important.

Ideally, we would develop a mathematical relationship by which the state of the economy, the availability of information, the willingness of a business leader to seek information, and his or her skill in using it lead to business success. Unfortunately, as there is no simple measure of business success and no way to measure all the information seeking and use that a person has been involved in, we must settle for approximations.

We are approaching this pilot study in the spirit that it is exploratory, that we are trying to find out what are the variables and how to go about measuring them, and we are not expecting to produce a completely valid psychosocial model of new business development in Ontario. We have had to make some generalizations and assumptions that we cannot rigorously justify, in the hope that, if they point us in the right direction, we can refine them later.

Related Research

One point comes clearly through most of the published works on the subject of use of information services — providing the service is only part of the problem. The other major part is getting people to use them. Providing services is often a technical or managerial matter. Encouraging and training people to use them may be a very complex social and educational matter. Often, studies of information use concentrate on formal institutions, but word of mouth, consultation with friends, attorneys, or village elders, and news media all contribute to knowledge.

There is a considerable literature, in sociology and information science, on the subject of information gaps (Chatman 1995; Childers and Post 1975; Dervin and Greenberg 1972). The focus has been largely on disadvantaged minorities within a larger society. This target group does not generally coincide with our target group. It probably has to be conceded that in any society there are going to be subgroups less popular than others and that government office staff may reflect such attitudes, whether or not repression is the official government policy. But, we have to proceed on the assumption that successful new businesses aid the society in general and that governments support them.

Hence, information gaps pertaining to potential entrepreneurs are not necessarily the result of deliberate policy and we shall act on this assumption.
there can also be no doubt that information gaps do exist and they may be caused by local lack of information availability for anyone, lack of adequate services for dissemination of information, unofficial discrimination, lack of willingness on the part of the entrepreneurs to seek out information, or lack of ability on their part to know how to use the services or understand the information. These lacks, or gaps, may or may not pertain to everyone, i.e., they may be selective.

Evans et al. (1977) state that "In every country...a certain amount of scientific and technological information...is processed and stored in some fashion for the benefit of users. Unless these users know how to find relevant information available to them, the information 'machinery' falls short of its main goal." It appears that, not only must they know how, but they must be motivated to use this knowledge. It is not enough to be literate in the sense of knowing how to read and write. It is also necessary to be literate in the sense of knowing or caring what is written and trusting that the written or recorded word may have value.

Agriculture is a business that is often small and highly dependent on information about technology and markets. "Technology" includes seeds, fertilizers, cultivating techniques, and transportation. Market knowledge includes information about world-wide demand, supply level and sources, competitive products, and sometimes sources of labour. The agricultural extension service in the United States, a cooperating network of government, university, and college agencies involved in advising, training, and educating farmers and farm families, is 200 years old (Scott 1970).

In its early days, it encountered the same user reluctance and skepticism we often hear about among modern small business people of today with regard to formal information services. In the late 19th century, after a devastating civil war and subsequent depression, U.S. farmers were becoming desperate and began to seek any advantage. Extension services became more popular. In 1914, the U.S. enacted new legislation that considerably enhanced and spread the extension service and government spending thereon. Today, it is highly respected and used (Richardson 1987; Warnock 1992). Its product is information. There seems to be nothing comparable, on so grand a scale, to support business in other industries.

Is there a lesson for us in this growth of an information service to development? There are and have been similar undertakings aimed at nonfarm businesses, but they lack the history or extent of analysis that applies to agriculture. What was it that made information services so effective in agriculture, compared with other fields? One answer is the passage of time, but in the modern world sponsors of such services do not tend to want to wait a century for an idea to take hold.

As noted earlier, people who talk or write about information gaps tend to use this term in a relative sense. There is said to be a gap if a given group is
assumed to have, or has demonstrated it has, less information than some other group. Usually, this is a disadvantaged minority compared with the majority population. But there is often nothing quantitative, nor is there a norm — what are people supposed to know? Measuring the deviation from an unknown norm is very difficult.

Chatman and Pendleton (1995), whose focus was on minority groups within a country, refer to an impoverished lifestyle. A contribution to this state is a lack of use of information, because of three causes: "(the information impoverished) perceive that sources of information are unusable in a timely manner,...when sources are available and useful, they are insufficient to respond to their needs,... [and] the channels of information, both mass and interpersonal, are viewed with suspicion and skepticism."

By way of illustration, a classic North American situation concerns a husband and wife lost on a highway while on an automobile trip. The wife says "Let's ask for help." The husband does not want to. These people are, temporarily, in a very information impoverished situation — truly lost in terms of both geography and temper.

Why does the husband resist asking for help? Partly because, in many situations, the husband views the help available with suspicion and skepticism. "The person we might ask will really not know but will not say so. We will get directions in words or gestures that are meaningless. We're better off consulting our out-of-date map." I suspect that many entrepreneurs have similar feelings. "Is all this government information in academic or legal language really going to help me? Or am I wasting my time seeking out and reading it?"

Another reason, both for the lost husband and the budding entrepreneur not wanting to ask, is the feeling of not wanting to have to display ignorance to a stranger. This is probably also a reason many people are reluctant to ask for help in a library. The information gap literature suggests that this is the kind of reasoning used by information deprived people.

Chatman (1995) lists four concepts related to the impoverished life world: risk-taking, secrecy, deception, and situational relevance. I think we can assume the second and third of these are not highly applicable to our situation, but neither should we be totally naive.

As we pointed out earlier, in almost any country there will have been, or are, certain groups the majority, with or without the official support of the government, wish to repress. Or, the minority may feel repressed because of past history, whether or not the repression is currently practiced. This feeling of repression could keep people from seeking the information necessary for business development.
The first and fourth concepts, risk-taking and situational relevance, are clearly pertinent to our project. Risk-taking has already been identified as a major factor in entrepreneurial success. For our purposes, the question becomes: How do we identify people high in this quality and then observe how they use information? The concept of situational relevance is one that can be controlled by a government or information agency, in the sense that they can work to make their information appear more relevant to potential users and we might be able to measure the extent to which they do so.

Approach to the Problem

Our first objective is to identify the variables needed and available. Finding economic data about Ontario as a whole was easy enough. We have time series for about 10 years of GNP (gross national product) at national and provincial levels, employment data, number of business registrations and deregistrations, bankruptcies, interest rates, and the like. What is not readily available is information about information: what is available, how information services are used by budding business people, how much these new entrepreneurs know about their chosen field and about business management in general. We plan to collect data on 15 communities in Ontario.

Categories of Variables

We began by interviewing a number of people, principally the head of the Toronto New Business Development Centre; the Small Business Office of the Ontario Ministry of Economic Development; the Bank of Montreal Small Business Office, which offers support services to small businesses; and the Small Business Center Network in North Carolina. The data available and opinions of experts in new business development suggest three important categories of information: economic/monetary, environmental/commercial, and personal characteristics of entrepreneurs or candidate entrepreneurs.

It is interesting that availability of information was not generally explicitly stated as an important category. Much anecdotal evidence suggests that entrepreneurs also do not think much of information as a distinct category of resource that they need. They are more likely to think in terms of what is needed: names of customers, resources, properties of materials used, etc. This widespread nonuse of the key term information confounds work in the field.

We learned that many people start a business for personal reasons, such as to become independent of a "boss." Others do so primarily to make a profit. It
is the latter type that most aid the economy of an area. The former are really just transferring their employment from an existing company to their own, new one; no new jobs or wealth are necessarily created. Development agencies, as may be expected, concentrate on the new wealth creators. Possibly, it would be desirable to filter those seeking just independence out of our sampling, but this is quite difficult.

Entrepreneurs' Interest in Information

We learned that many prospective entrepreneurs lack expertise in their chosen field and even more lack knowledge of such aspects of business administration as marketing, money management, dealing with government regulations, and managing staff. One can learn many of the managerial skills through books, short courses, and consultation. One cannot learn so readily how to cobble shoes, grow bananas, or design electronic computers. New business agencies seem to discourage those without the basic skills and work hard at providing or making available the managerial skills.

This brings us to one of the critical and difficult to measure factors, the willingness of entrepreneurs to seek information. By *information* in this context we mean information in all forms: books, pamphlets, video cassettes, and *consultation with knowledgable people*. Ideally, we would like to find out how many of those who thought about starting, or actually tried to start, a new business (or expand an existing one) sought help from a new business development centre, a government agency, a library, a bank, a trade association or union, etc.

There is no way that we could identify entrepreneurs at the moment they form the idea to start a new business. The closest we can come is to catch them as they first approach an Ontario Ministry of Economic Development and Trade Small Business Self-Help Centre, 32 of which are distributed around the province. But doing so means we will have missed anyone who abandoned the idea earlier for lack of information.

Information Availability

Our approach to measuring the information available in a community is to count the number of information facilities that are relevant to new business development: libraries, government information offices, lawyers, accountants, banks, newspapers, magazines, and radio and television stations. This approach ignores the specifics of what may be done at any given office — not all lawyers handle new business start-ups — but when there is a large number of one type of information resource there tends to be a large number of other types. An
information availability index will be computed relating the number of such facilities to population in a community.

Information Used

Possibly the only way to measure the amount of information use during the steps from forming an initial idea to starting a business, through various consultations, registration and actual start up, would be to follow the business people individually for some time. Such a technique has been used in studies of managers' work (Mintzberg 1973). We will approximate this by asking entrepreneurs before and after start up what sources they used and how they value them. We define start-up, for this purpose, as incorporation.

Measuring Short-Term Business Success

What is the best measure of success of a new business? In a study over a short span of time, such factors as net profit or number of employees are not necessarily definitive of success. Many businesses today prefer to hire part-time help or to contract out work to avoid the burden of long-term commitment to employees. This is another reason why we plan to use the fact of incorporation as a short-term measure of success. We will, however, ask each business person on our questionnaire if the business made a profit in the last accounting year.

We decided that going from an idea in an entrepreneur's mind to the formal creation of a new business is, in itself, a measure of success. It is not the ideal measure, but the information about creating a new company is public and it does represent a degree of achievement.

In the Province of Ontario, a new business must be registered with the government. When a business ceases operation, it is deregistered. A business may be a sole proprietorship, a partnership, or a corporation. Hence, incorporation is not synonymous with registration. Not all businesses are corporations, but the larger ones or those aspiring to be large tend to be incorporated. Similarly, there are multiple reasons for ceasing to function, such as retirement of the owner, movement of the business to a different jurisdiction, or bankruptcy. Hence, we cannot use the overall term deregistration to imply failure of a business.

As noted, those who actually registered a new business obviously do not include those who became discouraged by the early consultation process, or who realized without benefit of consultation that they were lacking the knowledge or money needed to get started. We have decided to look at one group of entrepreneurs (a) as they first approach the self-help office and another (b) who have been incorporated for about a year. These would be separate samples of
preregistrants and of recent incorporators. We lack the time for a longitudinal study. Hence, we are examining the difference in use of or attitude toward information between groups (a) and (b). We assume that differences in these factors are indicative of success in business.

**Measuring Personality**

We know that personality is a major factor in success. This includes willingness to take risks, creativity, energy, persistence, and articulateness (in selling the product or service to a customer or the enterprise to a prospective financial backer). It may include willingness to admit to not knowing certain things and willingness to ask for help.

We might approximate a measure of the willingness to ask for help by the number who actually go to government or private business help agencies or libraries. But, mere entry into the facility is not the same as asking for and receiving useful information, and information agencies do not normally keep records of the question asked, the type of person who asked a question, or the reason for it, or the perceptiveness of the question. Finally, we have no way to know how many unofficial consultations were held with what may have been highly knowledgeable people.

At best, the information sought may depend on the amount or quality of information perceived by the entrepreneur to be available. A person may be willing to ask for help only if he or she truly believes it will be forthcoming.

This attitudinal aspect of the problem has so far proven difficult to measure. We discuss it further in the next section, but we must accept that **availability alone is not a measure of use**. Ideally, we would also consider willingness to seek information, the actual seeking of it, and use of what is found.

**Information Availability**

What has been distressing, in our work so far, is the lack of previous work on measuring the various aspects of information gaps discussed earlier. We must ask what an information gap is a gap between. The sociological definition tends to say that it is a gap between information available to favoured groups versus unfavored groups. We might reinterpret that to mean a gap between those entrepreneurs who are well informed and those not, in any society.

There is no point considering the gap between an entrepreneur attempting to start a new electronics business in Silicon Valley and one trying a similar enterprise in a small country whose economy was previously dominated by sugar,
bananas, and tourism. The gap of interest is between those in a community who have "made it" in business or will make it and those destined not to. We need, then, some sort of relative measure or index of information availability, a separate measure of information use and perhaps a third, information known or knowledge. All these must be interpreted in social, political, and economic contexts.

Data Available

Economic Data The economic variables we have collected (information available for Canada and Ontario for the past 5–10 years) and hope to be able to duplicate or approximate in other countries are:

- GDP (gross domestic product)  
  - Canada
- GDP  
  - Ontario
- Labour force  
  - Canada
- Labour force  
  - Ontario
- Interest rate - Bank  
  - Canada
- Interest rate - Prime  
  - Canada
- Weekly earnings  
  - Canada
- Weekly earnings  
  - Ontario
- Unemployment  
  - Canada
- Unemployment  
  - Ontario, self, incorporated
- Employment  
  - Ontario, self, incorporated
- Employment  
  - Ontario, self, unincorporated
- Number of firms  
  - Ontario
- Business start-ups  
  - Ontario
- Business exits\(^2\)  
  - Ontario
- Bankruptcies  
  - Ontario
- New registrations  
  - Ontario
- New incorporations  
  - Ontario
- Employment  
  - Ontario
- Imports  
  - Ontario
- Exports  
  - Ontario
- Disposable income, total or per capita  
  - By city
- Retail sales, total or per capita  
  - By city

Collectively, this list is probably more than we need. We are not trying to predict the behaviour of an economy, but general economic conditions and attitudes toward the future are surely important factors in the decision to attempt

\(^2\)"Business exits" is a generic term approximately synonymous with Ontario's "deregistrations." It covers the many reasons for a business to cease operation.
to start a new business and the probability of its success. If the business is agricultural, we would include environmental factors, such as rainfall. For that reason, it may be necessary to make the model specific to an industry, i.e., to use a somewhat different model for an agricultural economy than for one based on mineral extraction, textiles, or electronic equipment assembly. We will compute a city economic index based on per capita income and per capita retail sales and a general index of economic conditions based on the foregoing variables.

**Information Available to Users** Based on informal conversations with people involved in research and measurement in the information science field, it appears that there might be a high correlation between those who read and those who use other information services. Hence, we are treating all sources as equal: those that provide primarily print-based information, such as libraries and newspapers; those that provide ethereal information, such as television broadcasters; and those that provide primarily consulting services, such as banks or lawyers. We will create an index based on the major kinds of publicly available information services relevant to business. Our first-round list:

- Libraries, public or academic.
- Other types of government information agencies (e.g., agricultural extension service, revenue service consultants, business self-help centres, etc.).
- Postsecondary educational institutions.
- Lawyers.
- Accountants.
- Bank or Trust Company branches.
- Printed news media.
- Radio/TV stations.

The first item is traditionally measured by holdings — roughly the number of books. One alternative is the number of staff members, probably highly correlated with holdings, and another is the number of public facilities — main library and branches. Postsecondary educational institutions could be measured by number of faculty members or number of students, or simply number of campuses. Lawyers, accountants, and bank or trust company branches are ideally measured by number of transactions or cases, but such data would be very difficult to collect. They could, like libraries, be measured by number of staff or by number of organizations. Printed news media and radio/TV stations could be measured by number of publishers or broadcasters, probably better by audience size, if such data were available.

Our initial approach will be to use number of offices or equivalent for all the categories in a community — number of firms for lawyers and accountants,
number of branches for libraries and banks, number of newspapers or magazines published, and number of radio or TV broadcasting stations. This is a relatively rough measure, but we believe these counts will be consistent with population and perhaps major industry in a community. An information index will be computed as the sum of the information facilities divided by population in thousands of persons.

We recognize that one key source of information for the new entrepreneur is not included in this approach: experienced persons in a field. Not getting information about all relevant consultations means that we are possibly missing some important data. We get some of this, but not really precise measurements, in the questionnaire described in the following. The only way to get the information directly would be to ask a relatively large number of people in a community to identify those who could offer advice in various fields.

**Measurements of Information Use** Our first approximation to measuring information use comes from recognizing that we cannot get all the information we want. We have no way to identify the segment of the population considering a new business until its members take some overt action, such as applying for registration of a company. Hence, the first point at which we can identify a prospective entrepreneur is when he or she applies for registration or approaches a new business incubator or similar institution, or approaches a bank for a start-up loan. We have already missed those who thought about a new business but did not know how to go about forming one.

The second point at which we can find new entrepreneurs is when they register. Some go beyond this and incorporate. In a sense, we can consider incorporation a form of success. The company may not have realized any profit, but its owners have created a legal business by going through a formal government procedure.

After incorporation, we once again have trouble finding information. We might poll new businesses — the act of incorporating is a public one — to find out their financial situation, but they are not obliged to answer. We can easily find the number of bankruptcies and deregistrations, but not necessarily the names and locations of all the companies involved. Thus, we were led to the assumption that remaining in business is a form of success.

Our decision was to take samples of people approaching an Ontario small business self-help office as an approximation to those considering the formation of a business. We will take samples of companies that have been established for 1–2 years to represent initially successful companies. We will administer a similar questionnaire to both, based on that used in the London, Ontario, pilot project (Tague-Sutcliffe et al., this volume). We modified the London questionnaire
principally by eliminating references to London and leaving out some detailed information. The questionnaire as used by us is shown in Appendix A. In Part I it asks some general questions about the business, including how long it has been in existence and whether or not it is profitable. This would be used only for incorporated companies. In Part II we ask about information sources used and the value of various categories of information. Part II also asks about other factors important to the success of a business. We intend that the difference in the frequency distributions of responses to the questions of Part II will be a measure of the difference in information use of preregistrants and established companies.

Summary of Variables

The following variables are used in our model:

**Direct Measures**

- **Economic**
  - GDP Provincial
  - GDP National
  - Interest rate - Prime Canada
  - Weekly earnings Ontario
  - Unemployment Ontario
  - Business start-ups Ontario
  - Business exits Ontario
  - Bankruptcies Ontario
  - New registrations Ontario
  - New incorporations Ontario

- **Economic**
  - Disposable income, per capita By city (DI)
  - Retail sales, per capita By city (RS)

- **Population**
  - Population By city (POP)

- **Information Available (INFO)**
  1. Number of public library branches
  2. Number of academic library branches
  3. Number of law offices
  4. Number of chartered accounting offices
5. Number of bank branches
6. Number of trust company branches
7. Number of daily newspapers
8. Number of weekly newspapers
9. Number of radio stations (AM/FM)
10. Number of television stations
11. Number of government information agencies. Agencies deemed relevant to the project are listed in Appendix B.

Questionnaire Data

• **Company Information (Existing corporations)**
  Year incorporated
  Type (manufacturing, retail, service, other)
  Number of full-time employees at start
  Number of full-time employees now
  Number of part-time employees hours now
  Profitable (yes/no)

• **Information Sources Used (INFSO)**
  1. Friends (Never, Sometimes, Frequently)
  2. Suppliers
  3. Customers
  4. Consultants
  5. Banks
  6. Associations
  7. StatsCan publications
  8. Publications
  9. Internet
  10. Libraries
  11. Other government agency information sources
  12. Other

• **Importance of Information (INFIMP)**
  1. Financing (Not, Somewhat, Very)
  2. Markets
  3. Suppliers
  4. Government regulations
  5. Management skills
6. Technology
7. Own business plan
8. Selling
9. Other

- **Factors of Importance (FACIMP)**
  1. Availability of financing
  2. Location
  3. Customer base
  4. Technological developments
  5. Exchange rate
  6. Interest rate
  7. Own expertise
  8. Employee expertise
  9. Other

**Indexes: Composite Measures**

- **Regional Economic Index (RECOX)**
  (Definition to be determined)

- **Local Economic Index (LECOX)**
  Tentative definition: difference between mean per capita disposable income and retail sales, divided by disposable income. This gives an index value by city. It is the only city-wide economic data we have on all cities in the sample.

- **Information Availability Index (INFAVX)**
  Sum of number of facilities of types listed in INFO, divided by population of city. Computed for each city.

\[
\text{INFAVX}_j = \frac{\sum \text{INFO}_{ij}}{\text{POP}_j}
\]

where: \(i\) is the index on information facility, \(j\) is the index on city.

- **Information Use Index (INFUSX)**
  Average value of responses to information use questions (INFSO) divided by the maximum value of a response.

\[
\text{INFUSX}_{i,k} = \frac{1}{n} \left( \sum \text{INFSO}_{ij,k} / \text{INFSO}_{MAX} \right)
\]

where: \(i\) is the index on question number, \(j\) is the index on city, \(k\) is the sample group, \(n\) is number of responses in sample, \(\text{INFSO}_{MAX}\) is maximum value of a response.
• **Information Importance Index** (INFIMPX)
  Average value of responses to information importance questions (INFIMP) divided by the maximum value of a response.
  \[ \text{INFIMPX}_{jk} = \frac{1}{n} \left( \sum \text{INFIMP}_{ijk} / \text{INFIMP}_{\text{MAX}} \right) \]
  where: \( i \) is the index on question number, \( j \) is the index on city, \( k \) is the sample group, \( n \) is number of responses in sample, \( \text{INFIMP}_{\text{MAX}} \) is maximum value of a response.

• **Factor Importance Index** (FACIMPX)
  Average value of responses to information importance questions (FACIMP) divided by the maximum value of a response.
  \[ \text{FACIMPX}_{jk} = \frac{1}{n} \left( \sum \text{FACIMP}_{ijk} / \text{FACIMP}_{\text{MAX}} \right) \]
  where: \( i \) is the index on question number, \( j \) is the index on city, \( k \) is the sample group, \( n \) is number of responses in sample, \( \text{FACIMP}_{\text{MAX}} \) is maximum value of a response.

**Statistics for Inference**

Our sample groups \( a \) and \( b \) represent "before and after" samples, i.e., business people before having made a commitment to starting a business and after having established one. A key part of the project is to determine to what extent these sample groups differ. The only data we have on individual businesses come from the questionnaires, to be administered in three of the cities. We will test for significant differences between the responses in each of three parts.

• **Information Use**
  Compute mean, variance, and student's \( t \) of questionnaire responses, Part II-1, by city and sample group. Test for significance of difference.

• **Information Importance**
  Compute mean, variance, and student's \( t \) of questionnaire responses, Part II-2 by city and sample group. Test for significance of difference.

• **Factors of Importance**
  Compute mean, variance, and student's \( t \) of questionnaire responses, Part III, by city and sample group. Test for significance of difference.
Regressions

Initially, we looked for correlations among our basic data. We found that, not unexpectedly, population correlates strongly with measures of information availability, per capita income and per capita retail sales indicating that, in general, the greater the population, the more money is available and the more information services are available. At the time this interim report was written, we had not yet had an opportunity to compare information seeking and valuing practices with these basic variables.

When we are able to administer our questionnaires, we will look for relationships between the two sample groups (\(a = \) those thinking about starting, \(b = \) newly incorporated businesses) and various combinations of environmental factors (economic, population), information availability, information use, and importance rating data.

Data Collection Plan

What we would like to do, but what is well beyond the scope of this pilot project, is to locate prospective entrepreneurs earlier in their careers and do the data gathering and analysis based on the type of industry involved and some personal characteristics of the persons involved. Then, we should follow the company over at least several years, watching for changes in size, sales, profitability, or product scope. Such a project would require several years of planning and monitoring.

We have selected 15 cities in the Province of Ontario. They are well distributed over the province, geographically, but with some view to our limited travel budget and the large expanse of the province. Five each are in the population categories of 8,000–25,000, 25,000–100,000, and more than 100,000 people. The cities and populations (Canadian Almanac and Directory 1995) are shown in Table 1.

Our plan is to send the questionnaires to officials who agree to cooperate, in small business self-help centres in these cities. In three cities, one in each group, we will conduct personal interviews on the same basis as before; some with people just approaching the registration process, some with companies established for a set period of time. These will be in-depth interviews seeking to learn the respondents' attitudes toward information and information sources. We require approval and assistance from several provincial government offices. This has been requested and the appears to be viewed with favour.
Table 1. Cities used in the study and their populations.
All are in the Province of Ontario, Canada.

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto</td>
<td>3,377,000</td>
</tr>
<tr>
<td>London</td>
<td>315,000</td>
</tr>
<tr>
<td>St Catherine's-Niagara</td>
<td>306,000</td>
</tr>
<tr>
<td>Sudbury</td>
<td>148,000</td>
</tr>
<tr>
<td>Thunder Bay</td>
<td>118,000</td>
</tr>
<tr>
<td>Peterborough</td>
<td>68,750</td>
</tr>
<tr>
<td>Barrie</td>
<td>66,000</td>
</tr>
<tr>
<td>Clarington</td>
<td>54,000</td>
</tr>
<tr>
<td>Belleville</td>
<td>37,243</td>
</tr>
<tr>
<td>Stratford</td>
<td>27,666</td>
</tr>
<tr>
<td>Simcoe</td>
<td>15,539</td>
</tr>
<tr>
<td>Midland</td>
<td>13,865</td>
</tr>
<tr>
<td>Collingwood</td>
<td>13,505</td>
</tr>
<tr>
<td>Kapuskasing</td>
<td>10,342</td>
</tr>
<tr>
<td>Smiths Falls</td>
<td>9,396</td>
</tr>
</tbody>
</table>

Source: Canadian Almanac and Directory 1995.

Current Status

We have collected almost all the basic data on economics and information availability. This comes from readily available sources, such as almanacs and telephone directories. To administer a questionnaire or interview entrepreneurs in depth, we must have the authorization and cooperation of two provincial ministries, both of which have been most helpful to date. We expect to complete this phase by September and the analysis of data by December 1995.

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Appendix A: Questionnaire

The original questionnaire is contained in Tague-Sutcliffe et al. (this volume). The changes were not complete at the time of the workshop this is a brief summary of the intended content. Section 1 asks for information about an existing company: when incorporated, number of employees, type of business, whether or not profitable. Section 2 asks about use of various information sources, recording for each type, never used, sometimes, or frequently used. It also asks for an assessment of the importance of various classes of information, such as about financing the business, suppliers, or government regulations. Section 3 asks about factors deemed important in the success of the business, such as availability of financing, location, or dollar exchange rate.

Appendix B: Government Agency Information Offices

The following provincial and Federal agencies may have information offices in any of the cities in our sample:

- Ministry of Economic Development and Trade: Small Business Ontario Offices
- Ministry of Consumer and Corporate Relations
- Ontario Development Corporation
- Eastern Ontario Development Corporation
- Northern Ontario Development Corporation
- Ministry of Culture, Tourism and Recreation (Tourist Establishment Licences)
- Liquor Licence Board of Ontario
- Customs and Excise Division, Revenue Canada (import/export)
- Ministry of Transportation (Delivery and Transport licences)
- Health Protection Branch/Health and Welfare Canada (Food and Drug Act Regulations)
- Consumer and Corporate Affairs Canada (Packaging, Labelling)
- Ministry of Housing (Building codes)
- Ministry of the Environment (Pollution Control)
- Ministry of Finance/ Retail Sales Tax Offices
- Revenue Canada, GST (Goods and Services Tax) Information Offices
• Revenue Canada/District Taxation Offices
• Employer Health Tax Regional Offices
• Consumer and Corporate Affairs Canada/Patent Office
• Workers' Compensation Board
• Ministry of Labour/Industrial Health and Safety District Offices
• Ministry of Health/Health Insurance Offices
• Industry Canada/Business Service Centre
• Industry, Science and Technology Canada/Licensing Opportunities

Section