Aligning the financial services, fulfillment distribution infrastructure, and small business sectors in Hawaii through B2B technology innovation

A proposal to the New Economy Research Grant Program

Professor Philip M. Johnson
Department of Information and Computer Sciences
1680 East-West Rd, POST Room 317
University of Hawaii

808 956-3489
johnson@hawaii.edu
http://www.ics.hawaii.edu/~johnson/

Introduction

Depending upon whom you speak with, the "New Economy" is either the greatest transformative event to occur in business and society since the Industrial Revolution, or a buzzword for a set of business models and practices that are inherently unsustainable and which leverage the investments of many into wealth for a few. The former set of advocates point to the incredible gains in the tech market sector over the past five years, the latter set of cynics point to the March, 2000 plunge in the NASDAQ as the first payment by investors for their lack of rigor in evaluating New Economy practices.

At its core, the advocates of the New Economy envision a rapidly approaching world where the vast majority of communication and value generation occurs in an online, networked environment; where the virtual has replaced the physical as the primary locus for work and play. Cynics view this as an unrealistic, utopian vision; similar to the world of 2001 envisioned by Arthur C. Clarke and Stanley Kubrick in 1968, which seemed at that time to be an almost inevitable vision of what would be today's society.

This research proposal pursues a middle ground for the application of recent advances in technology to business and social practices, one that recognizes that, for at least the short-term, the physical will continue to dominate the virtual. However, it also recognizes the way trends in technology innovation are enabling qualitative differences in the way individuals and organizations achieve age-old goals. Consider the following concrete, everyday example. Until the 1980's, the process of balancing a checkbook and making a household budget was a time-consuming, manual process of tallying charges, then classifying purchases in categories, and finally projecting future expenses and matching against personal goals. To be effective in actually achieving the goal of financial control, this process must be repeated at regular intervals, requiring both discipline and substantial time investment on the part of the individual. In the 1980's, the widespread adoption of personal computers and the availability of software such as Quicken enabled a computer-savvy individual to automate substantial parts of this process; after entering all of their transactions manually, the software could categorize and produce reports and what-if analyses. Quicken reduces the required time investment significantly and enabled additional forms of financial insight, but still requires the user to learn a relatively complex software system and be sufficiently disciplined to enter one's transactions each month. The rise of the World Wide Web and server-side computing enables a next step in streamlining and improved efficiency in accomplishing this goal. Now, the possibility exists for a user to connect to their banking account using a standard browser, and after some simple configuration tasks, have the bank's computers track the user's spending and produce monthly budget reports that are emailed to the user automatically. For the user, the recurrent overhead of manual transaction entry could be eliminated, as well as the cost of buying, installing, and maintaining the Quicken software. In addition, new value-added services could be provided, such as emailing the user automatically when charges in a budgeted category are exceeded, or data mining to provide the user with information about services of interest to them based upon their spending habits.

This simple example illustrates several philosophical and methodological bases for our research:

- We recognize that technological infrastructure evolution can have a dramatic impact upon business and social practices;

- We believe that "New Economy" innovations, to be viable in the long term, must provide quantifiable, qualitatively visible short-term to immediate improvements in efficiency. In short, it's always ultimately about *utility*. Improved access to information is an important but secondary goal.

- Our experience is that utility and personalization form a powerful feed-forward loop. Many individuals and organizations will provide a small amount of personal information for a promise of increased utility. If this utility is provided and if the information is kept sufficiently private, more information will be provided if it yields sufficient amounts of increased utility. In our bank balancing example, once the user or organization experiences the utility of automatic checking account categorization, they might happily provide more information about their finances (such as credit card data) in order to gain additional utility (such as the incorporation of credit card transactions into the budget planning process).

In the next section, we apply our orientation toward New Economy issues and our philosophical and methodological orientation to a potentially significant source of high technology growth for the economy of the State of Hawaii.

Research objectives and questions

To an extent never before achieved, the government, educational, and private sectors are pursuing a complementary, coordinated effort to grow the high technology industry in the State of Hawaii. The government has passed laws supportive of high tech growth during the past two legislative sessions. The University of Hawaii has initiated new programs in entrepreneurship and dedicated additional resources to high technology education and research, despite declines in overall funding. Private sector support for high tech growth includes increased availability and deal flow in both angel and venture capital funding, as well as the formation of industry groups such as the Hawaii Technology Trade Association.

In this research, we will capitalize on this current spirit of cooperation by performing an analysis of the infrastructural and technical barriers that currently exist for a specific class of Hawaii small businesses: those that produce Hawaiiana products with the potential for a national or global market. Our objective is to build a model of the process by which a small business in Hawaii that produces such physical products grows into national or international distribution, then identify short-term technological innovations that could accelerate this growth.

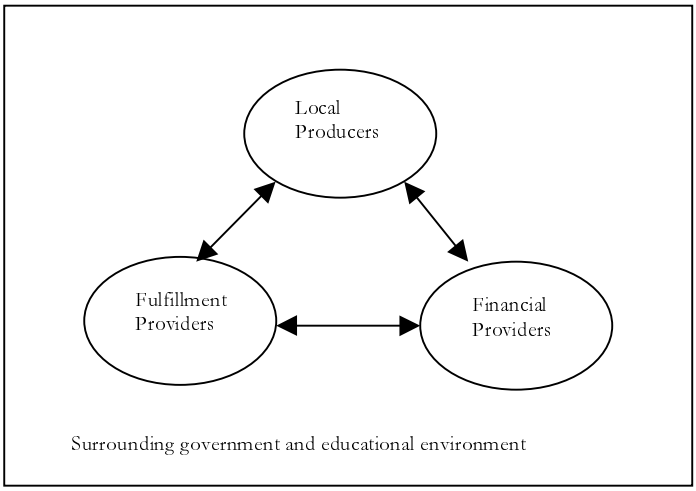
This research objective is based upon some preliminary work we have done with City Bank, a local institution oriented toward entrepreneurial, small business financial services. City Bank's research indicates a large, unexploited national and international market for local Hawaiian products, an outcome of increased globalization, increased cultural literacy, and the desire for many consumers to avoid bland, culturally neutral products. However, tapping this market more effectively requires:

- Increased entrepreneurial sophistication by Hawaiian small businesses producing local products. These businesses require additional support in learning how to grow their businesses beyond the border of their neighborhoods.

- Increased accessibility of infrastructure for national and international distribution and fulfillment services. We have identified one local company, Hilo Hattie, who has successfully made the leap from local to national/international distribution through its web site and distribution centers based in Hawaii and California.

- Technological innovation necessary to aid a small company to "act" like a much larger one in its national/international market. Our research objective requires the resolution of one fundamental paradox: consumers respond best to products made by small companies, yet small companies do not typically have the resources necessary for national and international marketing and distribution. We hypothesize that the confluence of the Internet, business partnership models such as Amazon's Associates program, and local distribution resources like Hilo Hattie's can be brought together to overcome this paradox.

Although there are countless factors that could be considered in researching how to accelerate the entrance of a small local company into the national and international marketplace, our research questions will focus on the following major participants and forces, as summarized in the following simple diagram:



Our research questions include:

- Who are the local producers most ready to exploit access to national/international markets through enhanced financial and distribution services, and what are their needs in this area?

- What kinds of financial service innovations and utility-based services by organizations such as City Bank would improve the capabilities of local small businesses to access national and international markets?

- What kinds of innovations and utility-based services by organizations such as Hilo Hattie would enable them to leverage their extant physical distribution capabilities for the needs to smaller local companies?

- Perhaps most interestingly, what kinds of *integrated* utility-based services could be created to reduce costs and speed business development? In other words, what kinds of useful B2B services could be implemented between the Financial, Distribution, and Local Producer sectors?

- How can existing educational and government services be leveraged and/or improved to facilitate the interactions between the three main participants?

- How can small producers work together (as in a cooperative) to achieve economies of scale in terms of infrastructural elements such as distribution, marketing, technology, and so forth?

Research methodology

We will pursue this research through the following overlapping set of phases, which we expect to require approximately one year to complete:

- **Needs assessment and structured interviews.** To begin, and throughout the course of the research, we will carry out structured interviews with individuals from the financial providers, fulfillment providers ,and local producers market sectors. We will continue to build upon our preliminary work with City Bank with more in-depth analyses of their services. We have a directory of over 300 local product companies that we will use to generate interviews with local producers. Finally, we will interview fulfillment providers such as Hilo Hattie. These interviews will result in a report that summarizes the state of the industry, the problem we are researching, and the barriers we have discovered.

- **Generation of proposals for technical and infrastructural innovations.** Based upon our interviews and resulting analyses, we will generate a set of proposals for utility-based, B2B services that hold the potential to significantly improve the local infrastructure for national/international marketing and distribution of locally produced goods, and the ways in which they will lower cost, increase the rate of business growth, or some combination of the two.

- **Selective prototyping and/or proof of concept technology development**. Depending upon the time and resources available, we may be able to select one of the technical or infrastructural innovations for prototyping and evaluation.

- **Development of partnerships with additional infrastructure providers**. Although we will focus initially on financial and fulfillment providers, we will seek to involve additional segments of the infrastructure community as the research matures. Candidate partners could come from such industries as accounting, law, software training, Internet service providers, web design, insurance, and so forth.

- **Generalization of results to non-Hawaiian economic and technical contexts**. A final goal of this research is to take our results from close analysis of our local environment, and make conjectures about how these findings might generalize to other communities.

It is important to note that our research focus is deliberately different than what might be expected from "New Economy" research. First, we are not focussed on high tech startups that are fueled by venture capital and hope to IPO within a few years. Neither are we focussed on companies producing nonphysical products such as software that can be distributed electronically over the Internet. Finally, we are not interested primarily in generic breakthroughs that could be applied to any business in any community context. Instead, we seek new forms of interface and synergy between the physical and the virtual, and the leveraging of the latest innovations in electronic commerce and communication to support and accelerate the most local of business development growth. We believe that this niche is an underdeveloped yet rich in potential for economic growth in our community and many others like it.

Qualifications

Philip M. Johnson is an Associate Professor of Information and Computer Sciences at the Univerisity of Hawaii. He founded and has directed the Collaborative Software Development Laboratory (CSDL, http://csdl.ics.hawaii.edu/) at UH for almost 10 years. In that time, CSDL has pursued research in software engineering and computer-supported cooperative work leading to: over 100 book chapters, articles, B.S/M.S./Ph.D. theses, and technical reports; research grants totaling over $800,000 in funding; design and implementation of over a dozen software systems totaling over 150,000 lines of code.

In addition, he has led the establishment of entrepreneurial curriculum in the Department of Information and Computer Sciences. In 1999, he taught the course "Software Startups in Hawaii: Facts, Fantasies, and Lessons Learned" (http://www2.ics.hawaii.edu/~johnson/691s99/), and in 2000, he taught the course "Internet Entrepreneurship: Theory and Practice" (http://csdl.ics.hawaii.edu/~johnson/691s00/). As part of the latter course, he designed and directed the implementation of an innovative e-commerce educational simulation system called "VCommerce" (http://vcommerce.hawaii.edu/) which is being used this semester in a business school course at Michigan State University. Two of his students, Joe Dane and Mette Moffett (who implemented Vcommerce) have won Aspect Technology grant awards through the University of Hawaii.

Finally, he has consulted with many high technology firms both locally and nationally, is a Director of the Hawaii Strategic Development Corporation and the High Technology Development Corporation, and is a co-founder of hotU, Inc., a local high tech startup.

Budget

The following budget assumes a one year research period, and a grant award of $15,000 from the New Economy Research program, which will be matched by an additional $15,000 of funding from City Bank (see attached letter of support):

Item	**Cost**
Research Assistant (12 months)	$22,000

Computer, miscellaneous software and supplies	$8,000
Total	**$30,000**