An Approach to IT Adoption in Micro-enterprises: Insights into Development

Mehruz Kamal
University of Nebraska at Omaha, mkamal@ist.unomaha.edu

Sajda Qureshi
University of Nebraska at Omaha, squareshi@ist.unomaha.edu

Follow this and additional works at: http://aisel.aisnet.org/mwais2009

Recommended Citation
http://aisel.aisnet.org/mwais2009/36

This material is brought to you by the Midwest (MWAIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MWAIS 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
An Approach to IT Adoption in Micro-enterprises: Insights into Development

Mehruz Kamal  
University of Nebraska at Omaha  
mkamal@ist.unomaha.edu

Sajda Qureshi  
University of Nebraska at Omaha  
squareshi@ist.unomaha.edu

ABSTRACT

Micro-enterprises have the potential to serve as the seedbed for industrialization. But in order to reach their potential, they face a myriad of challenges obstructing their path. A major obstacle to the cause is their inability to utilize technology to its full capability. Research has shown how IT enables organizations & even countries to leapfrog through stages of positive development. This paper goes through an innovative approach within a micro-enterprise to show how they may adopt and use IT. Findings from the case study shed insight for researchers & practitioners involved in using IT to assist micro-enterprises in underserved regions.

Keywords  
Micro-enterprises, IT, economic development, social development.

INTRODUCTION

The dominant form of business in both developing as well as in many underserved regions of developed countries is a special form of small business known as the microenterprise. This form of business has the characteristic of comprising between 1 – 5 employees. According to the Association for Enterprise Opportunity (AEO), there are over 23 million microenterprises in the U.S making up 87% of all businesses within the country. On a historical note, microenterprises have been considered the backbone of the U.S economy. Grosh and Somoleke (1996) have stated that microenterprises have the potential to serve as the seedbed for economic development. But it is seen that this potential of many microenterprises are hindered from growing and functioning efficiently by an inability to use information technology effectively (Schreiner and Woller, 2003; Sanders, 2002; Lichtenstein and Lyons, 2001). Although, it is not the primary engine of growth, the micro enterprise sector is very important for broad-based development, and for basic household economic survival (Leidholm & Mead, 1999).

Microenterprises play a very important role in generating jobs, developing business skills, and providing needed goods and services to a community (Duncombe and Heeks, 2002; Daniels, 1999). Barriers to starting these enterprises are generally low, households or individuals may engage in more than one micro enterprise, or may use one to augment or temporarily replace wage salaries. Most developing countries are predominantly comprised of micro enterprises (Alade, 2003). It has been seen that when IT is used within the context of small and medium-sized enterprises (SMEs), significant benefits are achieved. In a report by Qiang et al. (2006), it was stated that businesses can grow at a rate of 3.4% faster in terms of sales when email is used for customer communication. In the same fashion, 4% increase in sales as well as 5% increase in export performance was obtained when e-business techniques were adopted by SMEs in the manufacturing sector in Canada (Raymond et al., 2005). It has also been shown that profitability gains can come from cost savings rather than from increase in sales (Southwood, 2004). In addition, through a model of Information technology for development, Qureshi (2005) has shown that when IT implementations are introduced in the economic and social activities of a society, the expected outcomes would be better access to information and expertise, increased competitiveness and access to markets, administrative efficiencies, improved learning and labor productivity and reduction in poverty levels. Although current literature supporting the utilization of technology by SMEs exists, in practice, the scenario is quite different in the case of micro-enterprises. In a study by Wolcott et al. (2007) on a set of micro-enterprises in an underserved region in North Omaha, it was seen that although the latest state-of-the-art technology was awarded to these entrepreneurs to assist them with their businesses, most entrepreneurs had not even opened the packaging within which these technologies were contained six months after they had received them! Qiang et al (2006) also showed that among micro firms, only 27 percent use e-mail and 22 percent use Web sites to interact with clients and suppliers. Most studies in the field of Information Systems have focused on SMEs. Few studies have focused on issues relating to microenterprises. Traditional theories of technology adoption and diffusion do not adequately explain the manner in which these types of businesses adopt and utilize technology (Furuhol and Orvik, 2006; Riemenschneider et al., 2003). Micro-enterprises are an under studied topic – although it is the predominant form of business in developing countries and even in underserved regions in developed countries. Moreover, if IT has all the benefits that prior
research has shown it to have, then why in reality is adoption of IT not taking place in the context of micro-enterprises? Subsequently, the research question being addressed in this paper is how can micro-enterprises adopt & use IT in their business? The contribution of this paper is in an innovative approach to help micro-enterprises adopt and use IT. Results from applying the approach within a micro-enterprise are presented. Findings from the case study shed insight to researchers & practitioners involved in using IT to assist micro-enterprises in underserved regions to enable development.

BACKGROUND

Micro-enterprises, IT, & Development

Micro-enterprises are a form of small business. Small firms differ from large firms in various ways. In terms of technology, micro firms tended to primarily use technologies such as email, web and simple accounting packages as opposed to medium and larger sized firms that used more complex applications such as CRM, and other similar technologies (Bharati et al. 2006). Dandridge (1979) mentions that organizational theories that were developed as a result of studying large organizations, do not explain the true structure and management principles actually encountered in small businesses. Welsh and White (1981) state that “a small business is not a little big business” and show that with respect to financial management practices (cash flow, break-even analysis, return on investment, and debt-equity ratio), the analytical models applicable to large businesses do not apply. Small businesses also face greater risks when investing in technology (Senn et al. 1981). The skills, time, and staff necessary for planning are not major issues in large businesses, yet these same issues represent most of the difficulties in small businesses (Thong 1999). In a multi-country level study, Beck et al. (2005) showed that small and medium-sized firms faced greater financial, legal, and corruption obstacles compared to large firms, and that the constraining impact of obstacles on firm growth was inversely related to firm size. Subsequently, these issues are more prevalent in micro-enterprises. A study by Street and Meister (2004) has shown that Information Systems (IS) play a major role in small firms looking to grow. One of the key findings in that study is that in order to support the internal transparency of the firm during its growth phase, there is a need for an appropriate IS to be incorporated at a very early stage – even before many of the other structural or organizational changes are initiated. Small businesses can also harness the power of IT as a source of strategic advantage to help them become competitive and obtain a favorable position in their sector of activity (Bergeron et al. 1992). In a study by Matthews (2007), it was shown that ICTs play an important role in the expansion of SMEs. The results showed that there is an increasing awareness and desirability of small firms looking to grow to use the potential of internet communications to reach a larger market for their products and services. Matthews (2007) also discovered that lack of confidence in technology was a major inhibiting factor for SMEs looking to grow and suggests that training along with making small business owners aware of product and solution knowledge will improve their confidence in the use of ICTs to help support their business. There are also other studies that have looked at different aspects of IT in small firms: effect of computer training on attitudes and usage behavior (Raymond 1988); relationship between computing issues and satisfaction of end-users (Montazemi 1988); link between CEO involvement and computer use effectiveness (DeLone 1988). There have also been some studies that have investigated the effects of vendor-approach as opposed to consultant-vendor approach in the implementation of information systems in small businesses and found that small business owners favored the vendor-approach in implementing operational systems such as accounting systems, inventory control, sales order processing, sales analysis, payroll, and purchasing (Thong et al. 1994; Thong et al. 1996). It has been acknowledged by researchers and development agencies around the world of the increasingly important role that Information Technology (IT) can play in facilitating development. Steinberg (2003) suggests that the high versatility of Information and Communications Technologies (ICTs) have the potential to address a country’s development strategies - provided an enabling environment exists. Researchers in the field of IT for Development (ITD) have investigated various ways and in various use contexts the manner in which IT may help to bring about development. One such context is within the sphere of small businesses to help them achieve not only operational efficiency but at a broader level help bring about economic and social well being. ITD research has made contributions in providing equitable access to information and knowledge in areas such as education and literacy (Rodrigo 2003; Rodrigues et al. 2003); healthcare (Braa et al. 2004; Kimaro et al. 2005); software development (Chudnovsky et al. 2005; Tan et al. 2005); reduction in poverty (Cecchini et al. 2003; Kenny 2000); better government (Nidumolu et al. 1996; Qureshi 1998) and off-Shore outsourcing (Hawk et al. 2005; Preis-Heje et al. 2005). However there is limited research that considers the effect of IT implementations on micro-businesses and their contributions to development. Existing studies in this research stream have looked at findings resulting from implementing policies at the national level. Such data are obtained from the formal sector within societies and tend to overlook or disregard the informal sector of economies within which micro-entreprises reside. The above suggests that little research has been done in micro-enterprises. It then appears that there is a need to discover ways in which IT may be used by micro-enterprises to help them streamline their business activities and compete with larger firms and potentially impact development.
METHODOLOGY

This study uses an inductive interpretive case study (Walsham 1995) to understand how micro-enterprises may adopt IT to grow their business. An action research methodology (Baskerville 1999; Zuber-Skerrit 1991) is used to apply IT interventions within a micro-enterprise in North Omaha and the results analyzed. The research design used is shown in figure 1 below.

Figure 1. Research Design

As seen in the figure above, there are four distinct stages at which activities will be conducted. At T0, the researcher will interview the micro-entrepreneur to understand their past, present, and future use of technology and how the owner thinks IT could benefit the business. Stages T1 through T3 comprise the action research cycle that will be conducted. At T1, the researcher will once again meet with the micro-entrepreneur to inquire about any of the immediate IT needs and also get an in-depth understanding of the business. Equipped with that information along with the information obtained from the interviews at the T0 stage, the researcher will then plan what type of IT intervention would be appropriate to apply to the micro-enterprise. At T2, the actual IT interventions will be applied. At stage T3, the researcher will evaluate whether the IT interventions applied to the micro-enterprise actually meets and/or solves the needs expressed by the micro-entrepreneur. If not, then modifications are made and additional IT interventions are applied. Iteration between stages T1 through T3 represents the cyclical nature of the action research approach. At T4 after the action research cycle is over, the researcher sits down with the micro-entrepreneur and interviews them again to inquire in what ways the IT interventions impacted their businesses. The researcher will then integrate all the data from the interviews and observations and carry out a case analysis to discover how IT may be adopted by the micro-enterprises and may impact development.

THE CASE

HC is primarily an internet business that sells ethnic cake-toppers. The owner, KC started the business in 2004. In 2004, students from a local University developed her website. Very recently she has moved into a small office and shares the space with another business owner. KC does not have to pay for her office space. KC does some of the clerical work for the other business owner and in return gets to share the office space. KC uses a number of vendors from all over the United States to obtain the cake toppers. Sales till now have come from her website. Once a customer places an order for a cake topper, she receives the order form by mail and packages the cake topper figurine and ships it out to the customer. Payments for the cake topper are handled through PayPal functionality on the website. KC handles the shipping of the figurines herself and does not outsource this activity. She uses UPS to send out the items to the customers. She also includes a complementary gift with the purchase as a symbol of appreciation to the customer.

RESULTS FROM THE CASE

<table>
<thead>
<tr>
<th>Time 0 – Baseline Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>The researcher met with KC and asked her questions regarding her past, present, and future use of IT and in what ways KC thinks that IT may benefit her business. Table 1 gives summaries of her answers.</td>
</tr>
<tr>
<td><strong>Past</strong></td>
</tr>
<tr>
<td><strong>Present</strong></td>
</tr>
</tbody>
</table>
Historical & Social Context

Plan IT Interventions

At this point the researcher has a good understanding of the historical and social context of the micro-enterprise. The research then moves onto the next phase within this T1 stage, which is the start of the action research cycle to apply IT interventions to solve the immediate problems the micro-enterprise is facing. At this stage, the researcher plans what form of IT intervention would be most appropriate to be applied to the business. From the interviews conducted with KC, it was apparent that a major problem she faced was the lack of skills that would enable her to make changes to the business website when modifications were necessary. In addition, KC felt that the website needed to be re-designed as the current website was not drawing customers. Equipped with this knowledge, the researcher then went ahead and designed IT interventions to address these issues. The interventions are described in the following section.
Time 2 - Apply IT Interventions

The IT interventions that were carried out are as follows:

**New website:** One of the major interventions was the development of the new website. The new website has a more organized and efficient layout comparable to other leading online competitors of similar products. Content is laid out in a more manageable and attractive manner for visitors to easily surf the website. Colors chosen for the new site are of a much softer color in line with other online sellers.

**Training:** Training for the owner has come in form of providing her with a manual to help add/delete products on her website so that customers will always have the new and updated product list. And most importantly, the owner will not have to depend on someone else to change the product details for her on the website – she will be able to perform the changes herself by following the steps outlined in the manual. The manual gives screenshots as well as descriptive information as to the process to follow. A couple of hands-on sessions were done with the micro-entrepreneur so that any confusion could be cleared.

Time 3

**Observe Results**

*Perceptions and attitude changes:* One of the owner’s needs was to have her website look more “crisp” and professional. On doing some preliminary research as to the look and feel of other comparable businesses, it was suggested to the owner to change the colors and layout of her current site to help attract more customers. The owner had to be persuaded to shift away from her inefficient current layout and existing bold colors (red and black) to a more “crisper” organized layout and softer colors to help attract more customers.

**Reflect on impact of IT Interventions**

*Control:* It was observed that once the owner had been taught how to update content on the website and by providing her with an easy-to-follow manual, she seemed to be more confident and in control of her business. She no longer felt scared to modify content on the website and did not have to depend on someone else to become available to help her update her website. She could now run her online business at the pace she wanted without having to be delayed by depending on a 3rd party.

Time 4

During this phase, the researcher did an assessment of any impact that was created in the micro-enterprise from the IT interventions applied in the stages, T1 – T3. The micro-entrepreneur was contacted six months after the IT interventions had been carried out. Following is what KC had to say:

> “Things are going great. I have found a few vendors that I can drop ship with, so saving that expense with inventory has helped me a lot. I’ve put together a catalog with several new products. I now have 120+ products and a new catalog showcasing everything I sell. I just completed adding all of my products to my website, and once the programming is done, everything will be uploaded and ready to go. We do have the new template showing and a new picture for my free gift. Take a look [website link removed for confidentiality purposes]. We decided to change the banner but we kept the color scheme and navigation set up from the original template and I think it looks great too! I can't wait for you to see all of the new products I have. My catalog is 45 pages :) I didn't know what kind of program I could find or use for catalog design, so a friend of mine suggested I just use word since I basically know that, so I gave it a shot by inserting pictures and used text boxes for the descriptions and it looks pretty good for a first time try. If you know of a good program (not too complicated) that I can use, let me know and I'll give it a shot for my catalog for 2008.

I believe I'm seeing the same traffic numbers, but visitors adding my website to their favorites have increased a lot. I've actually had 4 sales within the past few weeks, so I'm excited about getting my entire line out there for the customers to see. Some of the search words showing on my reports are also items that will be new, so I'm excited to see my customers' reactions when my new product line hits.

In Microsoft Publisher, is there a PDF converter included in the software package? I went on-line at Best Buy to see the price and features, in the description it states that you can save your work as a PDF or XML, so am I right in that I will be able to convert my catalog as a PDF? Does that mean my current catalog that is a word doc, would I be able to convert that into a PDF or would I have to redo my catalog in the publisher program? I don't know much about programs as you can see :) , but if it will allow me to convert anything I may need to a PDF, then I don't have to purchase the PDF converter, just Microsoft publisher, and that will save me $100!”
Table 4. Impact Assessment Transcript

ANALYSIS

As can be seen from the impact assessment transcript in Table 4, a number of clear outcomes may be extracted and interpreted within the context of broader development. In terms of economic development, there has been some increase in income generation through sales on the newly re-designed website. Another economic development outcome coming from IT interventions in the business is the owner’s improved labor productivity. This is evident by the fact that the owner, KC has developed a 45 page catalogue of her products using a software program (MS Word) by herself without having to rely on a third party. In so doing, she has also positioned her business to be more competitive with her competitors through offering greater number of products to customers. Social development outcomes through IT are evident in KC’s description through access to relevant information such as finding vendors that would be able to drop-ship products. In addition, it is seen that KC is also using the Internet to search for new software applications that she can potentially use in her business (searched Best-Buy’s website for information on MS Publisher). In terms of the owner’s attitudes towards IT, it remains positive but it is safe to interpret that KC is now less fearful in trying and experimenting with software applications than she was before. In her narration she expressed interest in trying a new software application for converting her catalogue to pdf format. This attitude shift is significant from when the researcher had initially met with KC and she had expressed fear of “clicking the wrong button” and everything going wrong. These outcomes may seem very trivial to IS researchers but in fact they have far-fetched implications. IS research so far has neglected the unique context of micro-entreprises where traditional IT adoption theories fail to explain the dynamics of what goes on there. Micro-entrepreneurs are able to see the perceived usefulness and to some extent some of them even perceive the technology to be easy to use but it is unfortunately not enough to drive them to incorporate it into their business. This case study shows how a very systematic approach through understanding first how the micro-entrepreneur perceives or views IT and then understanding the business forms the foundation on which appropriate IT interventions need to be designed and applied to create the most impact. It is a gradual process of tailoring the IT to fit the business coupled with building confidence and necessary skills for the micro-entrepreneur to take control of the business. Without the context sensitive interventions that were applied to the micro-enterprise, the owner would not have had the courage to make any changes to the business website and might have eventually abandoned the business due to lack of revenue generation. It then implies that development policy practitioners need to put innovative strategies in place to assist micro businesses – instead of just throwing technology at them - to exploit technological innovations to improve and further the overall social as well as economic development goals of a region.

CONCLUSION

There are two distinct trends related to micro-entreprises, IT, and development. The first one being that micro-entreprises contribute to both economic and social development; and the second one being that IT can facilitate achievement of an underserved region’s development strategies. Little has been studied on the intersection of these two development trends. This paper is an attempt to flesh out an innovative approach to help micro-entreprises adopt and use IT for their growth. The IS community need to focus their attention on this under-studied classification of small businesses since with the right provision of IT and support, micro-entreprises may truly become a powerful force in the drive towards industrialization. Future research will entail using the approach presented in this paper to multiple case studies and carrying out a multiple case analysis to discover new concepts and relationships that will provide richer insight into the ways in which micro-entreprises adopt IT.

REFERENCES


