Assessment of Micro-enterprise Development through IT Adoption

Mehruz Kamal¹ Changsoo Song² Sajda Qureshi² Kenneth Kriz²
mkamal@brockport.edu changsosong@unomaha.edu squreshi@unomaha.edu kkriz@unomaha.edu
¹State University of New York at Brockport ²University of Nebraska at Omaha

Abstract

While prior work has focused on the process through which IT may be adopted by micro-enterprises, this research takes it one step further by assessing the outcomes from IT adoption in micro-enterprises that have undergone technology, training and trust building interventions. It analyzes these using a systematic evaluation model that ties in the key components of development. The contribution of this paper is in providing insights into how researchers and practitioners can better stimulate micro-enterprise growth and economic development through IT adoption.

1. Introduction

While there may be much known about the factors that drive small businesses to grow, there is much less known on the role of Information & Communication Technologies (ICTs) in stimulating small business growth. In theory, ICT adoption should lead to business growth through at least three of the theoretical lens pointed out by Hart [6]: the technical economies, dynamic economies, and evolutionary growth channels. If small firms adopt ICT and use it efficiently then they should see their average cost decrease, especially at higher levels of production. ICT can also facilitate learning-by-doing in creating a perpetual record of processes and results. Further, ICT can help businesses adapt to changing demand and supply environments and help them to improve their processes to meet the challenges afforded in the environment.

Research has shown that productivity improvements can be achieved through “learning-by-doing” [31] in order to become more efficient and effective. In recent years the development literature suggests that when ICTs are applied in innovative ways, the efficiency gains can be magnified [19]. When ICTs are applied in a manner that is appropriate to the social context [27], [25], then the outcomes such as access to new markets, administrative efficiencies, access to information and expertise and labor productivity can be achieved [17]. However, these outcomes are more difficult to achieve in micro-enterprises. This is because the challenges faced by micro-enterprises are numerous and little is known about how they grow.

This research builds on prior work that has looked at IT adoption in micro-enterprises through an innovative approach called IT therapy [29], [30], [18]. The IT therapy approach is well suited for addressing attitudinal challenges such as lack of trust, lack of confidence, lack of awareness, and resistance to technology. It can play a role in overcoming some capability challenges. It can increase user IT knowledge and can improve user IT skills, troubleshooting skills, and IT planning ability. IT therapy may not directly compensate for a shortage of time, money, and information, but it may help economize each of these. IT therapy is least well suited for providing basic infrastructure, professional development services, and on-going operational support services.

This paper will address the question of: What are the effects of IT adoption on the development of micro-enterprises? It does this by carrying out a systematic assessment and evaluation of the impact of IT interventions within a new group of micro-enterprises that have also undergone IT therapy. The following sections provide the necessary background on micro-enterprises, IT and development and highlight the gap that needs to be addressed in order to assist micro-enterprises to grow.

2. Micro-enterprises, Development, and IT Adoption

Past studies have shown that the use of ICTs can play an important role on the growth of small businesses [12], [26], [19], [21]. Cragg and King [4] have shown that there is a gradual increase in the number of small firms that either adopt various new technologies or take steps to upgrade what they currently possess. The studies suggest that IT can be employed to bring about increased competitiveness if it enables businesses to create new jobs, increase productivity and sales through access to new markets.
and administrative efficiencies [17], [12]. Small and medium sized businesses that have adopted and used ICTs have seen positive outcomes related to operational efficiencies, increased revenues, and are able to better position themselves within their market niche. Qiang et al. [19] observed that businesses that utilized e-mail to communicate with their customers experienced sales growth 3.4 per cent greater than those which did not. Similar outcomes were also observed for productivity and reinvestment. Both these components were found to be greater for more intensive users of IT [19].

Other research in this area also highlights the positive impact of IT use within small businesses. A 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 [21]. Specifically, Raymond et al. [21] mention that by using technologies such as websites, email and telephones to communicate with customers, SMEs can provide better customer service as well as expand their customer base to help reach out to both local as well as international consumers for their products. In another study Southwood [24] found that ICT investments by SMEs in South Africa resulted in profitability gains from cost savings rather than from increase in sales.

Despite the evidence from these studies, it is seen that in the case of micro-enterprises the scenario is quite different. Micro-enterprises face numerous challenges in being able to adopt and use IT for growing their businesses. Challenges such as affordability [11], [7], lack of awareness about IT [16], lack of IT infrastructure [1], [9], [15], [2], & lack of management’s capacity [10] to name a few. Wolcott et al. [30] broadly classified the multitude of challenges faced by micro-enterprises into categories under capabilities, resources, access, attitude, context, and operations.

It then appears that in order to help micro-enterprises overcome the many challenges that they face – particularly paying attention to their constraints of tight limited budgets and time – there is a need to arm them with ICTs to help them reap the many benefits that technology has to offer. This can be achieved through a process of IT therapy [29], [30], [18]. IT Therapy process entails training, technology and trust building interventions that enable micro-entrepreneurs faced with limited resources to adopt ICTs to grow their businesses. Examples of IT interventions or IT therapy tasks that were conducted in prior IT therapy initiatives are documented in Wolcott et al. [30] and Qureshi et al. [18]. Findings from those studies revealed that as a result of the interventions, the micro-enterprises experienced immediate outcomes such as better access to knowledge and expertise, competitiveness and access to new markets, improved administrative efficiencies, increased learning and labor productivity, and finally poverty reduction through job creation. These outcomes have implications for both social and economic development as shown through a model of IT for development by Qureshi [17]. However, beyond observing these immediate effects, it is necessary to have a systematic approach to evaluating the IT therapy initiatives. Such evaluation will shed light on whether IT adoption in micro-enterprises have any longer term growth potential as well as form the basis on which development practitioners may design interventions to achieve the most impact in underserved regions. The following section therefore takes this discussion further and describes the concepts that were used to carry out a systematic evaluation of the IT therapy initiatives.

3. Evaluation Model

To evaluate effects of IT therapy on microenterprises, the paper established a conceptual logic model, which is commonly used in program evaluation. The logic model can be a useful tool in conceptualizing a project; it helps design evaluation and performance measurement, allowing evaluators and other related stakeholders to focus on “the important elements of the program and identifying what evaluation questions should be asked and why and what measures of performance are key [13]. A logic model is composed of such fundamental components as resources, activities, outputs, short-term, intermediate, and longer-term outcomes [28], [13].

A micro-business development program has developed a logic model that is composed of elements such as inputs, program activities, outputs/interim outcomes, and impacts to measure the impact of the program [22]. According to the model, inputs refer to internal and external resources; program activities include one-on-on counseling, classroom training, seminars, loan packaging, and market search and analysis; outputs/interim outcomes comprises months in contact with program, classes/services completed, access to capital, attitude changes, and satisfaction with services; finally, impacts include business growth, annual sales, change in income, change in public assistance reliance, and hiring other employees. Government or non-profit agencies’ support programs for microenterprise, such as microloan delivery services and training and technical assistance of SELP (Self-Employment Learning Project), set economic development and poverty reduction as their ultimate goals [5], [14]. Most of the elements of the model are...
relevant to IT therapy in that the target is the micro-enterprise. The elements described so far will provide an insight for the logic model to evaluate effects of the IT therapy initiatives. Meanwhile, as far as information technology effects are concerned, Qureshi [17] explored effects of information technologies on development and categorized them into five major effect dimensions: access to information, knowledge and expertise, competitiveness and access to markets, administrative efficiencies, learning and increased labor productivity, and contribution to poverty reduction.

Prior research has shown that IT therapy has been performed by a combination of resources such as: information technologies, university faculty and students, and community partners. Selected microenterprises through initial screening interviews were provided with various IT assistance, including configuration of hardware and software, development of database and website, and related hands-on training required to manage those technologies. Meanwhile, IT knowledge modules were developed to share between students and to serve microenterprises. All of these are included in our logic model as resources, activities, and outputs. Outputs also include microenterprises’ behavioral changes and empowerment enabled through IT therapy.

Drawing upon the findings of Qureshi [17], the conceptual logic model of IT therapy include improved access to information and expertise, increased administrative efficiencies, increased learning and labor productivity, increased access to market, and improved quality as the short-term or immediate effects of IT therapy. Based on the micro-business development model and Qureshi [17], our logic model puts business growth, which can be represented by increased sales volumes, increased revenue, and increased profit, and reduced public assistance as intermediate effects of the project. And finally, our model sets economic development, which can be represented by increased or retained employment (job creation), and reduced or eliminated poverty as the longer-term or ultimate outcomes the project. Integrating all of these together, the established logic model to evaluate effects of IT therapy is shown in Figure 1 below.

4. Methodology

The conceptual evaluation model shown in figure 1 above is used as a basis to investigate a group of eight micro-enterprises that had undergone IT therapy. This is done using an interpretive approach. According to Klein and Myers [8], Information Systems research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions. The principles of interpretive research [8] that were adhered to were: 1) the principle of contextualization, 2) the principle of multiple interpretations, and 3) the principle of abstraction and generalization. The principle of contextualization was achieved by observing and listening to each of the micro-entrepreneurs participating in the interviews as they described the impacts that they now see in their business after the IT interventions. The researchers observed and noted the narrations made by the business owners. The narrations depict the social and historical backgrounds of each of the micro-businesses as is specified by the principle of contextualization [8]. The principle of multiple interpretations states that there may exist multiple viewpoints of the same issue. Within the context of our study, the principle of multiple interpretations entailed sensitivity to possible differences in interpretations among the micro-entrepreneurs as expressed in the multiple narratives described in the results section. According to Klein and Myers [8], the principle of abstraction and generalization state that interpretations coming out from the research data need to be related to theoretical, general concepts that describe the nature of human understanding and social action. For this study, the
findings will be related to the conceptual evaluation model in figure 1 to help explain the impact of IT adoption in facilitating micro-enterprise development.

4.1. Data Collection

Data was primarily collected through open-ended interviews conducted with the micro-entrepreneurs. The interviews were developed using Patton’s [20] Interview Guide Approach that calls for the interviewer to have an outline of topics or issues to be covered, but is free to vary the wording and order of the questions to some extent. The major advantage is that the data are somewhat more systematic and comprehensive than in an informal conversational interview, while the tone of the interview still remains fairly conversational and informal [20].

The first point of data collection used the interview instrument given in table 3 of the appendix. Responses obtained from this initial interview provided the researchers with information regarding the background of each of the micro-enterprises and helped the researchers to decide whether the micro-enterprise would be selected for IT therapy interventions or not. In addition, the researchers were also able to find out what challenges the micro-entrepreneurs were facing with IT and how they see IT benefit their business. After the micro-enterprises were screened and selected, IT therapy using technology, training, and trust building interventions were applied to each micro-enterprise. Since the IT therapy process has been documented in prior studies [30], [18], we will not go into detail about the actual process of applying the interventions.

The second point of data collection took place approximately 4-5 months after the interventions were applied. Once again open-ended questions were used for the interview and the instrument is given in table 4 of the appendix. The questions asked in this effects assessment were formulated based on the conceptual evaluation model given in figure 1. Specifically, the goal of this evaluation was to assess the immediate or short-term effects such as improved access to information and expertise, administrative efficiencies, learning and labor productivity, access to new markets, and finally quality improvements in the products and services offered by the micro-enterprises. Therefore, using our conceptual model, we framed open-ended questions targeting each of the above mentioned short-term effects. In addition to questions addressing the short-term effects, the researchers also asked a few questions relating to how the micro-entrepreneurs see their business be impacted through IT in the future. Also, questions relating to IT usage and exploration of additional IT for their business were asked. Together these additional questions indicate the likelihood of the micro-enterprises’ potential to impact development through IT adoption and shed some insight into potential intermediate and longer-term outcomes that may be expected as outlined in the conceptual evaluation model in figure 1. The following table outlines each of the short-term effects and the corresponding questions addressing those effects.

Table 1. Questions related to Evaluation Conceptual model

<table>
<thead>
<tr>
<th>Short-term effects</th>
<th>Questions (Table 4 in Appendix)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Efficiencies</td>
<td>• Time savings (Q.3)</td>
</tr>
<tr>
<td></td>
<td>• Cost savings (Q.4)</td>
</tr>
<tr>
<td>Improved quality</td>
<td>Quality improvement (Q.5)</td>
</tr>
<tr>
<td>Access to markets</td>
<td>Increase in potential customers (Q.6)</td>
</tr>
<tr>
<td>Learning &amp; Labor Productivity</td>
<td>• Acquisition of IT knowledge &amp; skills (Q.7)</td>
</tr>
<tr>
<td></td>
<td>• Sustainability of learned IT skills &amp; knowledge (Q.8)</td>
</tr>
<tr>
<td>Access to Information &amp; Expertise</td>
<td>Access to business knowledge and expertise (Q.9)</td>
</tr>
<tr>
<td>Intermediate &amp; Longer-term outcomes</td>
<td>• Future business impact from IT (Q.10)</td>
</tr>
<tr>
<td></td>
<td>• IT usage in business (Q.11)</td>
</tr>
<tr>
<td></td>
<td>• Exploring new IT adoption for business (Q.12)</td>
</tr>
</tbody>
</table>

5. Results and Analysis

Table 2 below shows what interventions were carried out and the corresponding effects that came about in each of the eight micro-enterprises in this study. Each micro-enterprise is listed as individual columns in the table. The rows represent the effects that the IT interventions produced. The interview instrument that was used to conduct the effects assessment is given in table 4 in the appendix. The questions that correspond to each row in table 2 - is provided to enable the reader to make the connection between which questions were asked to obtain answers for which short-term outcome.
<table>
<thead>
<tr>
<th>Micro-enterprise</th>
<th>AM</th>
<th>DN</th>
<th>EN</th>
<th>GM</th>
<th>PK</th>
<th>RL</th>
<th>RC</th>
<th>TU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventions</td>
<td>Hardware &amp; software configuration; Connection to musical instruments for composition</td>
<td>Website development &amp; management training, Setup of a back-up system &amp; wireless network</td>
<td>Software (DB) development</td>
<td>Website development &amp; management training</td>
<td>Integration of software and data onto notebook</td>
<td>Website development &amp; management training</td>
<td>Organization of documents and training on how to manage</td>
<td>Database development</td>
</tr>
<tr>
<td>Overall effect on business operation (Q.2)</td>
<td>Innovation from analog to digital</td>
<td>On-line business operation added</td>
<td>Streamline data, removing data duplication and resulting in more efficient and effective business operation</td>
<td>Offer potential customers to business info on line</td>
<td>Can use software and data anywhere for her business</td>
<td>Offer potential customers to business info on-line</td>
<td>Managing documents in a more efficient way</td>
<td>Management of business data with the database</td>
</tr>
<tr>
<td>Labor Productivity (Administrative Efficiency): Time savings (Q.3)</td>
<td>Biz process from 1 week to 1 hour</td>
<td>N/A</td>
<td>2 hrs/week</td>
<td>N/A</td>
<td>Yes, but couldn't pull it out in a quantitative manner</td>
<td>10 hrs/month</td>
<td>1-2 hrs/week</td>
<td>5-10 hrs/week</td>
</tr>
<tr>
<td>Administrative Efficiency: Cost savings (Q.4)</td>
<td>Saved off-line delivery costs</td>
<td>Website development cost</td>
<td>N/A</td>
<td>Website development cost</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Quality Improvement (Q.5)</td>
<td>Improved product (music) quality</td>
<td>Improved biz operation quality (offer a convenient on-line registration and payment option to clients)</td>
<td>Improved data quality, leading to service quality</td>
<td>Made her biz look professional</td>
<td>Improved service quality</td>
<td>Offer potential clients biz info in a more convenient manner</td>
<td>Improved service quality in terms of more time for communication with customers</td>
<td>N/A</td>
</tr>
<tr>
<td>Access to Market: Increase of potential customers (Q.6)</td>
<td>N/A</td>
<td>100 website hits/month</td>
<td>N/A</td>
<td>50 website hits/month, 10-15 people contacted</td>
<td>N/A</td>
<td>A couple of contacts until now</td>
<td>Meets 2 more potential clients/month, partly due to time saving</td>
<td>5 more potential customers/month</td>
</tr>
<tr>
<td>Learning / Empowerment: Acquisition of IT knowledge or skills (Q.7)</td>
<td>How to use computer and applications for his biz</td>
<td>How to build and manage a website for her business</td>
<td>Overall IT application knowledge</td>
<td>How to manage a website for her business</td>
<td>New IT knowledge and how to use it</td>
<td>Knowledge about web presence and related technologies</td>
<td>How to manage documents</td>
<td>Knowledge of database</td>
</tr>
<tr>
<td>Empowerment: Sustainability of learned knowledge and skills (Q.8)</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Partly yes</td>
</tr>
<tr>
<td>Access to biz knowledge and expertise (Q.9)</td>
<td>Learning knowledge from on-line networks with other musicians</td>
<td>Learning new biz knowledge through ME meetings</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>More and easier access to biz info through database</td>
<td>N/A</td>
</tr>
<tr>
<td>Potential for future business (Q.10)</td>
<td>Great positive potential</td>
<td>Great potential/Eager to adopt new/its</td>
<td>Great potential/Eager to adopt new/its</td>
<td>Great positive potential</td>
<td>Great positive potential</td>
<td>Great positive potential</td>
<td>Great positive potential</td>
<td>Great positive potential</td>
</tr>
<tr>
<td>Behavioral Change</td>
<td>Time spent in using IT (Q.11)</td>
<td>4 more hrs/day/week</td>
<td>10 more hrs/week</td>
<td>5 more hrs/week</td>
<td>10 more hrs/week</td>
<td>2 more hrs/day</td>
<td>About the same as before</td>
<td>About the same as before</td>
</tr>
<tr>
<td>Time spent in exploring IT (Q.12)</td>
<td>N/A (IT setup optimized)</td>
<td>1-2 more hrs/week</td>
<td>Included in the previous question</td>
<td>About the same as before</td>
<td>4 more hrs/week</td>
<td>About the same as before</td>
<td>About the same as before</td>
<td>N/A (IT setup optimized)</td>
</tr>
</tbody>
</table>
The assistance was customized to each micro-entrepreneur’s needs through initial IT needs assessments (see appendix). The IT assistance included basic computing skills, configuration and/or integration of hardware and/or software, data migration, backup system setup, wireless network setup, website development and hosting, database application development, etc. Substantial effects were expected according to the types of IT assistance offered. They were categorized into (1) access to business information and expertise, (2) administrative efficiency, (3) learning and labor productivity, (4) access to market, and (5) quality improvement as short-term outcomes. In addition to the short-term outcomes of the IT assistance, empowerment and behavioral change were expected as part of outputs of the assistance. Innovations in the use of IT in micro-enterprises involved refined or improved business processes. The following sections outline the results of post-intervention interviews, of which the aim was to identify the effects of the IT therapy.

5.1. Access to business information and expertise

Information technology (IT) has made access to information easier. In the context of micro-enterprises, it may allow micro-entrepreneurs to obtain relevant business information, and thus to increase their business expertise in an efficient and effective manner. All of the micro-enterprises that received IT therapy had access to the Internet before the start of the assistance, and used email as a means for personal and business communications. Accordingly, training for information search through the Internet was not needed by the micro-entrepreneurs as part of the IT assistance.

As far as access to business information and expertise is concerned, it is seen from table 2 that in TU, access to business information has been enhanced as a direct effect of the IT assistance. The IT assistance that TU received was the development of a database to combine information on customers and training classes. TU identified new potential customers for her business through combining the two separate records. In addition to TU, AM is another example that increased access to business information through IT therapy. An introductory instruction about social networking websites like MySpace enabled AM to network with other musicians to exchange each other’s experiences and opinions leading to increased business information and expertise.

5.2. Administrative efficiency

Administrative efficiency could be defined to mean the maximization of the ratio of net positive results to opportunity costs [23]. Increased outcomes for a given amount of costs or reduced costs for a given level of positive outcomes may be considered to belong to administrative efficiency. Therefore, in this paper, administrative efficiency is discussed in terms of cost savings. From the standpoint of micro-enterprises, the IT assistance itself means cost savings because the assistance was provided without charge. When the micro-entrepreneurs were asked about whether any cost savings incurred, DN and GM responded that they saved the cost of website development and related trainings. A typical case of cost savings came from AM. AM saved off-line delivery cost, including postage and gas by delivering products through e-mail. The business operation of AM transformed from analog to digital, which can be considered as a typical example of business innovation.

5.3. Learning & Labor productivity

Labor productivity refers to output per labor hour or per employee [3]. It comes from reduced labor input for a given amount of products or services, or increased products or services for a given amount of time. It turned out that a majority of the micro-enterprises (six out of eight) that received the IT assistance experienced time savings that can be attributed to the IT therapy. Saved time differed among micro-enterprises: RC saved 1 to 2 hours a week; EN 2 hours a week; RL approximately 2.5 hours a week; TU 5 to 10 hours a week. Notable is the case of AM where the business changed from analog process to a digital process. The product delivery cycle of AM reduced from 1 business week to 1 hour, which is really a tremendous time saving. DN and GM are the two cases that have not seen any time savings at the point of the effect assessment. However, these two businesses are managing newly developed websites which has taken additional time, offsetting any saved time. The saved time has been used for other core business activities such as more contacts with current and potential customers (RC) and quality improvement (AM).

It is important to mention that labor productivity is enabled through the learning of new knowledge and/or skills. All of the micro-entrepreneurs mentioned that they had learned substantial amounts of new knowledge and/or skills. AM referred to
learning how to use his computer and the applications for the business; EN mentioned an increased level of IT application knowledge as learning; TU learned how to utilize a database to manage the business and to identify potential customers; in the case of PK, overall IT applications knowledge increased; DN, GM, and RL learned the knowledge and skills of developing, hosting, and managing a website; for RC, what was learned is how to manage and organize documents on his computer. These new or increased knowledge and/or skills are directly or indirectly related with increased labor productivity as they enable the micro-entrepreneurs to apply their skills in the business.

### 5.4. Access to new markets

Access to new markets include increased access to current and/or new markets or customers, and primarily relates to web marketing or e-commerce sites. Three of the eight micro-enterprises were given the assistance of developing and hosting their websites. All of them expected increased access to their current and potential markets, and turned out to meet the expectations to a certain degree. DN’s website has recorded approximately 100 new hits per month on average. In the case of GM, about 50 hits a month have been recorded. However, RL could not estimate how many hits the website has recorded, despite the web counter functions available on the website. All the websites developed by the IT therapy were informational ones. Especially in the case of GM, 10 to 15 potential customers has made contact by seeing GM’s business information online – some of them are international which opened up new potential for GM to tap into. RL has also had inquiries from a couple of potential customers who viewed RL’s business information on the website.

Besides the case of web presence, another type of IT assistance showed a potential for increased business customers - TU combined the customer information and the training class information through the developed database, and thus was able to identify more potential customers from the database, which can be interpreted as increased access to potential customers. In addition, the ability to contact and meet more potential customers has been made possible in the case of RC, partly due to saved time as a result of having files better organized on his computer which freed up a lot of his time that he used to spend in locating documents on his computer prior to the IT therapy. As such, the IT therapy has contributed to enhanced access to markets, directly or indirectly.

### 5.5. Quality improvement

IT may contribute to business quality improvement, either through products or services. As far as product quality is concerned, AM is an example of product quality improvement as a result of IT assistance. AM mentioned that digital recording of music improved the quality of his music productions dramatically. EN has also experienced increased service quality via improved data quality resulting from the database programming assistance.

In most of the cases, the IT assistance for micro-enterprises has generated improved communication quality. In the case of website development and hosting assistance, micro-enterprises (DN, GM, and RL) mentioned that it has brought about improved communications with their customers, providing the customers with more business information in a more efficient and convenient manner. Especially in the case of DN, on-line registration and payment are said to have offered much more conveniences to the customers who used them. In the cases of PK and RC, time saved as a result of the IT assistance have allowed them to spend more time with potential customers, increasing communication (counseling) quality. In addition, GM mentioned that the website made her business look more professional, which is another aspect of quality.

### 5.6. Empowerment and Behavioral change

As stated earlier, micro-enterprises served that received IT therapy learned substantial amounts of IT knowledge and skills. In addition, most of micro-enterprises turned out to be able to control the newly adopted IT based on those knowledge and/or skills by themselves, which means that the IT assistance has resulted in real empowerment for the micro-enterprises to grow their business through the IT adoption. PK mentioned that a more reasonable decision-making about additional IT adoption has been made possible due to acquired IT knowledge from the IT assistance.

Meanwhile, the IT assistance led to significant behavioral changes of the micro-entrepreneurs. It was seen that time spent in utilizing IT increased significantly, on average from one hour to four additional hours a day, as compared with before the IT assistance. Two more hours a day were most common. Meanwhile, three micro-enterprises (DN, EN, and PK) have been spending more time in exploring new IT adoptions, experiencing substantial benefits from IT adopted during the assistance, and two others (AM and TU) have not because they
believe that the current IT setup is ideal for their business for the time being. Three others (GM, RL, and RC) have been spending about the same amount of time in exploring new IT adoptions as before. It is important to point out that all the micro-enterprises have seen great potential for IT to benefit their businesses in the future.

7. Implications & Conclusion

The effects from the IT therapy initiatives that have been discussed in this paper above shed helpful insight in understanding how micro-enterprises may be assisted in under-served regions to grow. The results of this paper show how a very context sensitive process – referred to as IT therapy in this paper was effective in helping micro-enterprises adopt and use IT. The evaluation of the IT therapy revealed that the resulting effects were different based on the nature of the technology or training that the micro-enterprises received. It also became evident that varying levels of micro-entrepreneurs’ motivation to grow their business had an impact on the effects that came about.

The analysis of the evaluation of the IT therapy initiatives show that across the board for all the micro-enterprises, learning of new skills was one of the major effects. This finding has implications for development practitioners working with micro-enterprises. Making micro-entrepreneurs take a class or simply providing them with technology is not the solution. In order to truly help these small businesses, development practitioners need to take a more grass-roots and hands-on approach whereby they need to go into the micro-enterprise and show the micro-entrepreneurs how to use the technology in their business context and not in general ways but how it can be incorporated to bring about efficiencies in their business. In addition, the learning that took place in each of the micro-enterprises serves as an enabler for bringing about empowerment. Empowering micro-entrepreneurs through IT therapy will position them to be able to take control of their businesses.

Results obtained in this study also have important implications for future research. One such implication is the evaluation of the same set of micro-enterprises after an extended period of time. Doing so will provide information as to how the skills and knowledge that the micro-enterprises obtained as a result of the IT therapy hold up and whether the business owners continue to use IT in their business operations. Future evaluations carried out over longer period of time will also provide information on any potential economic development outcome such as revenue generation, growth of the business, and assessment of poverty reduction. In addition, evaluation of any currently available IT assistance programs funded by various governments should follow a systematic approach similar to the one presented in this paper. This will enable governments to have a better understanding of the impacts of their initiatives targeted to small businesses in under-served areas.

8. References


Appendix

Table 3. IT needs instrument
Microenterprise's Information Technology Needs and Challenges.

<table>
<thead>
<tr>
<th>Micro-Business Name</th>
<th>Community Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of business:</td>
<td></td>
</tr>
<tr>
<td>2. Is your business income greater than 25000 pa: y/n</td>
<td></td>
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<tr>
<td>3. Number of employees:</td>
<td></td>
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<tr>
<td>4. Access and Use of HW and SW? a. What IT software are you using and for what tasks?, b. What hardware do you have access to and for what tasks?, c. How do you personally use IT/Computers?</td>
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<tr>
<td>6. How do you think IT can benefit your business?</td>
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<tr>
<td>7. What technologies are you aware of that can help you gain the benefit you just mentioned? Have you heard about any of these ways? (Web-based marketing/ get more customers, Back-up and recovery, Databases, Communications, Accounting, Presentations, Publicity material, Searching)</td>
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<tr>
<td>8. What computer skills do you feel you have and how did you acquire them?</td>
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<tr>
<td>9. What services do you have access to? a. IT provider/web/maintenance, b. Business development, c. Legal, d. Financial, e. Training/Education</td>
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<tr>
<td>10. What hinders you from using IT effectively? a. lack time, skills, b. financial, c. Attitudes/feelings/emotions</td>
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Table 4. Effects Assessment instrument
Effects of Information Technology Assistance on Micro-Enterprises.

**Section A: Effects of the IT assistance offered**
1. What IT assistance did you receive? Can you tell me about the technology solution that was carried out?
2. How has the technology solution that you received changed the way you do business? Can you give me an example from your business activity that has changed as a result?
3. Have you saved any time due to the IT assistance? If yes, how many hours per week or month do you save?
4. Have you saved any money due to the IT assistance? If yes, how much money per week or month do you save?
5. Do you see any improvement in the quality of your services or products as a result of the IT assistance?
6. How many more potential customers per week or month do you reach as a result of the IT assistance, as compared with the period immediately before the IT assistance?
7. Have you acquired more knowledge and/or skills from the IT assistance from UNO? If so, do those knowledge and/or skills help you manage your business in more efficient or effective manner?
8. After having interacted and experienced the new technology set-up or having applied your new learned IT skills, do you believe you would be able to complete a business task using IT if there was no one around to tell you what to do as you go? Can you give me an example from your experience after receiving the IT assistance?
9. Has the IT assistance offered you more access to business information and/or expertise? If yes, what kind of information and/or expertise?
10. How do you think the ways you are doing business now by incorporating IT, will have an impact on your business in the future?

**Section B: Behavioral Change**
11. How many more hours per week or month do you use IT compared with the period immediately before the IT assistance from UNO?
12. How many more hours per week or month are you exploring additional information technology adoption for your business compared with the period immediately before the IT assistance?

**Section C: Concluding question**
13. Can you tell me any other effects, which we haven’t talked about so far, that you now see in your business as opposed to before receiving the IT assistance?