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# Investigating the Effects of IT Adoption between Micro-Enterprises from an Ethnic Community in the United States

by

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## ABSTRACT

*The present research study aims to discover the effects of IT adoption in micro-enterprises in the Latino community in the United States. While the majority of the IT adoption literature considers large organizations, this study relies on Sen's Capability Approach and an adaptation of Action Research to support the adoption of IT by micro-enterprises. This "IT therapy" process enables IT to be used by micro-entrepreneurs to grow their businesses. Following an analysis of four Latin American micro-enterprises, this paper presents the most predominant outcomes. An assessment is made of the IT solutions implemented in the participating micro-enterprises. This paper contributes with a better understanding of how IT adoption can enable micro-enterprises in ethnic communities to grow. This has implications for governmental and non-governmental agencies supporting technology implementations in local communities. Future research based on the research findings should investigate communities of local enterprises at underserved areas as they adopt technology.*

## 1. INTRODUCTION

Up to this date, researchers in the information technology (IT) for development field have been able to identify the challenges concerning the adoption of IT in micro-enterprises [21] [25] [24] [17]. Also, previous research indicates the challenges related to micro-enterprises in the United States [21] [22] [25], and the challenges that micro-enterprises in the international community face as well [24] [17]. As it can be seen in the following sections, available literature shows

similar and other challenges specifically related to Latino based companies concerning IT adoption [12] [8] [17].

On the other hand, the current literature presents the effects that IT adoption has in micro-enterprises after deploying the new technologies in the business [16]. However, there is no research available that explains how these effects may vary depending on the ethnic community in which the business owners belong to, what are the causes for these differences, and what are the most predominant effects caused on each ethnic community.

Also, there is a gap that needs to be filled. The literature should explain how microenterprises pass from the initial challenges to the effects of IT adoption. In order for the current research to build a bridge that supports this transition, the researchers will base on Sen's Capability Approach [26] [23] [20]. The Capability Approach will provide the lens needed to see how the business owners and their microenterprises move from facing the challenges to reach the desired goals (and hence, identify the effects of IT adoption).

For the effects of the present document, the researchers will answer the following question: *What are the most predominant effects of IT adoption in micro-enterprises in the Latino community?* In order to investigate this question, an action research approach is used to assess the outcomes from technology and training interventions carried out by "IT therapists" on the micro-enterprises. While the majority of the IS literature focuses on IT adoption in large businesses, this research contributes to what is known about well-known but under-researched business, the micro-enterprise. This research contributes to what we know about IT adoption in micro-enterprises by highlighting the capabilities that are made possible through appropriate technology and training interventions. These interventions are implemented by IT therapists trained in a process that enables micro-enterprises to adopt technology to grow their businesses.

### **1.1. Importance of micro-enterprises**

From the current literature, the importance of micro-enterprise development can be seen as a way to provide a sustainable development for the communities where they are placed [24]. These micro-enterprises provide a way for the people with scarce resources to generate income that will help them slowly come out from the situation they are immersed, and also provide ways for the communities to improve the way of living of the inhabitants. Along with this, micro-enterprises may graduate, and become enterprises among the medium or even large sized companies range

[11]. If that is not possible in the short term, these businesses may collect enough capital throughout an extended period of time that could allow future generations, supplying their needs and even increase the possibility of becoming large enterprises in the future.

The importance of ICTs (Information and Communication Technologies) for micro-enterprises may also be reviewed. Qureshi et al [18] report that ICTs influence in the growth of small businesses; they also cause a cost reduction in the daily operations, bring product differentiation and create value to the firm. At the same time, micro-enterprises have difficulties adopting technology due to several challenges that these businesses face.

## **1.2. Challenges faced by micro-enterprises in the Latino community**

Given the importance of the micro-enterprises in the community context, many scholars have focused their efforts in studying the environments where these micro-enterprises operate. Furthermore, they have focused their attention in the challenges the micro-enterprises face to be able to become successful businesses [24] [21] [22] [17] [25]. Extending this research, there are efforts to investigate the effects of IT implementations that may help micro-enterprises grow in success; but also this may carry the challenges associated to successful IT adoption [14] [19] [17] [25].

From the research done, it has been found that many micro-enterprises from different communities and cultures around the world share many of the challenges [25]. On the other hand, there are other challenges that may be different according to the region where the micro-enterprise is located [21].

In the case of the United States, micro-enterprises face many challenges that make their development costly and not many times as fruitful as desired by the business owners [21] [22] [25]. Some of these challenges are displayed in Table 1.

Narrowing down this research to the challenges in the Latino micro-enterprises, it is necessary to see the importance of the focus in Latin America. The population in Latin America is growing from 566 million in 2006, to a projected population of 700 million by the year 2025 [15]. Going further, there is a great quantity of countries in this region that speak the same language (predominantly Spanish) and also share many customs that may be part of a big Latino culture as a whole. Despite the fact that some scholars have made efforts to establish stronger collaborative relations between universities in Latin America regarding the Information Technologies industry

[5], still not much research has been done. The latter is demonstrated by the lack of advanced programs in IT at Latin American universities, and also of Latin American-based journals that could focus their research in implementing IT for development and at the same time observe the results that these can lead to [15].

**Table 1. Challenges faced by micro-enterprises in the United States.**

Lack of motivation for entrepreneurship.
Lack of access to loans from banks or any other financial institutions.
Lack of specialized skills in certain business areas, especially IT.
Lack of personal incentives.
Lack of awareness, confidence and trust.
Inadequate IT planning ability and development capability.
Lack of IT knowledge.
Lack of money, time and information.
Inadequate hardware and software.

However, there have been minor initiatives to establish collaborative relations between academia and industry [9]. Also, some of the biggest governments in the Latin American region have made contributions to increase the usage of IT in the Latino population [12] [13].

More efforts are taking place to promote the development of the IT industry in Latin America [6] [1]. The expectation is that as these new ventures take place, the economies in the countries from the region will improve to a greater extent. Latino micro-enterprises will obtain benefits as they may find more IT support in their local communities, and with this overcome some challenges related to knowledge, IT skills and support, infrastructure, and the inequality that has been experienced in the communities as part of an underserved population [2] [12] [17] [25].

In relation to the challenges in the Latino communities, it has been found that business owners/executives may be influenced by the ethnic norms that reign on the community where the micro-enterprise operates [17]. Latino business owners/executives, as some business executives in certain countries in Asia, tend to make decisions a more traditional, experience and intuitive based approach [8]. In Table 2, there is a list of challenges that apply for the Latino community when applying IT in the enterprise setting [12] [8] [17].

**Table 2. Challenges faced by micro-enterprises in the Latino community.**

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Business vision and plan is not a critical success factor for the business owner.

Decision making approach based on experience, tradition and intuition.

Limited knowledge of technology.

Lack of training and skills set.

Language constraints.

Fear of losing control as a result of using the technology.

Mismatch between standard teaching technique and business owner preferred learning style.

Ethnic norms where the Latino community micro-enterprise is located.

Technology to be adopted is influenced by the social network, ethnic community.

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## 2. CONCEPTUAL MODEL

### 2.1. Effects of IT adoption

Now that the challenges concerning the IT adoption in micro-enterprises have been identified, a review on the effects that IT adoption can have on these businesses may be done. A model that can be reviewed in this case is the Qureshi Model of IT for Development [16], which examines the effects that can be identified in micro-enterprises after adopting IT for their daily operations.

The components of the Qureshi model include the following effects of IT:

- **Access to information and expertise:** IT adoption in micro-enterprises may bring access to new information about the business environment, the market, new technologies, knowledge, among others. Also, the adoption of IT may bring new expertise that could be used to support the business in many areas.
- **Competitiveness and access to markets:** The use of IT as part of the business processes may enable the company to become a stronger competitor in the industry, and also to access new markets that were difficult to access before due to lack of technological resources and information (see access to information and expertise).
- **Administrative efficiencies:** The process related to business administration may perceive an increased due to the usage of technology, adding more transparency in the monitoring of internal operations that take place within the business, and empowering administrators to make better decisions concerning the business they run.

- **Learning and increased labor productivity:** In the case of the employees within these businesses, technology may increase the productivity as they perform their daily operations in a more efficient way.
- **Poverty reduction:** Micro-enterprises contribute to the development of the communities they are placed in. As the businesses grow more, the contribution will be greater into reducing the poverty that may exist in the community.

From the research that has been done [10], it can be seen that this model has been applied to investigate the effects of IT adoption in micro-enterprises, but more research is needed regarding the effects in micro-enterprises in ethnic communities, and then compare which effects are more predominant in micro-enterprises from different ethnic groups. As described before, the research question that will be answered is “*what are the most predominant effects of IT adoption in micro-enterprises in the Latino community?*” The answer to this question may help better support ethnic groups depending on the effects that IT adoption may bring to their businesses.

## 2.2. Capability Approach

However, in order for the researchers to be able to pass from challenges to effects, there is some work that needs to be done to fill this gap. In other words, the researchers need an additional framework that would provide the lens that would help them focus in how the micro-entrepreneurs in the Latino community are able to overcome these challenges. This lens would be used to examine the characteristics from the micro-enterprises that enable these businesses to effectively adopt IT and incorporate these solutions into the business processes.

One model that has been used in similar instances is Amartya Sen’s Capability Approach [26] [23] [20]. The Capability Approach (CA) has been used before to focus in development of communities and to identify the aspects that need to be addressed to mitigate negative situations and/or environments, and bring welfare to individuals and their communities [20]. In the context of IT for development, the model has been also applied to determine similar aspects that need to be taken into account in the case of how technology can be applied to bring development to individuals and communities [26] [23].

The CA introduces a series of interesting concepts that are listed as follows [26]:

- Functionings and capabilities.
- Means, freedom and achievement.

- Well-being and agency.

Each one of these concepts is described in more detail in the following subsections.

### *2.2.1. Functionings and capabilities.*

According to the CA, the characteristics of an individual may be represented as the functionings. The functionings are the beings and doings of an individual [20]. In other words, the functionings represent what the person values on performing (doing), or the state that person is at a certain period of time (being).

A capability represents the set of functionings that a person has acquired over his/her life, and has the freedom to choose from [20]. In this regard, the functionings represent the achievements of a person, and the capabilities represent the ability of that person to achieve those functionings [26].

### *2.2.2. Means, freedom and achievement.*

Continuing defining concepts from the CA, now it is necessary to define other aspects related with the functionings and how to achieve them. From this, the CA presents means, freedom and achievement [26].

In order for the person to achieve certain functionings, he/she may need to have a set of means to achieve represented as resources or commodities (goods or services) that this person will use to accomplish his/her goals. Then, based on the current capabilities that the person has, he/she will have the freedom to use all these means to achieve to new set of functionings. The achievement will be what comes after taking advantage of that freedom, resulting in the new characteristics, beings and doings based on the needs and/or goals established by the person at the beginning.

There are several conversion factors that may affect in this process of means, freedom and achievement. These conversion factors include personal, social and environmental characteristics [23] [26]. Personal characteristics may include personal abilities and conditions, education, and even gender. Social characteristics may include the social norms and structures of power and influence in the society. Environmental characteristics may include current infrastructure, climate, market conditions, public and private institutions, and current public private services.



2.2.3. Well-being and agency.

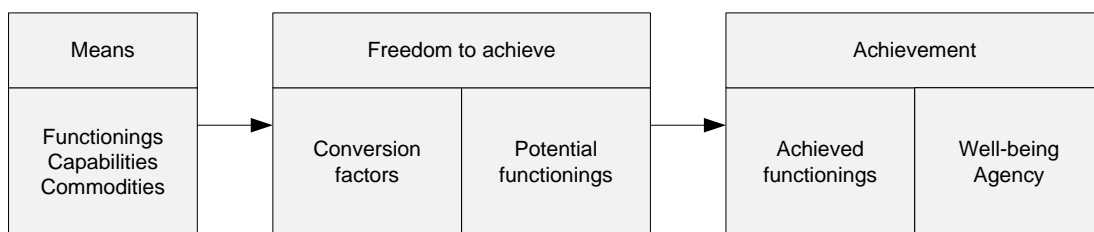
The CA defines that the set of capabilities that a person acquires over time, gives him/her the freedom to reach a state of well-being and agency [26]. The CA gives a framework to determine the well-being of the individual based not only in real incomes or commodities, but regarding the freedoms (capabilities) that the individual is able to take advantage of, and therefore have a valuable life [23].

Agency is the state that the individual reaches where he/she possesses a set of capabilities that allows this person to obtain goals and interests that benefit not only his/her well-being, but also the well-being of others with respect of social and moral norms, and/or personal commitments [26].

2.2.4. The CA into action.

Regarding the objectives of this research, the CA provides a model that may be followed to determine the current capabilities that Latino micro-enterprises possess. Also, the CA provides the concepts that can be applied in this research to determine the process that can be followed to determine the current means and freedoms to obtain new achievements (development) in these micro-enterprises. The aim is to reach a state of well-being and agency that will be described with the effects that IT may have on the Latino microenterprises through the Qureshi framework.

Based on the Figure 1 presented by Zheng [26], the researchers have adapted the flow to define how the CA would be applied for the micro-enterprises. Figure 1 represents the CA applied for the current research project.



**Figure 1. Application of the Capability Approach on the study of micro-enterprises.**

As the figure 1 shows, the process takes the functionings found in the micro-enterprise at the beginning of the research, and examines the current commodities (means) that may allow potential functionings to be achieved. The second part is the freedom to achieve, considering the

conversion factors that influence in achieving the potential functionings, according to the vision the micro-enterprise has for the near future. The third part in this process includes the achieved functionings, taking into account the priorities, constraints, and therefore the freedom to achieve within the micro-enterprise.

### **3. METHODOLOGY**

In order for the researchers to carry out with this study, they applied a form of qualitative inductive research called Action Research. This qualitative research method was proposed by Kurt Lewin in the mid-1940s and it was conceived as a way to address social problems that needed a social action to be solved [7]. Lewin's proposal with action research originally targeted the problem that there used to be a gap separating researchers and practitioners. Both sides would be working independently, missing the best from the other side. Researchers would build theories to solve practical problems, but they would not be able to put them into practice; practitioners would not be aware of these theories and therefore they could not access this new knowledge [7]. Hence, action research suggests that the solutions that may be in a professor's desk for a problem in the real world should be applied into practice [3]. This application may also bring new knowledge that would help develop the theory even more.

Action research has also been applied before in the Information Systems (Technology) industry [3] [4] [25]. Based on these previous applications, the researchers found confidence in using action research as the methodology that would set the framework to accomplish the purposes of this study.

As a methodology, action research is an evolving methodology that combines theory and practice [7]. Also, it provides a framework that enables a collaborative environment among the research participants (researchers and practitioners) [3]. Given the environment in the IT industry that involves a high degree of practicality, action research is ideal to be used as a research method regarding information systems [4] [3].

There are two basic stages in the action research method [4]: diagnostic stage and therapeutic stage. Going in more detail in these stages, generally there are 5 phases as part of an iterative process that covers these stages: diagnostic, action planning, action taking, evaluating and specifying learning. The last two may vary among different authors, having evaluating as observing, and specifying learning as reflecting [7].

### **3.1. Data collection**

Data was collected through a course conducted to train students in the training and technology interventions and through the eTeams project which funded the time and effort on this project. The IT therapy process was introduced in the IT for Development course at the University of Nebraska at Omaha. The aim of the course is to provide initial steps to bring development to micro-enterprises through the adoption of IT [25]. In addition, “IT therapy” process is described as the series of steps that are followed to “understand the business and existing technology, [and then] implement technology-based projects, and train business owners as appropriate” [25]. This process carries out several meetings with the client, called interventions, following the foundations of action research [7]. The interventions aim to apply technology solutions and obtain a change in the situation/environment on which the micro-enterprises were working. The interventions were carried out by students/researchers, called “IT therapists” [25]. The cases reported in this research were conducted by IT therapists who also carried out the research reported here.

The different stages in the IT therapy process are as follows as described by Qureshi et al [18]:

- **Diagnosis of problems:** In this stage the therapists identify the problems/needs that are faced by the micro-enterprise related to the business and how IT can be used to solve these problems.
- **Identification and trial of alternative solutions:** The therapists determine the best solutions (processes and software) that could be applied to solve the problems/needs that exist in the micro-enterprise.
- **Development and implementation of IT solution:** The selected IT solutions are developed and implemented in the micro-enterprise according to the initial diagnosis and the proposed solutions.
- **Adoption and use of IT solution:** The therapists carry out the final implementation and training in the micro-enterprise, in order to finalize the adoption of IT by the business.

The stages were used to guide the technology and training interventions used to support the micro-enterprises in their adoption of IT. The role of the researcher was to assess the outcomes from the IT therapy sessions. In order to assess the effects of these interventions, an instrument

was used to guide the interviews before and after the interventions. The instrument is described in the following section.

### **3.2. Instrument**

Table 3 shows a set of questions that will be used for data collection, already grouped by each one of the stages of the IT therapy process described in the previous section. The concepts from the CA that apply for each question are also included in this table.

As defined by the action research methodology and the IT therapy process, the data for this study was collected through observations, interviews and open discussions with micro-enterprise owners. Also, meetings with other therapists added some extra value to this process, as the collaboration environment, promoted by action research, provided information necessary to carry out solutions.

## **4. RESULTS**

During this study, the researchers (therapists) worked with four micro-enterprises in the Latino community, in the South Omaha area, in Omaha, Nebraska, USA. After a period of approximately 15 weeks, they were able to perform several interventions with the micro-enterprises, resulting in IT solutions to cover business needs. Also, these interventions helped to improve internal processes within the micro-enterprises to provide a better service for their customers. These 15 weeks were divided in two periods; the first period consisted of 8 weeks where the researchers (therapists) worked with two micro-enterprises (EA and PN, see sections 4.3 and 4.4 respectively). The second period corresponds to the remaining 7 weeks where the therapists worked with the other two micro-enterprises (MAMC and MB, see sections 4.1 and 4.2 respectively).

The following sections describe more in detail each participating micro-enterprise and the results obtained as part of the interventions that the IT therapists provided during the process.

### **4.1. Micro-enterprise 1: MAMC, Cleaning Services**

The first micro-enterprise in this study, MAMC, is a cleaning services business. MAMC is a micro-enterprise who provides various cleaning services to residential and non-residential

clients. MAMC is a business with 2 employees, and was legally established in 2005. The micro-enterprise provides services to several clients in the Omaha metro area.

**Table 3. IT therapy process, Capability Approach and data collection questions.**

IT therapy process	Description	CA Concepts Applied	Questions	Outcomes
<b>Diagnosis of problems</b>	Identification of problems the micro-enterprise owner is facing with respect to their business and potential uses of IT	Functionings	What are the business problems and needs?	Needs assessment
		Functionings, Capabilities	What are the current challenges and barriers?	
		Functionings, Capabilities, Well-being, Agency	What are the business goals and how can IT help reach these goals?	
<b>Identification and trial of alternative solutions</b>	Determine the best solutions (manual/process and software) that could be applied to solve the problems/needs that exist in the MEs	Means, Freedom	What are the available IT skills and knowledge?	Selection of IT solutions
		Means, Freedom	What are the possibilities of IT adoption in the MEs?	
		Means, Freedom	Do we have financial, time and human resources available?	
		Means, Freedom	What are the possible constraints we may find within the MEs?	
		Means, Freedom, Achievement	What tools cover the problems/needs present in the MEs?	
<b>Development and implementation of IT solution</b>	The selected IT solutions are developed and implemented in the MEs according to the needs assessment	Means, Freedom, Achievement	Are the tools being developed according the current needs?	Development and implementation plan
		Means, Freedom, Achievement	Are the GUIs appropriate for the current IT skills?	Development artifacts
<b>Adoption and use of IT solution</b>	Final implementation and training take place in the MEs to finalize the adoption of IT	Means, Freedom, Achievement	Are all the resources available to finalize the implementation?	Software application in production
		Means, Freedom, Achievement	Do we need to change current processes in the MEs?	
		Means, Freedom, Achievement	What kind of training is needed?	
		Well-being, Agency	Is the technology being used?	
		Well-being, Agency	What are the outstanding outcomes after the IT implementation?	

Currently the company offers cleaning services in different areas. The cleaning services include kitchen, bathrooms, bedrooms, floors and walls. All the services are offered where the client is located. The MAMC employees go to the site and give an initial estimate depending on the amount of work that needs to be done. Then, if the client agrees on the estimate, the services are provided according to the agreement MAMC and the client made.

After finishing the job, the business owner tries to maintain contact with the client so MAMC can have an opportunity of potential future services this may require. This way the micro-enterprise makes efforts to establish a relationship with the client.

On the other hand, to bring clients, MAMC employees performs marketing tasks by giving out business cards and brochures that present the micro-enterprise and all the services offered by this business. Potential clients may establish contact with the business owner by a phone number or sending an email to the owner’s account.

Table 4 displays a list of the functionings identified at MAMC during the interventions. Table 5 reflects the means, freedom and achievement at this micro-enterprise.

**Table 4. List of functionings at MAMC.**

Cleaning services in different areas.
Publicity and marketing through business cards and brochures.
Primary contact with client is by phone.
Alternate contact with clients is by email.
Initial estimate in first visit to client.
MAMC owner establishes relationship with client.
Business takes place in a scenario that requires high mobility from the employees.

**Table 5. Means, freedoms and achievement for MAMC**

Means	Freedom to achieve		Achieved functionings
	Conversion factors	Potential functionings	
Phone service, Vehicle, Internet connection at home, Various cleaning supplies	Owner likes simplicity, Fluency in English, Education continuity by owner, Limited knowledge about technology, Limited budget, Time constraints	Website presence, Sugar CRM solution, Google Apps for CRM, Text Messaging based solution for CRM, Quickbooks training	Website presence, Google Apps for CRM

#### 4.2. Micro-enterprise 2: MB, Mexican Restaurant

The second micro-enterprise that was included in this study was a Mexican restaurant located in the South Omaha area, where the Latino community resides in the city of Omaha, Nebraska. MB is a family owned restaurant that offers a variety of traditional Mexican food, with original recipes being prepared with the traditional ingredients and in some occasions these would be prepared from scratch in the restaurant. MB was established in 2009, and it has gained popularity among the Latino community in this area.

MB has a combined experience in restaurants of more than 20 years by the owners. It introduces a home-like environment with the aim of providing a welcoming atmosphere for the customers. MB has 3 employees who also are the business owners, and people from the family that work as volunteers a few hours a week.

MB also provides catering services for any kind of social event. This also adds a variety on the services that can be provided by the restaurant. MB would provide the food and also the service at the place where the event is being held.

For customers on the site, the services are provided as a normal restaurant. In addition, the customers can also call and order food, and then pick up the order after a designated time. For catering services, the customers would call the catering coordinator at the restaurant, who is also one of the business owners.

The restaurant has a strong marketing and publicity campaign, as one of the owners is finalizing her studies in marketing in a local university. This has helped the business to be known in the community and establish a presence in the local radio and also in some websites that present some information about the business with some customer reviews.

Table 6 displays a list of functionings found at MB. Table 7 displays the means, freedom and achievement identified in the process for MB during the interventions.

**Table 6. List of functionings at MB.**

Traditional Mexican food service.
Family-owned business.
More than 20 years of combined experience.
On-site service.
Food pre-order system.
Catering service.
Strong advertising campaigns.

**Table 7. Means, freedoms and achievements for MB.**

Means	Freedom to achieve		Achieved functionings
	Conversion factors	Potential functionings	
Internet connection at home and at business location, Wireless router, Laptop computer, Basic utilities (services) at location, Restaurant equipment, Raw food	Decision making by family as a unit, Superior education level on second generation in the family, Some fluency in English, Limited knowledge about technology, Limited budget, Time constraints	Website presence, Social media page, Electronic sign, Information backups, Cash register information, CRM solution introduction	Website presence, Social media page, Electronic sign, Information backups

**4.3. Micro-enterprise 3: EA, Mexican Restaurant**

The third micro-enterprise in this study is another Mexican restaurant, also located in the South Omaha area. EA is a family owned restaurant and it has been in the restaurant business for more than 20 years. It offers great traditional dishes and provides the authentic Mexican flavor in every meal. This restaurant has gained recognition in the community and also has had many favorable reviews by local newspapers. One can also find many reviews over the web at different web sites, and they all have good comments of people who have visited the restaurant. EA is well known in the area, and most of the people in the Latino community in South Omaha have already tried their food.

EA was established in 1986 by a marriage of Mexican immigrants who needed a way to provide nourishment to the family. At the time there was not a big Latino population in the area, giving the opportunity to access a great public. The family leader (father) saw a great opportunity to bring traditional food to the community, and this idea was well received. The cooking skills were acquired before establishing in the U.S., and these combined with other business skills gotten in previous family micro-enterprises in Mexico, gave the advantage to EA to be in a leadership position among Mexican restaurants in town.

Besides the food services offered at the restaurant, it also provides catering services for social events. The restaurant has 7 employees, from whom 4 are full time employees and 3 work in a part-time basis. Nowadays, there is a great variety of food to choose from in EA’s menu.



Since the establishment in 1986, EA has been experiencing the ups and downs of the restaurant business, and now has been struggling to survive given the competition that is now present. As any other micro-enterprise, the business owners have to promote the services in traditional ways (newspapers, flyers, business cards), but they have seen the opportunity with presence in the web. Also, the owners have identified some opportunities of improvement in internal processes, and they are planning in applying solutions that will produce a better service to customers.

Table 8 displays a list of functionings found at EA. Table 9 displays the means, freedom and achievement identified in the process for EA during the interventions.

**Table 8. List of functionings at EA.**

Traditional Mexican food service.
Family-owned business.
Cooking skills acquired at country of origin.
On-site service.
Catering service.
Traditional advertisement.

**Table 9. Means, freedoms and achievements for EA.**

Means	Freedom to achieve		Achieved functionings
	Conversion factors	Potential functionings	
Basic utilities (services) at location, Desktop computer, Laptop computer, Basic utilities (services) at location, Restaurant equipment, Raw food	Decision making by family leader, Fluency in English only by owner, Limited knowledge about technology, Limited budget, Time constraints	Website presence, Antivirus protection, Cash register implementation	Website presence, Antivirus protection, Cash register purchase information

**4.4. Micro-enterprise 4: PN, Mexican Bakery**

Perhaps the most interesting case in this study, PN is a Mexican bakery located near the South Omaha area at Omaha, Nebraska, in a community that combines Latino and White ethnic groups. PN’s main service is the baking of cakes for special occasions and social events, including

family gatherings, “Quinceañera” parties, community meetings, and holidays. Also, the bakery offers baked goods with a traditional Mexican taste, to satisfy the needs of the predominant Mexican ethnic group in the area.

PN is owned by a Mexican immigrant who came to the U.S. in 1994 to live the American dream. He established in Phoenix, Arizona, and worked in construction for three years. Later, he moved to Sioux City, where he learned with his brother about the bakery business. One year later he moved to Omaha and continued working in the bakery business since his arrival. In 2002, PN was finally established as a micro-enterprise and from that time on PN has gained the public recognition from people in the Latino community.

PN has initially started to sell baked goods at EA’s (previous case) location. Now PN has grown enough to be in its own building and also to have its own vehicle for cake deliveries.

What is amazing from this case is that PN’s owner barely finished elementary school. Despite this fact, the business owner’s entrepreneurial skills and vast desire to achieve has made possible that PN has been recognized as one of the most successful businesses in South Omaha in the past decade. Public recognitions, honor mentions and people’s favor show that PN and his owner are well respected among the micro-enterprises and micro-entrepreneurs in the community.

Lack of formal education, absence of free time and English language skills have not been enough barriers to stop PN’s success. The business owner has a great desire to improve his business and technology skills, and these have pushed him to take free courses offered in local career development centers. After taking a few basic courses related to computers, he has learned the importance of technology for today’s businesses, and how the web can help to reach more customers and increase the yearly income.

Beyond marketing and sales purposes, the business owner has also identified how he could use technology to have a better relationship with suppliers, and research about competition and market trends as well. He knows that educating himself in the use of technology could help him in reaching several goals.

Table 10 displays a list of functionings found at PN. Table 11 displays the means, freedom and achievement identified in the process for PN during the interventions.

**Table 10. List of functionings at PN.**

Traditional Mexican bakery.
Two main shifts for baked goods preparation.
On-site service.
Cake delivery service.
Ornamental arrangements for special occasions.
Traditional advertisement.
Public recognitions for outstanding labor.

**Table 11. Means, freedoms and achievements for PN.**

Means	Freedom to achieve		Achieved functionings
	Conversion factors	Potential functionings	
Internet connection at home location, Desktop computer, Vehicle, Basic utilities (services) at location, Bakery equipment, Raw food	Elementary school level education, Lack of English language skills, Limited knowledge about technology, Limited budget, Time constraints, Great desire to achieve	Website presence, Laptop computer, Software in Spanish, Training in web search engine usage, Training in email usage, Training in Power Point presentations usage	Website presence, Laptop computer, Software in Spanish, Training in web search engine usage, Training in email usage, Training in Power Point presentations usage

## 5. ANALYSIS

After finishing the IT interventions by the therapists, well-being was reached by MAMC as a result of the adoption of IT. There are several outcomes based in the Qureshi framework discussed in prior sections.

The first outcome that was evident was *learning and increased labor productivity*. After finishing the training in Google applications, the business owner was able to understand more about innovative tools that could help the business in its daily operations. This would help her in the way new clients are contacted and managed in the future. This also will increase the possibilities of potential services in the future as there is a better way to manage appointments and possible services with existing clients.

Related to the training in these applications, the business owners also had a new perspective on accessing information. As it was described before, the therapists guided business owner into additional software. Then, the business owner accessed information to cover other needs for

other projects. Hence, the second outcome that comes as a result of IT adoption is *access to information and expertise*.

The third outcome is *competitiveness and access to markets*. Having access to better tools and with the creation of a website, the micro-enterprise now is more competitive as it has been able to compete with other businesses in the industry that provide similar services and also use technology to achieve their goals. By managing client’s information more efficiently and with a new web presence, now the MAMC is able to potentially access new markets that before were difficult to reach by traditional means.

The state of agency was not reached by this business, as the outcomes only cover the well-being of MAMC, and may not bring direct benefits to the community.

Table 12 displays the outcomes that were perceived by the micro-enterprise based on the functionings that were reached by MAMC.

**Table 12. Outcomes of IT adoption at MAMC.**

Access to information and expertise.
Competitiveness and access to markets.
Learning and increased labor productivity.

In the case of MB, the first outcome obtained is *access to information and expertise*. With the information provided about social media, the owners are now able to think and experience new ways to reach the customers using technology. Also, the training in the creation of information backups brings some expertise that before the interventions was not available for the owners.

The second outcome present in MB is the *competitiveness and access to markets*. Again, the access to new information and the establishment of web presence through MB’s website may give the family members an opportunity to reach other markets and extend the services to other areas in the city, not limiting themselves to the community where the micro-enterprise is located.

As it was found with the previous micro-enterprise, MB did not reach a state of agency, as the outcomes only benefit the well-being of the micro-enterprise and not the well-being of the community.

Table 13 presents the summary of the outcomes obtained by MB after the adoption of IT.

**Table 13. Outcomes of IT adoption at MB.**

Access to information and expertise.
Competitiveness and access to markets.

For the third case, EA, the first outcome obtained is *access to information and expertise*. Before the interventions, EA's owners would not use the computer much due to a recurrent fear of technology. After having some informal training given by the therapists, they were able to use the computer more often, and even start using it to browse information on the web for subjects related to the business, and for personal reasons as well.

The second outcome for EA was *competitiveness and access to markets*. This micro-enterprise has been able to advertise the business on the web given the opportunity to show the restaurant's information in the web. Now customers are able to access the web site to find information about menus, recognitions and directions to get to the restaurant. According to EA's owner, they have been able to save a lot of money previously used to advertise the business in local newspapers.

The following two outcomes identified for EA were *Administrative efficiencies* and *learning and increased labor productivity*. Given some budget constraints, the owners were not able to acquire the cash register by the time the therapists were documenting the case. However, the therapists will provide the support needed when EA is able to do the purchase of this system. At the time of installation, the owners and therapists can foresee an increase in administrative efficiencies due to a better control in sales and income that is being received during the week, the month and even the quarter. Going further, they will also have a better control in the internal productivity due to benefit that can be extended not only to the owners, but to the employees as a result of the more efficient way to process the orders online between the front desk and the kitchen.

EA has only reached a state of well-being due to outcomes of the IT implementation have only benefit the business. Therefore, agency has not been reached because not benefit for the community has been identified so far.

Table 14 presents the summary of the outcomes obtained by EA after the adoption of IT.

**Table 14. Outcomes of IT adoption at EA.**

Access to information and expertise.
Competitiveness and access to markets.
Administrative efficiencies.
Learning and increased labor productivity.

For the last case, PN, the first outcome identified was *access to information and expertise*. After receiving a training provided by the therapists in the subject of web search engines, the owner has been able to browse for any kind of information in the web. He is now more independent in the use of his new computer, and as a result he now spends more time in the computer. PN's owner can now search for suppliers outside town and even from other states.

The second outcome identified for PN was *competitiveness and access to markets*. As a result of the training, the owner is also able to see what the competition is doing. Beyond local competition, he is also able to have a better understanding of what bakeries in his own country are doing, so he can reach his target market according to the same trends he identifies from businesses in Mexico. In addition, now he seeks for opportunities to reach other Latinos in different parts of Omaha and neighboring towns, giving presentations with his new laptop computer and promoting the website for more customer visits.

The third outcome for PN was *administrative efficiencies*. With the acquisition of a new laptop computers, software in Spanish and training in office productivity tools and the web, PN's owner has found a new world to explore in how technology can help his business. Certainly his vision about technology has changed, and this is the reason why he has enrolled to take free courses in spreadsheet applications, for a better control in budget and income and expenses made during the period.

In the case of PN, well-being has been reached given the opportunities to increase the well-being of the business. But still, benefits for the community have not been identified at this point, hence the state of agency has not been reached for PN.

Table 15 depicts a summary of the outcomes identified at PN after the adoption of IT.

**Table 15. Outcomes of IT adoption at PN.**

Access to information and expertise.
Competitiveness and access to markets.
Administrative efficiencies.

## **6. CONCLUSION**

The present study has covered the work done in four micro-enterprises in the Latino community in the form of IT therapy. The researchers have assumed the role of IT therapists to intervene in the micro-enterprises and help provide the support for the micro-enterprises to implement IT solutions to supply the current needs. The purpose was to identify the outcomes obtained by micro-enterprises as effects of the adoption of IT.

The study began with an overview of the various challenges that micro-enterprises face in their communities. Then, the researchers presented the framework that would be used to determine the outcomes of adoption of IT [16]. To be able to bridge the gap between challenges and outcomes, the researchers used Sen's Capability Approach to identify the micro-enterprises' functionings and freedoms to achieve other new functionings, and reach a state of well-being. This approach provided the lens to examine this transition within the micro-enterprises.

Also, in order for the researchers to add an extra value to the research and help the micro-enterprises reach a change, they used a variation of the action research methodology proposed by Wolcott et al [25]. Action research provided the research methodology to carry out this study. The IT therapy process gave the researchers a framework for data collection through each IT intervention.

As a result, the researchers found two specific outcomes to be common among the four micro-enterprises that were part of the study. According to the IT solutions that were adopted by these businesses and the results obtained, the following represent the identified outcomes:

- Access to information and expertise.
- Competitiveness and access to markets.

The businesses were enabled to access new information, in the form of training in the use of new technology for the business operations. New expertise came as the business owners were able to do new things with technology, to be able to reach new customers or to cover other business and personal needs.

With the establishment of a web presence, both businesses were able to expand their coverage to other populations in the area. The creation of new website opened new doors to the micro-enterprises to advertise their products in a cheaper way compared to traditional means. As it may be perceived in other micro-enterprises, or even in larger businesses, there is a constant need for the micro-enterprises to advertise the business to be able to survive.

Based on Sen's Capability Approach, the four micro-enterprises reached a state of well-being considering the effects of IT adoption, but they were not able to reach the state of agency. As the micro-enterprises are struggling with limited budgets and other constraints, they perceive enough income to survive, but not enough to project with a considerable support to the communities where they operate. This may be a state that could be reached in the long term.

## 7. FURTHER RESEARCH

This research aimed to answer the question about the most predominant effects of IT adoption in micro-enterprises in the Latino community. In order to continue answering the original questions about the effects produced by IT adoption in ethnic communities, the researchers need to continue exploring and studying these effects of IT adoption in other non-white communities, for instance, black community, Native American community, among others.

The researchers have used *Action Research* to carry out this study. To provide some other possible courses for future research, the researchers recommend considering a different approach as *Appreciative Inquiry*, which perspective in research is almost opposite than action research. While action research focuses in problem solving, appreciative inquiry focuses in the positive aspects of an organization and the research could focus in how these positive aspects can be used to cause change in the micro-enterprise through IT adoption. Also, a combination of both approaches in the IT therapy process could bring an added value to new research.

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