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Information Technology Adoption by Small Businesses in Minority and Ethnic Communities.

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Abstract

Information systems adoption by small businesses often is viewed as a basic building block of economic development. Yet, the components that impact business success and thus economic development are mostly unexplored, especially within the context of minority and ethnic communities, both domestically and internationally. Given that IT adoption in small businesses is very often the domain of the business owner, an investigation of how the attributes of individual business owners and the context in which they are embedded is essential. This paper develops an integrative model of the role that IT adoption plays in business success and the economic development process within minority and ethnic communities. The contribution of this paper lies in providing an integrative model of IT adoption that is relevant to small businesses in minority and ethnic communities and a set of theoretical propositions to facilitate adoption of IT in these communities.

1. Introduction

The ability to successfully adopt and diffuse information technology by small business entrepreneurs in minority and ethnic populations appears to be a challenge faced by many economies, both domestic and international. Because small businesses are an important and integral part of every nation's economy, their survival and growth contributes to the creation of jobs and wealth in that economy [16], [37]. It appears that if small businesses are able to use information systems effectively, they can grow, potentially reap the benefits from their technology, and become profitable.

According to [39], significant research has been undertaken to define the role that information systems play in small business success [8], [17]. However, while information systems are often relied upon to assist growth, small businesses often find it difficult to implement technology for a variety of reasons, including resource constraints [34]. In particular, small business entrepreneurs have been seen to be reluctant to invest in information systems even though there is an increasing awareness that information systems can be of value to their businesses [4]. Street and Meister [39] suggest that technology adoption issues such as the role of the CEO, perceived usefulness or relative advantage, and ease of use have been investigated within the context of U.S. businesses [8]. The small business entrepreneur's attitude is seen to be an important factor in determining the implementation success, as are training and post implementation issues [45], [18].

The uptake of information systems by small businesses in developing communities and regions of the world is even more challenging. In a study of information systems used by rural micro-enterprises in Botswana, Duncombe and Heeks [10] found that these businesses relied on localized, informal social networks for information, including their information about IT. However, information obtained from these networks was of poor quality and not easily accessible and thus appeared to fail the poorest and most disadvantaged entrepreneurs. In such cases, IT represented an unaffordable addition to costs, while the benefits of using it were not apparent. Duncombe and Heeks [10] concluded that there is a role for IT intermediaries in providing the needed information on markets, customers and suppliers. Puri and Sahay [30] add that through improved communication, disadvantaged communities have been able to articulate their understanding, knowledge and views about business development.

Furuholt & Ørvik [15] identified that the main reasons for the limited development of IT usage and implementation in disadvantaged regions resulted from the following: lack of top management engagement, knowledge barriers and staff resistance, lack of utilitarian value and other personal incentives, the symbolic value of information technology, poor organization, poor infrastructure, and different concept of time. Warschauer [44] provides a rather different perspective in helping to understand why IT adoption

and implementation efforts may fail in one context and yet succeed in another. He says that the key issue revolves around "not unequal access to computers but rather the unequal ways that computers are used." Warschauer [44] also highlights another important point: "Technology does not exist as an external variable to be injected from the outside to bring about certain results. It is woven into social systems and processes…the goal of bringing technology to marginalized groups is not merely to overcome a technological divide but instead to further a process of social inclusion." This suggests that a study of information systems adoption in developing communities will have to take into account the social context in which these entrepreneurs operate.

While IT adoption is a multifaceted construct which has been widely researched in various contexts [9], [41], [43], [23], [17], [18], [23], [25], [8], [4], [26], [35], [36], [39], and [15], it has yet to illustrate how IT adoption enables small and medium-sized enterprises (SMEs) and micro-businesses, which are the types of business most frequently populating minority and ethnic communities, to succeed and enhance economic development [40], [27]. Interestingly, such businesses are seen to be the building blocks of economic development but may be the least likely to adopt information technology. There is empirical evidence to suggest that the adoption of IT in SMEs increase their profitability and outreach [27] in terms of increased sales [33], [34] and cost savings [38].

While several studies on the adoption of IT by small businesses in developing nations have been undertaken and published, as of yet, no research has been published that investigates the factors impacting IT adoption by small businesses in minority and ethnic communities within the U.S. In this paper, we posit that information technology adoption in these sorts of communities depends upon a range of components that include not only their access to technology but also the social norms of the community in which the businesses are embedded.

Our research suggests that barriers to the adoption of IT in small minority and ethnic business contexts include not only more commonly-studied factors such as owners' individual attitudes towards and knowledge of IT and the degree of control that business owners believe that they have over their ability to use IT to run/develop their business [2], [3], [14], [29], but also factors such as the degree to which business owners identify with their minority/ethnic communities as well as their preferred learning styles. In other words, there is a need to understand the context in which these businesses operate as they adopt technology. Thus, the central question being investigated in this paper is

"What are the key components that impact IT adoption in small and micro-enterprises in minority and ethnic communities?" The key contributions of the paper are the development of an integrative model and a set of theoretical propositions to facilitate adoption of IT in such communities.

2. Theoretical Background

The following sections outline the theoretical and empirical arguments for variables that we believe to be key in explaining the IT adoption/acceptance by a small business in a minority and ethnic community context. Each section ends with research propositions, which are then integrated into a model of IT adoption/acceptance that is appropriate for the micro-business environment of interest.

Existing Models of IT Adoption/Acceptance

As background for our model of IT adoption in small and micro-enterprises in minority communities, we begin by reviewing literature in the IT Adoption/Acceptance field. Venkatesh, Morris, Davis, and Davis [43] offer perhaps the most recent and comprehensive coverage of a range of IT Adoption/Acceptance models. [43] outlined and tested the explanatory power of eight prevailing models of IT Acceptance, including the Theory of Reasoned Action (TRA – [3]), the Theory of Planned Behavior (TPB – [2]), Technology Acceptance Model (TAM – [9]), Motivational Model (MM – Davis et al, 1992), Model of PC Utilization (MPCU – [42]), Innovation Diffusion Theory (IDT – [28]) and Social Cognition Theory (SCT – [6]). By integrating key variables from these prior models, they develop their own unified model, termed UTAUT.

While the UTAUT model is obviously descriptive and predictive of IT Acceptance in the majority of business and IT environments and contexts, we felt that some of the factors it included, which are identified below, were not directly applicable to small, minority business contexts, where owners make most decisions and work groups do not exist. As such, we felt several of the individual models they reviewed that incorporated individual choice variables, primarily the Theory of Planned Behavior (TPB) models [2], would be more appropriate for the context we wished to study. Thus, we will only briefly review UTAUT, outlining in the areas in which it overlaps with TPB.

First, like the TPB model, Venkatesh et al's [43] UTAUT model uses behavioral intention as its outcome variable, which is seen as leading to actual behavior, in this case IT adoption or acceptance. To explain behavioral intention, UTAUT relies on three constructs: performance expectancy, effort expectancy, and social influence. Venkatesh et al [43] define performance

expectancy as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. The performance expectancy variable has little overlap with TPB within our context because it views IT acceptance as an employee choice related to career advancement, rather than as a choice that owners make regarding their business success. Effort expectancy is defined as the degree of ease associated with the use of the system. Like performance expectancy, effort expectancy has little overlap with the TRA/TPB model because it has more to do with the characteristics of the technology as opposed to those of the owner adopter.

The third UTAUT variable, social influence, is defined as the degree to which an individual perceives that important others believe he or she should use the new system. The social influence variable is an individual variable somewhat like the subjective norms construct proposed by TPB models. We will address this variable more extensively in the methodology discussion below. Also, Venkatesh et al [43] added the construct of facilitating conditions as a variable directly associated with actual behavior but not behavioral intention. Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. One aspect of facilitating conditions includes the perceived behavioral control factor proposed by [2].

So of the three UTAUT and existing literature model factors, we will bring forward the individual level of analysis variables of subjective norms (which we will adapt for our minority context using the term "ethnic identification – see further discussion below) and facilitating conditions (we elect to use the Ajzen term "perceived behavioral control") for inclusion in our model. To that we will add back Ajzen's TRA/TPB variable of individual attitudes and knowledge, along with a new variable termed "preferred learning style."

Attitude Toward IT (Cognition/Knowledge)

In Ajzen's Theory of Planned Behavior, *attitude* is postulated to be the first antecedent of behavioral intention. It is an individual's positive or negative belief about performing a specific behavior, such as IT Adoption. In the TPB model, these beliefs are called *behavioral beliefs.* According to Ajzen's theory, an individual will intend to perform a certain behavior when he or she evaluates it positively. Attitudes are determined by the individual's beliefs about the consequences of performing the behavior (behavioral beliefs), weighted by his or her evaluation of those consequences (outcome evaluations). According to [1], attitude is "a learned

predisposition to respond in a consistently favorable or unfavorable manor with respect to a given event." Attitude relevant responses, according to Ajzen, are used to measure the conception of attitude. Those attitudes are believed to have a direct effect on *behavioral intention* and are often linked with *subjective norms* and *perceived behavioral control.* A priori, there is no reason to believe that this characteristic will be different in the minority business ownership context than in any other more general context.

Proposition 1: The more positive the small minority business owner's attitude toward IT Adoption, the greater the intention to adopt IT solutions.

Perceived Behavioral Control

In Ajzen's TPB model, perceived behavioral control refers to the degree to which an individual feels that performance or nonperformance of the behavior in question is under his or her volitional control. People are not likely to form a strong intention to perform a behavior if they believe that they do not have any resources or opportunities to do so even if they hold positive *attitudes* toward the behavior and believe that important others would approve of the behavior (subjective norm). According to [1], perceived behavioral control is "the perceived ease or difficulty of performing a behavior and a personal sense of control over performing it." This construct is similar to measures of self-efficacy, such as "Do I believe I can do it?" such as those discussed by [23]. A priori, there is no reason to believe that this characteristic will be different in the minority business ownership context than in any other more general context.

Proposition 2: The higher the small minority business owner's perceived behavioral control over IT Adoption, the greater the intention to adopt IT solutions.

Subjective Norms/Ethnic Identification

In Ajzen's Theory of Planned Behavior, *subjective norms* are assumed to be a function of beliefs about whether others either approve or disapprove of performing the behavior. Beliefs that underlie subjective norms are termed *normative beliefs.* An individual will intend to perform a behavior when he/she perceives that important others think he/she should. Important others might be a person's, spouse, close friends, physician, etc. This is assessed by asking respondents to judge how likely it is that most people who are important to them would approve or disapprove of their performing a given behavior.

However, in minority communities, emerging literature suggests that the strength of a small business

owner's ethnic identity, defined as the extent to which one identifies with a particular ethnic group(s), may be the strongest norm influencing IT adoption [5], [24]. "Ethnic identification" refers to one's sense of belonging to an ethnic group and the part of one's thinking, perceptions, feelings, and behavior that is due to ethnic group membership. The ethnic group tends to be one in which the individual claims heritage [29]. According to this literature, ethnic identity is separate from one's personal identity as an individual, although the two may reciprocally influence each other. Four major components of ethnic identity [5] include ethnic awareness (understanding of one's own and other groups), ethnic self-identification (label used for one's own group), ethnic attitudes (feelings about own and other groups), and ethnic behaviors (behavior patterns specific to an ethnic group). It is this latter aspect of ethnic identity that may be most significant in IT adoption.

Proposition 3: The degree of ethnic identification of small minority business owners will be related to their intention to adopt IT solutions.

Preferred Learning Style

Theoretical and empirical studies in the education literature have long posited a relationship between a student's preferred learning style and the degree to which the student engages in learning [12], [11]. Effects of preferred learning styles have been even stronger in research investigating adult learning, which would be the context of business adoption of IT solutions. Studies of differences in ethnic and minority learning styles have shown that teaching styles must be adapted to address these differences in order to create a successful learning environment. For example, on Felder's [13] active vs. reflective learning dimension, African American learners were clearly reflective, while Caucasian learners were clearly active. Interestingly, all ethnic groups favored the sensing mode except Latino learners, who favored intuitive approaches. In terms of sequential versus global understanding, African American and Native Americans were clearly sequential, while other ethnic groups showed no significant preferences [14]. Thus, while it seems reasonable to assume that preferred learning styles are likely to affect IT adoption in all small businesses, based on a small number of studies that include ethnic preferences, including this variable as a key factor in the adoption of IT solutions by minority businesses seems even more important.

Proposition 4: The preferred learning style of small minority business owners will be related to their intention to adopt IT solutions.

While we have listed four direct variables that derive the IT Adoption Intention propositions above, a number of additional interactive and moderated propositions could also be created. Having reviewed the general IT Adoption literature and having added additional variables that seem uniquely relevant to the small, minority business context, we then began the process of model construction by adding information derived from empirical observation and case studies.

3. Methodology for Model Development

In order to develop a model of IT adoption for small businesses in developing communities, we followed an interpretive research strategy to build the concepts in model and a quantitative strategy to develop constructs to operationalize the model. This model is unique in that it develops qualitative insights within the rigor of a quantitative model. According to [24], Information Systems research can be classified as interpretive if it is assumed that our knowledge of reality is gained through social constructions such as language, consciousness, shared meanings, documents, tools, and other artifacts. Within interpretive research, theory is developed though a process of generalizing from empirical statements and qualitative descriptions to theoretical statements [25]. They suggest that this offers generalizability of measurements, observations, or other descriptions to theory as well as generalizability of the resulting theory beyond the sample or the domain that the researcher observes [25]. Using our interpretive understanding to build a model, constructs are developed through rules of formal logic and hypothetico-deductive logic [26]. Lee [26] suggests that through hypothetico-deductive logic theorized entities have consequences that are observable even though the entities themselves are not. This enables a model to be developed that satisfies the criteria for good theory.

Specifically, we used a four-stage process of action research [46] which included the steps of planning, acting, observing and reflecting. In the first stage of the research, a class project was planned in which teams of graduate and undergraduate MIS students were provided to small businesses within an minority, primarily African American, community in Omaha, Nebraska to help them implement IT solutions to improve their businesses through a system termed "IT Therapy" [46]. In the process of designing and implementing these IT Therapy team projects, students kept journals detailing their conversations about the process with their small business clients. Nine case

studies were developed from these journals. At the same time, we also developed a working model of IT adoption/acceptance in developing communities, using the relevant IT adoption/acceptance literature reviewed above, along with additional literature that we deemed relevant to the new context in which we were studying IT adoption.

From the literature-based propositions and journal-based case studies, we developed an open-ended questionnaire that an independent study student who was bilingual in English and Spanish used to interview nine Hispanic small business owners in Omaha, Nebraska. While space constraints prevent our publishing the instrument in this article, the instrument is available from the authors and includes questions adopted from empirical studies investigating both Ajzen's Theory of Planned Behavior (described in his website) and from empirical studies of ethnic identification and learned styles cited elsewhere in the paper. From these interviews, nine additional case studies of small business owners from the Hispanic community were developed.

We then transcribed the information from the African American case studies into the open-ended questionnaire format and contrasted the Hispanic and African American cases with our initial theoretical propositions to develop the following model of IT adoption by small business owners in minority communities, in this case, Hispanic and African-American small business owners in the U.S. Midwest. The reason that we chose to use Hispanic business owners in addition to African American was that in our view, many of the issues that face immigrant business owners within the U.S. are similar to those faced by small business owners in developing countries.

Thus, we chose these populations as our basis for creating an international model of IT adoption which could be later tested in contexts outside of the U.S. Certainly, a larger scale, multi-ethnicity empirical study would include matching industries of the businesses surveyed in order to control for specific industry effects, something that our case studies did not do. Having said that, most of the businesses studied were in service industries such as day care, restaurants, pawn shops, and such, which are likely to exhibit similar characteristics and information technology needs. Our integrative model of minority and ethnic IT adoption is shown in Figure 1.

Figure 1: Model of IT adoption by minority/ethnic small businesses
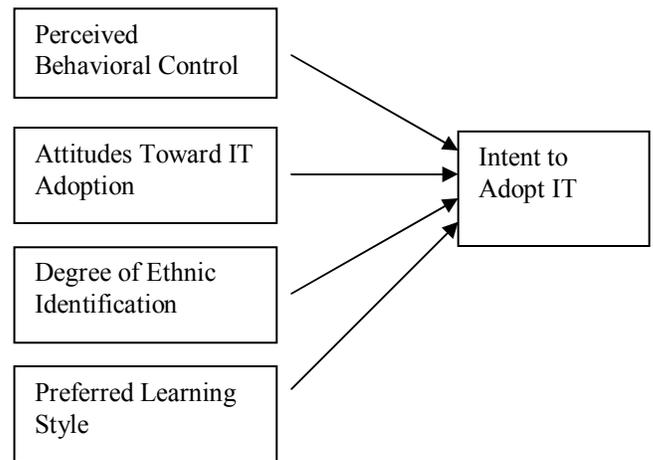
4. Preliminary Insights

Several interesting insights resulted from the process of deriving the integrative model from our interpretive research strategy. First, we found from our case study data that perceived behavioral control, that is the owner's belief in their ability to select and manage their IT needs, seemed to affect the success of their adoption of new information technologies. Less successful adopters tended to be skeptical of their ability to incorporate IT in a meaningful way into their business processes. They felt that their lack of resources (primarily financial) hindered their ability to fully utilize their IT tools. However, our research also discovered that unsuccessful adopters typically did not install their IT systems themselves. Rather, they relied on free resources from their local university communities to design and install their systems. As a result, they tended to doubt their ability to maintain and continue updating these tools. In contrast, our more successful adopters never mentioned any barriers to adoption. Overwhelmingly positive, they talked about using their access to educational resources in the community (small business trade organizations, for example, as well as friends and family) and also felt comfortable researching how similar firms used IT to improve their businesses.

A second TRA/TPB factor, knowledge of and attitudes toward IT, also seemed to play an important role in adoption of IT in the two communities. Data from our case studies suggested that the less successful adopters felt that they did not have the training needed to select and maintain their IT tools, such as websites. They typically had not been trained in, nor had they sought formal or informal training related to, IT. Consequently, they did not feel comfortable using the

technology introduced during IT therapy. One of their key challenges was keeping their technology up to date. While most of these business owners did not have training in IT prior to starting their businesses, interestingly, the more successful adopters tended not to have formal training prior to starting their businesses either. However, successful adopters were more likely to be comfortable with the technology from the beginning because they seemed to recognize its importance to the success of their businesses. They learned on their own (often from family members, friends, and children) how to use their IT resources and then trained their employees to use them. They keep their skills up to date by daily practice and use and call their internet service providers with any questions or problems. The successful adopters did not foresee problems in keeping the IT tools up to date.

The evidence on the degree of ethnic identification and subjective norms is mostly indirect, but it tends to support the model as well. Generally speaking, based on our relatively small number of case studies, African American businesses were less likely to be successful longer-term adopters of IT than Latino businesses. The data we gathered suggested that Latino business owners' greater degree of embeddedness in their family and geographical community networks might have some bearing on this difference. These social networks may have affected not only norms and attitudes toward IT, but they may also have provided extended informal training and knowledge resources.

Finally, several interesting findings resulted from the information derived from our interpretive research strategy that may provide future research directions, especially as they relate to minority and ethnic differences. Latino business owners tended to choose their own technologies, which were less complex and less expensive than those sought after and embraced by the African American businesses. In this sense, they may provide evidence supporting Christiansen's [7] disruptive technology strategy model, which suggests that many businesses/technologies overbuild and overcharge for improvements that are not relevant to customer uses and which are unnecessarily complex and expensive. He would argue that small businesses may not need the latest, best new technology; rather only technology that is "good enough" for their current needs.

5. Analysis

In developing upon what is known about IT adoption, our preliminary results suggest that the use of IT by small businesses embedded in minority and ethnic communities follows the disruptive innovation model proposed by [7]. Technology adoption in the small businesses entailed the use of basic functionality in simple software to support key activities. This innovation enabled the entrepreneurs to create value for their businesses and in the process discovered new ways in which they could make money using IT. This form of IT adoption suggests that if successful, IT could indeed be a driver of innovations in minority and ethnic small business communities. [37] suggests that innovations that enable businesses to employ factors of production more efficiently assist in the upturn of economic growth cycles. The results suggest that if IT adoption by small businesses does indeed drive their growth, then small business development can be seen to be a driver of economic development.

However, the results also illustrate that innovative adoption of these existing technologies was tempered by challenges such as limited knowledge of the technologies due to lack of training and skill sets, fear of losing control as a result of using the technologies, the mismatch between standard teaching techniques and business owners preferred learning styles, and the ethnic norms in which the minority and ethnic businesses are embedded. At the same time the potential opportunities from using the technology motivated some entrepreneurs to adopt the technology. While the adoption of IT enabled entrepreneurs to use existing simple applications in innovative ways, the IT Therapy was applied in the context of the business activities. For example, the adoption of power point enabled one small business entrepreneur to more professionally discuss new business opportunities, which in turn enabled him to raise more funds [46]. Yet, our research suggests that such adoption successes are most often achieved by working within the context within which the businesses operate.

The context in which the IT was adopted by the entrepreneurs was the social network, which in the case of minority and ethnic communities includes the social norms of their communities, the attitudes toward and knowledge of information technology, and the preferred learning styles of those within the community. Taken a step further, the activation of knowledge from these social networks entails knowledge networking. Knowledge networking is bringing diverse and distributed knowledge and skills into action [32]. This process enabled the small business entrepreneurs in these communities to access the necessary skills (through the IT Therapy), resources and business connections through their use of IT. In particular it enabled economic development outcomes such as access to new markets and administrative efficiencies to be achieved in order to enable the businesses to grow. As illustrated by [31], these factors bring about

development by increasing the ability of the small business to generate income and/or create jobs. The outcomes for economic development were observed in the majority of the businesses studied were job creation, increase in sales and productivity [40], [27], [33], [34].

6. Summary, Conclusions, and Directions for Future Research

Adoption of IT in small and micro-businesses in minority communities is unique in that the owners of these businesses are characterized by social characteristics, including their unique ethnic identities and individual learning styles. In addition, certain behavioral dimensions, including their perceived behavioral control and attitudes towards IT adoption, are particularly relevant to their intention to adopt IT solutions. This paper has adapted a variety of IT adoption model variables and other constructs to this specific context, which has yet to be explored in the IT adoption literature.

The context within which the small businesses operate is one of economic, social and human development. Economic development is the use of resources for creation of wealth or jobs; social development entails the provision of services such as healthcare and education; and human development entails empowering people to take control of their lives [37], [31]. Within this development context, small business entrepreneurs are dependent upon their social networks in order to find the stability they need to continue to succeed in their businesses. IT therapy is the process by which educators work with small business owners to understand the business and existing technology, implement technology-based solutions, and train business owners as appropriate [46]. When a small business entrepreneur's social network is taken into consideration, we believe that IT therapy can result in more successful adoption of IT.

At the beginning of our research, a review of the more general IT adoption literature, along with other related preferred learning styles and minority and ethnic literature streams, was conducted. We then correlated those theories with journal data and with case studies of small African American-owned businesses (derived from journals completed as part of the curriculum for an IT for Development class). An open-ended questionnaire was then developed and used to gather additional information from a sample of small Latino-owned businesses.

Our analysis of the extant literature, empirical data, and our own case studies led to the development of set of propositions and an integrated model which combine existing IT adoption constructs with those more uniquely relevant to the minority and small business community-based development context. The ultimate contribution of this model is in its application to economic development. Further research will develop and administer more quantitative data collection instruments to a larger sample of small businesses in minority and ethnic communities, including those in international settings.

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8. Appendix I: Instrument

IT for Development Open-ended case questionnaire
Explain why we are doing this survey :
UNO/Creighton want to help small businesses better use technology to improve their business and so are trying to understand how they are using current technology and what their needs are in the future.

I.   Base Line of Existing Tools/Access to IT Tools

1. What sorts of information technology tools are you using in your business right now?

2. Have they had any difficulties getting access to any of the information technology tools they would like or need for their business?

3. How did you acquire the information technology tools that you have now?

4. Can you continue to get access to these same sources of technology or do you see any barriers to gaining access to them in the future (i.e. funding for them, internet connection availability, training, etc.)

II. Values, Attitudes and Beliefs Towards Information Technology (computer hardware and software, the internet, websites, word processing and account symptoms, etc.)

1. How comfortable do you feel using these tools? In what ways do you think they have helped your business (if any)?

2. How useful do you think these information technology tools are to a small business owner?

3. Do you feel that you have confidence in your ability to use the tools you have to help you in your business?

4. If you have performed some of these functions manually in the past, do you feel that information technology tools have been a help? If so how? Or a hindrance? If so how? Do you feel more comfortable and trust your ability to use manual tools more than information technology tools?

III.   Knowledge and Skills and Resources

1. Did you teach yourself to use your IT tools? If not, how did you learn to use them?

    a. Have you or anyone in your business had any training or educational courses or classes to use your information technology tools?

    b. Have you or anyone in your business had access to a help desk or support services to answer questions about using your IT tools if you need them?

    c. Do you have manuals for or books about using your IT tools? Do you use them? If so, are the helpful? If not, why not?

    d. Have you used either outsiders, friends or fellow business owners or others in your network or group of friends or family to show you how to use your IT tools?

    e. Other ways of learning? In a former job, for example?

    f. Of the manuals, demonstrations, help desk or support services, or courses/training classes, which has been most helpful to you?

IV.   Ethnic Identity

1. Do you live in a Latino community such as South Omaha?

2. Is your business located in a Latino community such as South Omaha?

3. Do you belong to a church in your community that other Latino friends or family attend?

4. Do you belong to a Latino community center ?

5. Do you network with other Latino business owners in your community? If so, are these formal or informal networks?

6. Do others in your Latino community and networks use about the same, less or more IT tools in their business than you? Why do you think that is?