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Adoption of Information Technology by Micro-enterprises: Insights from a rural community

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ABSTRACT

It appears that the growth of micro-enterprises is a key driver of economic development in underserved communities. However their growth is limited to only 20% of the economy even though they comprise 87% of businesses in Nebraska. Research has shown that IT adoption can increase their growth by 3.5% but the challenges to IT adoption by micro-enterprises are many. Current theoretical models on IT adoption focus on the intent to adopt IT in large organizations where employees' attitudes and perceptions are measured in terms of their objectives within the structures of accountability. Micro-enterprises are unique in that the intention to adopt is an individual cognitive decision made by the micro-entrepreneur. It is often the ways in which IT is used and can be used to grow their businesses that effect the adoption decisions made by the micro-entrepreneurs. This paper considers the adoption of IT by micro-enterprises through a focus group session. Following a qualitative analysis of the data using constructs from the Theory of Planned Behavior and Social Cognitive Theory, this paper uncovers patterns that provide insight into the attitudes and perceptions that effect the adoption of IT by micro-entrepreneurs. The contribution of this paper is in the discovery of patterns and categories of micro-entrepreneurial attitudes and perceptions that effect the adoption of IT.

Keywords

Micro-enterprise, micro-entrepreneurs, information technology, attitudes, perceptions.

INTRODUCTION

Current research has established that Information and Communications Technology (ICT) can play an important role in the growth of small businesses (Matthews 2007, Sullivan 1985, Qiang et al 2006, Raymond et al 2005). Specifically, small businesses may utilize IT to create new jobs, increase productivity and sales through access to new markets and obtain administrative efficiencies (Qureshi 2005, Matthews 2007). These outcomes can be achieved through measurable improvements in the lives of people living with limited resources to sustain themselves. Riemenschneider et al (2003) investigated 1000 US small businesses and discovered that despite the numerous challenges that such types of businesses face in terms of technology, they were prepared to overcome obstacles to IT adoption to obtain web presence. The key reason behind this happening was due to market pressures to keep with the competition and promote services to customers. This need was greater than the obstacles to setting up websites. There is a sense that small and medium enterprises hold the promise of building development incrementally on existing national capabilities, and providing a seedbed for the emergence of dynamic and efficient larger national firms (Levy 2001, Mathews 2007, Servon and Doshna 2000). The promise of eBusiness adoption by micro-enterprises can potentially provide these businesses with the ability to access new markets and reduce costs through administrative efficiencies (Brown and Lockett 2004, Pateli and Giaglis 2004). However, the use of ICT by Small and medium Sized Enterprises (SMEs) remains a challenge in both developed as well as developing countries (Schreiner and Woller 2003, Sanders 2002, Lichtenstein and Lyons 2001, Hyman and Dearden 1998, Honig 1998, Piscitello and Sgobbi 2004). In particular the opportunities opened up by the internet for eBusiness is limited in SMEs especially due to the challenges faced by globalization (Piscitello and Sgobbi 2004). The myriad of challenges faced by micro-enterprises make it even more difficult for them to adopt IT to reap the benefits of eBusiness. In particular, Piscitello and Sgobbi (2004) suggest that the key barriers to the adoption of IT for eBusiness is not size but the learning processes followed by the firms and access to networks of similar internet enabled business services.

Small and medium sized (SME) businesses are seen to be organizations that employ less than 500 people and typically have problems adopting IT due to competitive pressures and underestimation of time taken to implement IT (Riemenschneider et al., 2003). The focus of this paper is on a specific form of small business, namely, the micro-enterprise. Micro-enterprises are classified as the smallest form of businesses comprising less than 10 employees. Most of the time, it is seen that micro-enterprises are operated by just one person, who is the owner and sole employee. According to Grosh, B. and Somolekae

(1996) barriers to growth of micro-enterprises are access to capital, educational level of the entrepreneur, legal barriers and start-up financing. In their study of information systems for rural micro-enterprise in Botswana, Duncombe and Heeks (2003) suggest that the role of ICT in enabling information and knowledge is important for both social and economic development. They found that there was a reliance on localized, informal social networks for their information for rural the micro-enterprise. Information from these networks was of poor quality and not readily available; it appeared to fail the poorest and most disadvantaged entrepreneurs. In this sense, ICTs can represent an unaffordable addition to costs and the benefits of using them are not always apparent (Duncombe and Heeks 2003, Matthews 2007, Southwood 2004). Moreover, unlike its larger counterparts in the business arena, micro-enterprises do not have dedicated IT departments or staff. The micro-entrepreneur is the sole person responsible for taking all the decisions regarding the business including decisions dealing with adoption and use of IT within the business. In two related studies by Wolcott et al. (2007) and Qureshi et al. (2008), it was seen that a group of micro-enterprises were awarded certain technologies through a technology grant program but even after six months, the boxes containing the new IT devices were unopened. The researchers in those studies discovered that although almost all the micro-entrepreneurs realized that technology can help their business in some way, their level of realization of that fact was not sufficient enough to drive them or motivate them to incorporate and use the new IT. This form of behavioral attitude of perception goes against traditional theories of technology acceptance such as the technology acceptance model (TAM - Davis, 1989) and the UTAUT (Venkatesh et al., 2003). In addition, these theories do not address the use of IT to grow a micro-business by an individual. It then appears that there is a need to understand the attitudes and perceptions that micro-entrepreneurs have towards IT and how IT may be used to benefit their businesses. This is where the main contribution of this paper is focused. The study described in this paper will address the question: *How do micro-entrepreneurs' attitudes and perceptions towards IT affect their adoption of Information Technology?* Given that each micro-enterprise is unique and relies on the vision and abilities of its owner, it is important to select a group of micro-enterprises that are typical of a community. The research question is studied through a focus group session consisting of ten micro-entrepreneurs in a rural community in Nebraska. Investigating the research question posed, will enable researchers studying micro-enterprises to be able to formulate effective strategies to address IT adoption and usage issues that help micro-enterprises grow. A second core contribution that this research makes is by its focus on micro-enterprises. Most published studies in the field of IS have either focused on large organizations or SMEs. Very few have studied micro-enterprises and even less, have attempted to investigate issues relating to technology adoption in micro-enterprises.

THEORETICAL BACKGROUND

IT and Small Businesses

Literature in this area has shown that when small and medium sized businesses incorporate and use IT, visible and measurable outcomes such as improved operational efficiencies as well as increased revenues result. Such outcomes then enable these businesses to have a better positioning in the markets that they serve. It has been seen that when businesses used e-mail to communicate with their customers, they experienced sales growth 3.4 per cent greater than those businesses which did not (Qiang et al., 2006). The same study also pointed out similar outcomes for productivity and reinvestment. In other words, both these components were found to be greater for more intensive users of IT (Qiang et al., 2006). In a study by Raymond et al. (2005), it was observed that 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. Specifically, Raymond et al. (2005) 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. Increased utilization in IT is not always evident through increased revenue of businesses. As a study by Southwood (2004) shows, IT investments by SMEs in South Africa, resulted in profitability gains from cost savings rather than from an increase in sales.

Although it has been established through prior research that IT can bring about substantial benefits to firms, uptake of IT – whether very simple or complex – has been extremely slow or rather lacking within micro-enterprises. In a study by Qiang et al (2006), among the *micro firms*, only 27 percent use e-mail and 22 percent use Web sites to interact with clients and suppliers. Consequently, the findings beg the question: If computer use affects firm productivity and IT expands networking within sectors and industries, the micro firms may not be benefiting from these externalities. Two very recent studies by Wolcott et al. (2007) and Qureshi et al. (2008) has shown that, even when the group of micro-enterprises under study were awarded certain technologies through a technology grant program, the boxes containing the new IT devices were unopened - even after six months! The researchers in those studies discovered that although almost all the micro-entrepreneurs realized that technology can help their business in some way, their level of realization of that fact was not sufficient enough to drive them or motivate them to incorporate and use the new IT. There could possibly be two underlying reasons to explain this behavior. On the one hand, micro-enterprises face numerous challenges, both technical and non-technical. And on the other

hand, attitudes and perceptions that the micro-entrepreneur has towards technology play a large role in facilitating the eventual uptake and utilization of the new technologies into their businesses.

There have been a number of studies that have looked at the various challenges that small businesses face. One issue is that of *Affordability* (Mansell & When, 1998; Hazan, 2002). These studies have shown that small businesses operate on very constrained and limited financial terms and do not have sufficient capital to invest towards IT. *Awareness about IT* (Owen & Darkwa, 1999) is another core problem. Most often than not, micro-entrepreneurs do not possess any technical skills and are unaware of the capabilities that IT may bring to their business. A number of studies have looked at the issue of *Infrastructure* (Baark & Heeks, 1998; Latchem & Walker, 2001; O'Farrell, Norrish, & Scott, 1999; Barton & Bear, 1999). Infrastructure is a basic need for any form of IT implementation to work. Lack of such infrastructure will be a major barrier to the adoption and use of IT within the business. *Private/Government sectors* (Lefebvre and Lefebvre, 1996) in any community also play an important role in either facilitating or inhibiting the development of IT infrastructures to promote increased IT adoption and use. *Management's capacity* (Lefebvre and Lefebvre, 1996) to incorporate IT into small business environments are also a major component in successful IT adoption and use. Most of these studies refer to challenges that are tangible. An important aspect to the successful adoption of IT within the micro-enterprise environment has to do with intangible issues such as perceptions and attitudes that the micro-enterprise owners have towards technology. This is more crucial within the small business context since all decisions regarding the business rests on the owner and an individual cognitive act. The next subsection describes some of the literature that explains these intangible constructs and how they might play a role in micro-enterprises.

Perceptions and Attitudes towards IT

Researchers in the area of IT adoption/acceptance have attempted to understand how perceptions and attitudes that people have towards IT influence the eventual adoption and use of new technologies. As a result of such investigations, a rich repository of well defined IT adoption models and constructs have come about: Theory of Reasoned Action (Ajzen and Fishbein, 1972), the Theory of Planned Behavior (Ajzen, 1991), Technology Acceptance Model (Davis, 1989), Model of PC Utilization (Thompson, Higgins, and Howell, 1991), Innovation Diffusion Theory (Moore and Benbasat, 1991) and Social Cognition Theory (Compeau and Higgins, 1995). Venkatesh et al. (2003), integrated key variables from some of these prior models, and developed their own unified model, referred to as UTAUT. This model considers the adoption of IT by employees of large corporations, which is considerably different than the context of micro-enterprises – which are the focus of this study. It is beyond the scope of this study to explain each of the above mentioned IT acceptance models. We do however extract some of the key constructs from these prior models that we believe will enable us to understand attitudes and perceptions that micro-entrepreneurs have towards IT.

Perceived Behavioral Control: This construct comes from Azjen's (1988) work and explains that 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 Azjen, perceived behavioral control is "the perceived ease or difficulty of performing a behavior and a personal sense of control over performing it." (Ajzen, 1988).

Attitudes towards IT Adoption: According to Ajzen, 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. (Ajzen 1988)

Lewis et al. (2003) took a different route to understanding the intent to use technology by looking at the sources of beliefs about IT use and how they impact the two most common constructs, that of *perceived usefulness* (Davis, 1989) and *perceived ease of use* (Davis, 1989). Lewis et al. (2003) state that there are three core sources that influence beliefs about IT use: individual factors, social factors, and institutional factors. The individual factors are most relevant to the study of how micro-entrepreneurs adopt IT. Regarding individual factors, computer self-efficacy and personal innovativeness with technology were the influential sources for both perceived usefulness as well as perceived ease of use of technology. Within the context of this current study and realm of micro-entrepreneurs, institutional factors as described by the Lewis et al. (2003) study do not apply since most micro-enterprises comprise of one person and in essence, there is no management hierarchy structure present. The individual factors of computer self-efficacy and personal innovativeness with technology from the Lewis et al. (2003) study however, do apply. Explanations of these two constructs as well as how they relate to micro-entrepreneurs' beliefs about technology are described below.

Computer Self-Efficacy: Based on Bandura's (1977) social cognitive theory, self-efficacy is when an individual watches other people using IT, and their perception of their own ability is influenced. Self-efficacy can be broken down into two distinct outcomes, performance and an individual's expectations of an enhanced status within an organization. In studying

micro-enterprises, self-efficacy is the perception that they can use IT to increase performance and/or status. In other words, it is the belief that the micro-entrepreneurs can use the technology to help them improve the performance of their business. This involves a micro-entrepreneur asking questions to himself or herself such as “Do I believe I can do it?”(Lewis et al 2003). Regarding achieved enhanced status, within the context of micro-entrepreneurs, it is the belief that using IT will give the entrepreneur a rise in status among other micro-business owners.

Personal Innovativeness with technology: This notion represents the degree to which an individual is willing to try out any new information technology. It is an individual’s propensity associated with more positive beliefs about IT use. Individuals develop beliefs about new technologies by synthesizing information from a variety of channels including mass media and interpersonal channels. (Lewis et al 2003). Agarwal and Prasad (1998) state that individuals are referred to as *innovative* if they are early to adopt an innovation. Applying this construct of personal innovativeness with technology to understanding our sample of micro-entrepreneurs will enable us to get a sense of either beliefs regarding their eagerness (those who consider themselves early adopters of IT) or hesitation (those who consider themselves late adopter of IT) towards IT.

As the constructs to measure the adoption of IT in micro-enterprises have not been developed as yet, the above four constructs will be used within an interpretive research strategy to analyze data collected in a focus group of 10 micro-enterprise in a rural community. The focus group was conducted in order to 1) understand the challenges faced by the micro-entrepreneurs as they adopt IT to grow their businesses and 2) arrive at insight into what can be done to assist the micro-enterprises in adopting IT. The following section describes the methodology used to collect the data and analyze it.

METHODOLOGY

This research follows an interpretive research strategy in which data collected through a focus group was analyzed through an inductive process. According to Klein and Myers (1999), 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 (Klein and Meyers, 1999) that were adhered to were 1) the principle of contextualization, 2) the principle of interaction between researchers and the subjects, 3) the principle of dialogical reasoning and 4) the principle of multiple interpretations. The principle of contextualization was achieved by observing and listening to each of the micro-entrepreneurs participating in the focus group session as they described their businesses. The researchers observed and transcribed the narrations made by the business owners. The transcriptions depict the social and historical backgrounds of each of the micro-businesses as is specified by the principle of contextualization (Klein and Myers, 1999). The principle of interaction between researchers and subjects was achieved through the focus group session. The Focus Group was conducted by the authors in Lyons Nebraska where a diverse set of micro-entrepreneurs came together to discuss the challenges they faced with IT. The brainstorm questions we posed to them were 1) As you think about acquiring and using information technology to benefit your company, which kinds of challenges do you encounter?, 2) If the challenges you mentioned were mitigated, how would you envision using technology within your company? After each brainstorm the first author who conducted the focus group, facilitated the brainstorm and helped arrive at some major categories for voting. The second author typed up the brainstorm categories and managed the clickrs (a technology used for obtaining anonymous input from a group of people on issues) for voting. The third author typed up the transcripts of the discussion that were coded for the purpose of this paper. The questions that were posed to the focus group participants coupled with the facilitation provided by the researchers during the session served to “socially construct” the descriptions that each of the micro-entrepreneurs provided. This is emphasized by Klein and Myers (1999) principle of interaction between researchers and subjects. The focus group was comprised of a set of micro-entrepreneurs who had a diverse set of backgrounds and success with their micro-enterprises, had very varied experiences with technology and were of different ages, skills and economic means. Table 1 lists the micro-entrepreneurs that participated in the focus group.

| | |
|---|---|
| JB – Large equipment manufacturer | MF – manages the local library |
| DJ – owns as flower and gifts shop | LM – owns a dress shop |
| MA – owns a hardware store | JJ – owns a farm business |
| JP – manages a funeral home | FH – Superintendent of local school |
| KS – owns a family daycare | BG – owns a stoneware and pottery business |

Table 1. List of Micro-entrepreneurs

Principles of dialogical reasoning and multiple interpretations (Klein and Myers, 1999) were adhered to during the open coding of the transcribed data. The data collected during the focus group was transcribed and coded using an instrument developed using the constructs for perceived behavioral control (TPB - Azjen, 1988), attitudes towards IT adoption (TPB - Azjen, 1988), computer self-efficacy (SCT - Lewis et al., 2003) and personal innovativeness (SCT - Lewis et al., 2003) with technology. The coding was carried out independently by the second and third authors to interpret the meanings in the

transcripts as they related to attitudes towards perceived behavioral control (TPB), IT adoption (TPB), computer self-efficacy (SCT) and personal innovativeness (SCT). This is where the principle of dialogical reasoning (Klein and Myers, 1999) was applicable. Dialogical reasoning entailed sensitivity to contradictions between the constructs developed from the theory and the actual findings. 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. Subsequently, the researchers integrated their versions of the coding in order to produce a shared understanding about the perceptions and attitudes demonstrated by the micro-entrepreneurs. At various junctures, the researchers attempted to reconcile different viewpoints with respect to the coding constructs themselves. During this process, certain patterns of attitudes both common and distinct to groups of entrepreneurs emerged. The researchers refined the initial groups using inductive reasoning and a process of trial and error to produce final conceptual groupings. The next section shows the results of the coding process.

RESULTS

This section illustrates the results of the coding process and the discovery of attitudes and perceptions from the coded categories. The codes were developed from the Theory of Planned Behavior (Ajzen, 1988) and Social Cognitive Theory (Bandura 1977, Lewis et al., 2003) constructs. The Theory of Planned Behavior constructs chosen for this study are Perceived Behavioral Control and Attitudes towards IT Adoption. The Social Cognitive Theory constructs coded in this study are Computer Self Efficacy and Personal Innovativeness. The transcripts for each micro-entrepreneur (MC) were coded using codes developed from these constructs and tabulated in the coding instrument. The transcripts were coded twice to ensure that the interpretation of the codes was true to the context and history of each micro-enterprise, and that there was sensitivity to multiple interpretations of participants. Through discussions between the coders possible contradictions in the data were addressed (Klein and Myers, 1999). The codes were then counted and tabulated to reveal the number of times that particular behaviors were reflected in the transcripts. The labels used to code the transcripts are illustrated in Table 2, under the constructs that they represent. These labels are tabulated against the micro-enterprise in which they occurred.

| MC | Perceived Behavioral Control | | | Attitudes Towards IT Adoption | | | Computer Self Efficacy | | Personal Innovativeness | | |
|--------------|------------------------------|----------|------------|-------------------------------|--------------------|----------------------|------------------------|----------|-------------------------|--------------|-----------------|
| | Difficult | Easy | In Control | Learned | Favorable Response | Unfavorable Response | Performance | Status | Early Adopter | Late Adopter | Channel Variety |
| JB | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| DJ | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 0 |
| MA | 2 | 0 | 0 | 2 | 1 | 4 | 1 | 0 | 0 | 1 | 0 |
| JP | 0 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| KS | 1 | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 |
| MF | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 1 |
| LM | 4 | 0 | 0 | 1 | 2 | 4 | 2 | 0 | 0 | 1 | 0 |
| JJ | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 1 |
| FH | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| BG | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| Total | 12 | 1 | 3 | 8 | 11 | 9 | 9 | 5 | 8 | 6 | 4 |

Table 2. Results of the IT adoption coding

The results suggest that while the perceptions of IT use were primarily that it was difficult to use (12), the beliefs about the consequences of using IT by the micro-entrepreneurs was favorable (11) compared to responses that were unfavorable (9). On computer self-efficacy, the micro-entrepreneurs could see that they could use the technology to help them improve the performance of their business (9). The majorities of the micro-entrepreneurs were high on personal innovativeness and most displayed behaviors of early adopters (8). While the attitudes to IT were generally favorable, the micro-entrepreneurs believed that they could grow their businesses using IT, but did not know how to use IT to grow their business. The narrative for each of the micro-enterprises reveals distinct but comparable attitudes and perceptions. Quotes are extracted from the

coded transcripts to reveal the underlying “story which the data tell” (principle of dialogical reasoning – Klein and Myers, 1999). The quotes from the transcript portions are illustrated below under the labels used to code the transcripts.

Perceived Behavioral Control

The results suggest that the micro-entrepreneurs felt that using IT was difficult and they did not necessarily have a personal sense of control over their use of IT in their businesses. Portions of the transcripts that reflect their sentiment are illustrated below:

Difficult – this code, based on Ajzen (1988) refers to the fact that the user finds it difficult to use technology and experiences significant cognitive burden when doing so; often the user is overwhelmed and ‘doesn’t know where to begin.’ More than half of the micro-entrepreneurs described difficult experiences with some aspect of technology. The kinds of difficulties encountered by these micro-entrepreneurs (both general and specific) are characterized in the analysis section.

JB: (*Difficult*) “Trying to get info off floor from welders into office is very hard for us”

DJ: (*Difficult*) “I am computer illiterate...I’m sure I could utilize it more, I just don’t know how to do that”

MA: (*Difficult*) “Is it better to develop something yourself or to hire somebody, I mean where do you start?”

Easy – this code, derived from Ajzen (1988) and Lewis et al., indicates that the user finds it easy to use technology and experiences a low cognitive burden when doing so. There were almost no direct statements about ease of use within the transcripts.

KS: (*Easy*) “technology wise [we] use internet a lot”

In control – this code, derived from Ajzen, refers to the entrepreneur’s feeling of having gained control of some aspect of his business through the use of technology. Very few micro-entrepreneurs felt as if IT had helped them to be ‘In-Control’ of their businesses.

JP: (*In control*) – “funeral home here in Lyons, we recently started 2006 a webpage and it has helped out a lot as far as people having access to online obituaries, service information, we have links as far as resources places lodging, local florist, cemeteries, names of churches, helped us deal with families out of town, making arrangements over phone”

MF: (*In control*) – “I kind’ve designed a little page for him and he copies what he typed in, paste it right over here, and he has a record to give to the customer (this is a spreadsheet for billing customers), but it looks right, and that is something some of the people who have come for class have asked for, so they can do some record keeping for little businesses that they have.”

Attitudes towards IT Adoption

For this construct, the results suggest that the micro-entrepreneurs have favorable attitudes with regard to adopting IT in their businesses. About half of the entrepreneurs had learned to use some type of IT to attain their business goals. Only three individuals presented unfavorable responses to IT; all three of these individuals also expressed favorable and/or learned responses; this is a dichotomy that is explained in the analysis section. Portions of the transcript illustrating these sentiments appear below:

Learned – this code, also from Ajzen (1988), refers to a learned predisposition to apply technology to a particular kind of task. The learning may be internally motivated and/or externally facilitated. Learning appears to be more common than feelings of being ‘in control.’ The degree to which learning has occurred and/or might occur informs the analysis.

LM: (*Learned*) “Have a laptop at my store now - basically taught myself how to use it”

MA: (*Learned*) “Then we also have another computer for paint record keeping, paint formulas. Our flyers we now... customize over [the] computer”

Favorable response – this code, based on Ajzen (1988), refers to a belief that the use of IT has beneficial consequences. The use may be a current use or a hypothetical future use. Critically, the micro-entrepreneurs provided a wide variety of favorable responses to the possible use of technology within their businesses. The strong positivity (in spite of all the characterizations of IT as difficult) bodes well for future interventions and informs the attitude grouping in the analysis.

MF: (*Favorable response*) “We would be interested in seeing something locally with a web page, would benefit businesses, would help our business as well”

JJ: (*Favorable response*) “if you know that business has what you want, before you get in the car and go there you are going to be a lot more apt to stop and pick it up there”.

Unfavorable response – this code refers to the belief that the use of IT provides no benefits, and/or negative consequences. Two users provided numerous unfavorable responses, whereas one user provided only a single unfavorable response.

LM: (*Unfavorable response*) “if I do get a response online, I don’t necessarily have item, if I get it, will they buy it?”

JB: (*Unfavorable response*) “They were supposed to take picture of businesses, and list people’s hours and things like that but it wouldn’t tell your products, that was the idea behind the one that we have. And, nobody has looked at it for such a long time, it is just kind of sitting there”

Computer Self Efficacy

The micro-entrepreneurs appeared to be primarily interested in the performance potential of IT. The comparative dearth of comments related to status may suggest that IT, as a relatively uncommon feature in these environments, is not strongly linked with status. The transcripts below illustrate the codes:

Performance – this code refers to the belief that use of technology can help improve the performance of a business. It can serve as either an affirmation or statement of doubt about personal capabilities and ultimate benefits. The vast majority of the micro-entrepreneurs made statements about the performance potential of IT. Contextualized, these statements reveal trends described in the analysis.

JP: (*Performance*) “just think that if we wouldn’t have had someone get it started for us, we would still be without it, since they started it, it has been great”

LM: (*Performance*) “how do I get my web page developed? I had to walk through this process on the phone, it was so difficult”

Status – Refers to the belief that using IT will provide increased status to the micro-entrepreneur. A minority of the micro-entrepreneurs had positive beliefs about status.

BG: (*Status*) “I have a friend in her 80s, and her husband left her with antiques in a garage and she couldn’t get car in garage, and children said get on internet and sell it! So she has been selling it, she sold one item to Japan for \$400!”

Personal Innovativeness

The results in relation to Personal Innovativeness suggest that almost half the entrepreneurs have Early Adopter tendencies. A contradiction appeared when early adopting individuals (in some areas of IT) made late adopter style statements. The paper resolves this contradiction in the analysis section via a discussion of specificity. Early Adopters were more likely than Late Adopters to have Channel Variety.

Early Adopter – Early Adopter coding is applied to statements that indicate an interest in upgrading and exploring capabilities as well as to statements that show that the micro-entrepreneur is/was ahead of the technology curve.

FH: (*Early Adopter*) “challenge is always more money to buy more hardware, more software, staff are competent in educational and business setting. We’ve got several desktop computers, some laptops.”

JJ: (*Early Adopter*) “[I bought my] first computer in 1986”

Late Adopter – this code indicates a hesitancy to adopt new technologies and a lower level of personal innovativeness. Late adopter codes are applied to statements that indicate the micro-entrepreneur is behind the technology curve or hesitant to adopt new technologies.

JB: (*Late Adopter*) “I wouldn’t buy anything online”

DJ: (*Late Adopter*) “I do not have a web page”

Channel Variety – this code refers to the fact that the micro-entrepreneur has developed multiple ways to answer his IT questions. Channel variety can be self-created, e.g. a user reads computer manuals, or externally facilitated, as in the case of the state providing IT support technicians.

BG: (*Channel Variety*) “We have a computer man in town who takes care of a lot of people”

MF: (*Channel Variety*) “fortunately with the help of Library commission we have been the front side of technology”

While the codes themselves provide some insight into the attitudes of the micro-entrepreneurs, the most interesting patterns emerged from pairing groups of individuals that portray similar attitudinal behavior towards IT. The analysis section describes these groups.

ANALYSIS

The above results were analyzed using Klein and Myers (1999) principle of dialogical reasoning and the principle of multiple interpretations. Dialogical reasoning entailed sensitivity to contradictions between the constructs developed from the theory and the actual findings. For example, while the perceived behavioral control was low, attitudes for the adoption of IT were favorable. This suggests that the Micro-entrepreneurs fall into distinct groups, in other words, “Technology Attitude Groups.” These groups are characterized by the extent to which they perceive technology as both applicable to their businesses and said businesses’ future growth. The second 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. What follows are descriptions of our categories that emerged. The lists of businesses that fall into those categories along with sample quotes from the coded transcript are given in table 3 below and serve to illustrate the justifications behind the categorizations.

Positive Limited – This group sees the value of IT and is willing to adopt it, but lacks the capabilities and support to proceed further (see table 3).

Positive Specific – Micro-entrepreneurs in this group tend to have a split perspective; they perceive technology as beneficial in some areas (e.g. acquiring access to new customers through the web) but have doubts about other areas (such as online purchasing processes) (see table 3).

Positive Holistic – Business owners in this category have moderate to strong Channel Support, defined as access to formal or informal networks of IT Support. They display a positive attitude towards IT in general and have no significant reservations. Often these micro-entrepreneurs have some interest in teaching others about technology (see table 3).

Mild Hesitance/Negative Bias – This group appreciates that IT has potential, but believes that the risks outweigh the benefits (see table 3).

Strong Negativity – Micro-entrepreneurs in this group believe that IT has no potential value and incorporating it into their businesses will not provide any significant benefits. None of the micro-entrepreneurs that participated in the focus group portrayed attitudes that would make us believe that they have strong negativity. This conclusion is also supported by the results (see table 2) that showed that for the Perceived Behavioral Control construct, the dominant coding indicator that was prevalent in the narrations of the micro-entrepreneurs was a favorable response (frequency count = 11). All the micro-entrepreneurs felt that IT would benefit their business in some way. Since our focus group participants did not portray this belief, we do not have sample quotes representing this technology attitude group and have subsequently left this column out in table 3. But we do however believe that this group exists and so it remains as a category.

| Positive Limited | Positive Specific | Positive Holistic | Mild Hesitance/Negative Bias |
|--|---|--|---|
| <p>DJ: “I do some book keeping on it. I am sure I could utilize it more, just don’t know how to do that “</p> <p>KS: “Computer classes would be nice... We need more than basic skills, deciding what software would be available. Help in selecting and learning the software “</p> | <p>JB (Positive perspective): “Our websites probably bring us half of our business “</p> <p>(Doubting Attitude): “I would use hardware website to see what times you are open, and if you sell specific products, but I wouldn’t buy anything online “</p> <p>MA (Positive perspective): “we currently have 3 computers, our accounting, then we basically have an internet one, 90 supplies are ordered through suppliers</p> | <p>JP (Cross-domain positivity/expertise): “We have a link for merchandise over Internet. They can look at pictures of things up there. It has been really helpful. All of our records are on the computer. When we get a phone call, we use computer to retrieve records “</p> <p>(Source of channel variety): “I took computer courses when I was in college, it was more for PowerPoint, and access, and Excel...”</p> <p>(Source of Channel variety): “we had someone go in and do the page, and train us to update the content”</p> <p>MF (Cross-domain positivity/expertise & channel variety): “fortunately with the help of... library commission we have been the front side of technology“</p> <p>(Teaching interest): “I teach senior citizen classes, 95 individuals since 2003, really basic</p> | <p>LM: “Number one thing bought online is clothes – how would I even go about saying here are a pair of pants and this is the sizes and color – is it worth it to go deep into inventory, if I do get a response online, I don’t necessarily have item, if I get it, will they buy it? What to stock, how much to stock, if it would be worth it to sell online”</p> |

| | | | |
|--|--|--|--|
| | <p>through internet“ (<i>Doubting Attitude</i>) “We have thought about a website and honestly are afraid of time it would take to develop one, if it would even be worth it“</p> <p>BG (<i>Positive perspective</i>): “There is a program that you join [on the internet], and every week there are different things that other potters are writing in the problems what to look out for what to buy and you can send your questions and answers in and some of the potters talk to each other. It’s helpful.”</p> <p>(<i>Doubting Attitude</i>): “There are so many search results! To Even find myself on the computer is something else”.</p> | <p>skills but lot are coming on board as far as getting more familiar with computers“</p> <p>JJ (<i>Positive view towards IT</i>): “Was always interested in computers, farm record keeping in Excel spreadsheet Internet for Markets, bought machinery using E-bay”.</p> <p>(<i>Source of channel variety</i>): “we have skyways wireless which is a wireless, and it is variable. We were the 5th person to be hooked up, and they supposedly have gotten better equipment since then so we are going to talk about getting better equipment... I first got my first computer and got out the dos manual and started reading it, back slash crap, and what in the hell are they saying. It wasn’t until many years later they came out with computers for dummies and all these, it is getting better”.</p> <p>FH (<i>Positive attitude towards IT</i>): “challenge is always more money to buy more hardware, more software, staff are competent”</p> <p>(<i>Teaching interest</i>): “we also have distance education”</p> | |
|--|--|--|--|

Table 3. Sample quotes from coded transcript

The above technology attitude groups that emerged from the coded transcript data support the notion that the linkage between attitudes and use of IT within micro-enterprises is a *cyclical* process, so that attitude is continually driving usage which is driving attitude and perceptions. To illustrate further, if the micro-entrepreneur’s attitude towards IT is poor and the usage of IT does not provide a benefit to the business owner, then the individual will be stuck in late adopter mode (personal innovativeness will be low – Lewis et al., 2003). That is, they will be very hesitant about using any new technologies because the benefits are simply unclear. If the micro-entrepreneur’s attitude is moderately positive, it is because a specific technology behavior has been reinforced, for example, using a website to sell products online. If other, more general, technology related behaviors have not been reinforced, the impulse to explore the technology field is never activated.

CONCLUSION

Current theoretical models on IT adoption have focused on the intent to adopt IT in large organizations and as a result fail to explain IT adoption mechanics within micro-enterprises. Subsequently, it is not the *intent to adopt IT* that is the issue for the micro-entrepreneurs. This has been illustrated in the results. Rather, it is the ways in which IT is currently used, or has been used in the past within their businesses that have caused them to hold their current beliefs/attitudes/perceptions towards IT - which eventually effect the adoption decisions made by the micro-entrepreneurs. In understanding this crucial finding, it is important to emphasize again that micro-enterprises are unique in that the intention to adopt is an *individual cognitive decision* made by the micro-entrepreneur as opposed to large organizations where employees’ attitudes and perceptions are measured in terms of their objectives within the structures of accountability. The contribution of this paper is in the surfacing of attitudinal groupings that suggest that attitudes held by micro-entrepreneurs drives the use of IT for their business and that this is a *cyclical* process. These “Technology attitude groups” that emerged through the analysis of attitudinal patterns portrayed by the micro-entrepreneurs provide valuable insights into ways IT can be adopted to help micro-enterprises grow their businesses. Further research into the perceived benefits for the micro-entrepreneurs needs to be undertaken. In addition, with the help of these attitude groupings, future research will entail investigating practical issues of how these micro-enterprises can be supported through IT by providing specific interventions for social and economic outcomes.

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