IN SEARCH OF DIGITAL EQUALITY IN MISSISSIPPI’S TWO LARGEST CITIES:

AN EXAMINATION OF THE DIGITAL DIVIDE THAT EXISTS BETWEEN AFRICAN AND EUROPEAN AMERICAN-OWNED SMALL BUSINESSES IN JACKSON AND GULFPORT

By

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Does a Digital Divide exist between African and European American-owned small businesses in the South? There is no inferential statistical research literature on this subject. The literature available are usually conjectures made by small business observers who are quoting results from descriptive statistical reports whose samples originate from cities and states in the North. Research indicates that Northern businesses have vastly different racial, gender, educational, and economic characteristics than Southern businesses. Therefore, it is unlikely that business technology data generated from these locations are generalizable to cities in the South.

Research also suggests that a technologically urbane small business environment in a given area can economically uplift its inhabitants. Considering that southern states—particularly regions in the “Deep South” like Alabama and Mississippi—have some of the highest poverty levels in the United States for its African American population, a
detail analysis is needed to determine whether a technological chasm exists between African and European American-owned small businesses in the above states. A potential technology chasm might be the reason for the poverty that characterizes the lives of the South’s African American population.

The purpose of this study was to use a Multivariate Analysis of Variance to determine if a Digital Divide existed in both the access and the use of telephone, computer, and Internet technology when comparing small businesses owned by African and European Americans in Mississippi. The primary cities under analysis were Jackson and Gulfport—the two largest urban areas in the state. The results indicated that there was not a Digital Divide between these two groups—both were technologically lacking. However, the owners of these businesses did view technology positively—a factor that might ease future technology adoption.
DEDICATION

I would like to dedicate this research to my mother, Elizabeth Jones, and to a steadfast supporter, Dr. Robert L. Jenkins.
ACKNOWLEDGMENTS

The author expresses his sincere gratitude to the individuals without whose assistance this dissertation would have been left in the realm of fantasy. Initially, thanks are due to Dr. James Adams, my committee chairperson, for his willingness to allow me to formulate this topic in my own unique way. Gratitude is also due to Dr. David Morse, my statistical methods advisor, who answered my numerous questions about my chosen statistical procedure and my instrument development. Finally, appreciation is also due to the other members of my dissertation committee, namely Dr. Anthony Olinzock, Dr. Chien Yu, and Dr. Robert Jenkins, for the invaluable direction that they provided.
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CHAPTER I

INTRODUCTION

Summary

This chapter introduces the possibility of a small business Digital Divide in the United States, and the negative economic affects that it might inflict on African American-owned small businesses. It briefly examines African Americans’ sordid history with the European American majority, as a backdrop to this group’s quest to development of a technologically well-informed small business community that would elevate African Americans out of poverty. This chapter also describes the lack of investigation of the possibility of a Digital Divide between African and European American-owned small businesses in the South. The purpose of this study and the problem that it investigates are also discussed in this chapter. This chapter also discusses the hypotheses of this study, the limitations of this study, and the definitions of several pertinent terms that appear throughout this text.

Background

An examination of the history of the United States reveals that African Americans from their first induction into colonies in 1619 have had a unique relationship with the European American majority. This association produced such inhumanities against
African Americans as Colonial Slavery, Antebellum Slavery, and Jim Crow. These situations served to retard the social, political, educational, and economic development of this ethnic group (Bullock, 1967; Moody, 1968; Woodward, 1966). Several federal judicial and governmental measures in the 1950s and 1960s addressed the social, political, and educational dilemmas faced by African Americans in the United States. One such measure was the 1954 United States Supreme Court's desegregation ruling in *Brown vs. the Topeka Board of Education*. This ruling declared that “separate but equal” was inherently unequal for the African Americans in the classroom. Another measure, the Civil Rights Act of 1964, forbade discrimination by race in any federally sponsored program. This measure served to force businesses and state agencies that received federal funding to end discrimination against individuals based on their race. Lastly, the Voting Rights Act of 1965 forbade discriminatory tactics like literacy testing—a ploy adopted by many southern states to stop African Americans from voting in the 1960s.

For African Americans, these measures gave them the right to pursue their goals even in Mississippi—a state known at that time as a “Closed Society” to any concept of African American social, political, and educational equality (Silver, 1963). On a whole, these measures lessened the social, political, and educational “Holocaust” that had characterized the African American community’s existence in the United States since the end of the Civil War (Jones, 2000; Thomas, 1997).

Despite these positive results, however, the above measures did little to equalize the economic disparity that existed between African and European Americans (Franklin, 2000; Sitkoff, 1981). A United States Census Bureau report (2002a) revealed that in 1959 55% of the African Americans lived below the poverty line compared to only
18.1% of European Americans. This trend continued throughout the 1960s with African American poverty rates ranging from 41.8% in 1966 to 33.5% in 1970 while European American poverty rates were only 11.3% and 9.9% respectively. African American dominance in poverty continued throughout the 1980s, with poverty levels that averaged 32.2% over the ten-year span between 1980 and 1990 compared to only 10.45% for their European American counterparts. The 1990s did not bring about an equalization of the poverty rates between these two ethnic groups. From 1993 to 2000, African Americans below the poverty line averaged around 28.8% compared to only 11.2% for European Americans (Center On Budget and Policy Priorities, 1998; United States Census Bureau, 2002a).

African Americans continued impoverishment in the 1990s caused many African American leaders to call for the development of more African American-owned small businesses—a solution proposed several decades earlier by Booker T. Washington (Smiley, 1997; 1998; 1999). Spokespersons from this ethnic group like Jessie Jackson, Carol Moseley-Braun, Larry Irving, Al Sharpton, Louis Farrakhan, and numerous others stressed that the induction of African Americans into the small business environment would encourage the economic growth of the African American communities in United States. These leaders stressed that the newly formed small enterprises would create jobs in these communities; thus, decreasing the level of unemployment which would in turn serve to slowly lift individuals in those areas out of poverty (Arrison, 2002; Boyd, 2002; Hubbard, 2000; Nowak, 2000; Smiley, 1997; 1998; 1999).

African American leaders’ faith in small business ability to uplift African American communities economically has some factual basis. In 1997, small businesses
employed 499,000 individuals who received some form of financial assistance (money received from friends or relatives not living in the same household, excluding loans). These enterprises also employed 799,000 individuals that received public assistance (assistance received from the government excluding food stamps and SSI payment). This is a sharp contrast to large businesses. They employed only 388,000 individuals that received financial assistance and 511,000 persons that received public assistance (United States Small Business Administration, 1998a). Small business’ help to the economic downtrodden continued in 2000. The small business sector of American economy employed 660,000 individuals who received financial assistance and 730,000 that received public assistance while large firms only employed 390,000 and 530,000 individuals in the respective categories (Headd, 2000). These numbers indicate that over the last decade small businesses have contributed more too both the national economy and to the economies in the communities in which they operate than the larger firms have. Therefore, the development and the success of small businesses in the African American community could serve as a means of economic uplift (Bauman, 2001).

African Americans responded to their leaders’ request for the creation of more small businesses—especially in the South. From 1987 to 1992, there was a huge increase in the number of African American-owned small businesses in this region. In Florida, Alabama, and Georgia, the number of small businesses during this period increased by 58.2%, 45.8%, and 79.8% respectively (United States Small Business Administration, 1998b; 1998c; 1998d). In South Carolina, Tennessee, Louisiana, and Mississippi, the number of African American-owned small businesses increased by 43.1%, 43%, 32.5% and 45.5% in that order (United States Small Business Administration, 1998e; 1998f;
By the late 1990s, many of the previous states could boast that their African American population had become a significant portion of their minority small business communities. States like Alabama, Louisiana, and Mississippi could boast that their African American population owned more small business enterprises than any minority group that occupied their states (United States Small Business Administration, 1999a; 1999b; 1999c).

The increase in the number of African American-owned small businesses in the South had a dramatic impact on the number of African American-owned businesses nationally. From 1987 to 1997, the number of businesses owned by African Americans increased by 108%. Moreover, of the $495 billion that minority businesses garnered in 1997, African American-owned businesses accounted for 12% of the total revenue that minorities produced. This was an increase of 6% from the previous year’s total and a 16% increase from the 1994 total (United States Small Business Administration, 1999k). The most recent reports indicate that the increased in business ownership and in revenue production continued throughout the late 1990s and the first several years of the 21st Century. These increases were so dramatic that the United States Small Business Administration began to stress that African American-owned small business enterprises were becoming so economically viable that banks were giving them loans more frequently for such things as business renovations and business expansion (United States Small Business Administration, 2000a).
Statement of the Problem

Despite the increase in the total number of African American-owned businesses and the amount of revenue these businesses produced during the late 1990s, these figures did not rival those produced by the other minorities in the United States. The number of Hispanic American-owned businesses increased by 232% from 1987 to 1997. They generated 37% of the $495 billion that minorities produced in 1997. Asian American-owned businesses increased by 180% during this period. Their businesses accounted for 56% of the revenue that minority owned businesses grossed in 1997 (United States Small Business Administration, 1999d). The great increases that these groups experienced in both business ownership and in revenue production when compared to African American-owned enterprises continued to dominate the business landscape in 2000 and beyond.

This inequality in revenue and in businesses ownership did not stop African American poverty levels from decreasing. Thanks partly to the increase in the number of African American-owned small businesses and the overall robustness of the economy, by 2000 only 19.1% of African Americans were below the poverty line (United States Department of Census, 2000). The robust economy also resulted in the falling of European American poverty rates to 5.3% in the same year (United States Department of Census, 2000).

With the constant disparity in poverty levels between these two groups, many business strategists in the mid and late 1990s began to levy opinions on how African American-owned small businesses could further encourage the growth and economic vitality of their businesses. Analysts from the Diaspora Development Organization
(DDC), the Microsoft Corporation, and Technologies Incorporated (TI) declared that the major inhibitor to the continued development and economic growth of African American small businesses was the Digital Divide. As with the other aspects of African American everyday lives, these organizations stressed that a chasm in access to and use of business technology existed between African and European American-owned small businesses in this country (Boyd, 2002; Brown, 2000; Business Technology Editors, 1999; COMPAQ News, 2001; Crenshaw, 1999; Jordan, 1999b; McGuire, 1999; Microsoft News, 2002; Rojas, 1999; Wasow, 2002; Whigham-Desir, 2001).

According to the above experts, this Digital Divide crippled African American-owned small businesses the most in the following areas: participation in the information technology industry from both a consumer and a producer perspective and participation in e-commerce. These business specialists stated that the lack of participation in these two areas prohibited these enterprises from expanding their employee base. Participation in these economic endeavors have shown to increase revenues dramatically, thus, creating an environment that is ripe for expansion into new markets and into new areas of operation. This expansion would have led to an increase in the workforce of small businesses owned by African Americans. As the above business professionals suggest, these factors would have also had the logical outcome of decreasing the amount of public assistance that the states’ provided to individuals in the economically depressed African American communities. By creating jobs, unemployment rates in these communities would have decreased; thus, making the communities more economically independent of state funds (Boyd, 2002; Business Technology Editors, 1999; Brown, 2000; COMPAQ News, 2001; Crenshaw, 1999; Jordan, 1999b; McGuire, 1999; Microsoft News, 2002; Rojas, 1999; Wasow, 2002; Whigham-Desir, 2001).
The supposed lack of technological sophistication by African American-owned small businesses in the United States that the above observers claimed exists is very shocking. The technology marketplace expanded extensively from an industry production perspective throughout the 1990s and the first several years of the 2000s. Businesses spent huge amounts of their revenue on these products during this period. From 1990 to 2000, the production of computers, communication equipment, and semiconductors went from around 5% to 38%. The output growth (production of computer related technology) of the Information Technology (IT) industry from 1994 to 2000 escalated from 12% a year in the early 1990s to around 40% a year from 1994 to 2000 (Minority Business Development Agency, 2001; United States Department of Commerce, 2000). These increases continued at the same rates in the first year or so of the 21st Century.

A direct correlation existed between consumer and business demand for this highly specialized technology and the above increase in total technology production. As far as the common consumer is concerned, the United States had an estimated 40.8 million broadband Internet subscribers by the end 2004—a 10.5 million increase from the projected 2003 totals. Researchers also estimated that IP-Related traffic would increase from .5 exabytes (one exabyte = $2^{60}$ bytes) in 2000 to a projected 11.4 exabytes by the end of 2005. Consumer demand for wireless services is also expected to increase in the years to come. By the end of 2004, the United States had an estimated 203 million wireless telephone subscribers—an increase of 49 million users from the 2002 totals and a 25
million user increase from the projected end of the year totals for 2003 year (Minority Business Development Agency, 2001).

Business demand for technology also increased. Real business investment in software went from $28 billion in 1987 to $149 billion in 1999 (United States Department of Commerce, 2000a). If the information technology equipment or hardware component is considered, business investment in technology escalated even more dramatically. Between the years of 1995 and 1999, real business total investment in information technology increased from $243 billion to $510 billion (United States Department of Commerce, 2000a). In 2000, one source estimated real business total investment in technology at $520 billion (United States Department of Commerce, 2000a).

Large firms were not the sole contributors to these huge technology expenditures. Small businesses in the United States also contributed significantly. From 1997 to 2002, small business investment in information technology increased by $25 billion (United States Small Business Administration, 2000b).

Though there were significant decreases in business demand for computer and information technology from 2001 to 2003, it was by no means significant enough to assert that the vast majority of the businesses in the United States had stopped actively participating in the technology revolution. Technology experts and economists stress that this slow down was due to the dire state of the economy—an economy that caused many would-be technology buyers and investors in the business world to either hold on to their money or simply buy modest upgrades for the technology they already owned. The positive improvements that the economy had in the last several months of 2003 caused many experts to predict a sharp increase in business technology demand and production
for the next several years (United States Census Bureau and United States Department of Commerce, 2001a; 2001b; 2001c; 2002a; 2002b). According to the analysts at the Microsoft Corporation (2002a; 2003c), companies like Radio Shack, Wal-Mart, General Motors, FedEx, Motorola, Sprint, and UPS are expected to triple their technology purchases over the next five years in order to continue to improve their business-related processes. By 2010, according to one estimate, total real business investment in information technology alone should be around $977 billion (Minority Business Development Agency, 2001; United States Small Business Administration, 2003a; 2003b; 2003c).

Technology related dividends in the information technology industry would not be relegated to huge firms. Smaller firms will also provide technology related services to consumers. In rural areas in Alabama, Tennessee, and Mississippi, government subsidies allow small firms of Internet Service Providers (ISP), wireless telephone providers, and computer manufactures to provide the technology needs for the people in these communities (Duncan & Culver, 2000; Tennessee Regulatory Authority, 2000; 2001). These enterprises are usually able to gain a significant portion of the market share in these rural communities. The reason for this outcome is that from a cost perspective it would be a greater economic burden for larger firms to provide these services in these areas due to the lack of a preexisting technology infrastructure. Small businesses garner greater governmental subsidies and other forms of support than larger firms for technology related enterprises. Because of these factors, small businesses, according to one estimate, produced over 70% of the new information technology jobs between 1992
and 1996. Industry experts expect this trend to continue throughout the first decade of
the twenty first century (United States Small Business Administration, 2000b).

The negative effects that a possible Digital Divide might have on small business
participation in the ever-expanding information technology service marketplace are not
the only technology related concern. Business experts also claimed that this lack of
digitization prevents African American-owned small businesses from fully participating
in e-commerce. The revenues generated by e-commerce in the United States over the last
decade support the importance of e-commerce as a selling and a purchasing tool for
products and services (United States Department of Commerce, 2000; Ward, 2003).

Private estimates of e-commerce in the fourth quarter in 1999 revealed around $14 billion
in business-to-consumer e-commerce revenue in the United States. In the fourth quarter
of 2003 alone, Bizarte.com made $18.35 billion in online sales—an increase of 22% from
the entire online sales figures for the company in 2002 (Cummings, 2003). In the
business-to-business aspect of e-commerce, this method garnered $671 billion in revenue
in the United States in 1998. By the end of 2003, one government agency estimated that
business-to-business e-commerce generated $2.8 trillion. By end of 2010, this form of
commerce will yield, according to one estimate, $3.2 trillion (United States Department
of Commerce, 2000).

A breakdown of these e-commerce numbers on a small business level further
illustrates the economic importance of e-commerce to businesses in the United States. In
1999, business-to-consumer e-commerce sales of small businesses were $33.1 billion.
By the end of 2000, small businesses generated $61 billion in business-to-consumer e-
commerce sales (United States Small Business Administration, 2000b). Small
businesses’ revenue production in this aspect of e-commerce should continue at the same rate until 2010. Business-to-business e-commerce generated fewer funds than business-to-consumer e-commerce over this period. According to one estimate, in the year 2000, small businesses in the United States only produced $23.5 billion from this form of commerce. The data suggests that this form of commerce will increase by only 10% a year for the next ten or so years. Collectively, research suggests that small business in the United States shall generate at minimum 30% of their annual incomes online throughout the first decade of the 21st Century (United States Small Business Administration, 2000b).

The enormous amount of technology related purchases by business in the United States, the numerous opportunities for small businesses to participate in the information technology industry, and the e-commerce statistics are powerful indicators that technology equality is a necessity for African American-owned small businesses if they hope to compete on an equal footing with European American-owned small businesses. Technologicalization of African American-owned small businesses and the economic vitality it will produce might cause more jobs to become available to the economically depressed African American communities throughout the nation. This could have the effect of continuing the decline in the poverty levels that grip both the inner cities and rural areas of the United States that this ethnic group dominates. However, there have to be meticulous examinations of the technological readiness of African American-owned small businesses besides the above-mentioned conjectures of industry leaders and African American spokespersons. This is particularly true for regions in the South that have
historically had the largest concentration of African Americans and the highest poverty and unemployment levels in the United States.

**Justification**

In the 1990s, studies done by organizations like the National Telecommunication and Information Administration (1995; 1999; 2000a; 2000b) and the United States Department of Commerce (1997; 2001) illustrated that a Digital Divide in technology access and use existed between African and European Americans. Only a few studies have attempted to analyze this issue in the small business arena. An examination of over 1000 databases from a variety of government agencies, newspapers, and privately owned organizations revealed only eight studies that analyzed the pervasiveness of this phenomenon in the small businesses environment in the United States. These studies had several limitations. None chose to examine closely states in the South, which have the highest concentration of African Americans, the highest poverty levels, and the highest unemployment levels in the United States. These studies did not collectively examine the effect that the most utilized predictors of the Digital Divide—age, race, educational level, economic status, and the presence of a business technology infrastructure—had on the level of technology access and use of the small businesses in the United States (National Telecommunication and Information Administration, 1995; 1999; 2000a; Northern Virginia Community College, 1998; United States Department of Commerce, 2001). Only three analyzed the effect that race had on technology access and use—a predictor that Digital Divide experts over the last decade have stressed is the most significant determinant of the level of technology access and use (Haythornthwaite, 2001;
Hoffman and Novak, 1997b; 1998; 1999). Small businesses’ use of technology to
design and to produce products and services from a manufacturing perspective was not
analyzed by these studies (Halligan, 2002; Hammers, 2002; Honda and Martin, 2003).
Utilization of inferential statistical procedures that are designed to both test for
differences among variables and to allow for results to be generalized to a larger
population were not utilized by these studies.

Statement of Purpose

Considering the above deficiencies in the available research on the existence of a
possible small business Digital Divide in the United States, the South, and Mississippi in
particular, this study addresses these needs. The study provides the first statistically
concrete answer to whether a Digital Divide exists between the small businesses owned
by African and European Americans. Therefore, the purpose of this study was to
determine through a multivariate inferential statistical analysis (MANOVA) if a Digital
Divide in access to and use of telephone, Internet, and computer related technologies
existed between African and European American-owned small business in Mississippi—
a state that has one of the highest poverty rates (17.1%) and one of the largest African
American populations (36.3%) in the United States (United States Department of Census,
2002). Since the vast majority of Mississippi is still essentially rural with an agriculture-
based economy and therefore might not have the need for extensive or basic technology
access and use, this study analyzed the presence of a possible Digital Divide in the small
business communities of the two largest cities in this state—Jackson and Gulfport. These
cities have widespread non-agriculture-based economies that extensively use a variety of
technological advancements (United States Small Business Administration, 1999c; 2001g, 2003c). These cities also have a wider range of extremes for the variables under analysis than the rural areas—areas characterized by poverty, unskilled labor, and rudimentary education. This wider range will contribute to a more robust investigation of African and European American access to and use of technology on a small business level in Mississippi.

**Hypotheses**

This study had five primary hypotheses. The first \( (H_1) \) is that there will be a statistically significant difference in the level of access to and the level of utilization of all the telephone, computer, and Internet related technology access and utilization variables on the race variable. The second hypothesis \( (H_2) \) is that there will be a statistically significant difference in the level of access to and the level of utilization of all the telephone, computer, and Internet related technology access and utilization variables on the business gross income variable. The third hypothesis \( (H_3) \) there will be a statistically significant interaction between the race variable and the education variable, the age variable and the education variable, and the age variable and the income variable. The fourth hypothesis \( (H_4) \) is that there will be a statistically significant difference in the level of access to and the level of utilization of the all the telephone, computer, and Internet related technology access and utilization variables on the education and the age variables. The fifth hypothesis \( (H_5) \) is that there will be a statistically significant difference in the level of access to and the level of utilization of the all the telephone,
computer, and Internet related technology access and utilization variables on the e-commerce strategy and the business technology plan variables.

Limitations

As with any research endeavor, there were limitations. From a research perspective, there were five limitations to this study. The first of which was generalizibility. The issue of generalizibility was in question in this study on two grounds. The first of which was more generic—the idea of any sample being truly representative of a given population. As with any statistical procedure, there is no foolproof guarantee that the sample taken is truly representative of the entire population from which it was drawn (Knapp, 1998). There will always be outliers, either extreme or mild, within a given population. The only thing that a researcher can do is to make sure that the generalizable population’s characteristics are defined precisely and that they are robustly prevalent in the sample. If this is done and only a few outliers are present, they may be simply disregarded as being anomalies. However, if a significant number of outliers are prevalent, it is an indication that their might be more than one population within the sample, thus, they should be closely scrutinized to determine what characteristic or characteristics make them different from the other individuals sampled. Once the distinguishing characteristic or characteristics are ascertained then a researcher would ideally do separate analyses on these two populations on the variables under consideration, thus, producing generalizable results for each individual population. As it relates to this study, only a few extremely mild outliers were prevalent; thus, this
researcher is confident that the results obtained were generalizable to the population from which it was taken.

Beside the outlier aspect of generalizibility, there was another as it pertains to the sampling procedure used in this analysis. The sample was randomly taken from the small business communities in the two largest cities in the state and not from the more rural regions in Mississippi such as towns like Itta Bena and Tchula. This limits the generalizibility results as it pertains to the entire state. However, it should be stressed that in those smaller rural areas the vast majority of the small businesses are *mom and pop* operations. These enterprises do not have the budgets, the employees, or the need that would indicate that they would have access or utilize technology on a large scale.

Therefore, a quantitative analysis of the variables contained in this study would be a fruitless undertaking in the more rural areas of Mississippi. For these more rural communities, a qualitative approach to the Digital Divide in small businesses would produce results that are more profitable. By sampling the two largest cities in the state, however, a broader economic, social, and educational spectrum was analyzed. Therefore, the generalizable populations in this study were the cities from which the sample was taken.

The second limitation of this study is the experimental point system utilized to give value to the categorical access and utilization data analyzed using the MANOVA. Historically, descriptive statistics have been used to investigate the Digital Divide phenomenon because the data itself caters to this form analysis. The author of this study only tested the point system on thirty datasets of a variety of Digital Divide variables before utilizing it in this study. As with any innovation, additional experimentation and
research replication is the only mode to test whether this system will continue to produce consistent results when using the MANOVA.

The measures used to compute the Digital Divide are the third limitation of this study. Access and use of telephone, Internet, and computer technologies are not the only significant means to measure the Digital Divide in the small business arena. An equally important measure of the Digital Divide, according several business technology experts, is the number of hours of technology training that employees received on the job (Baraban, 2005; Ference, 1997; Hammer, 2002; Murphy, 2002; Page, 1998). Others might stress that the access and use of technologies such as product transport vehicles (dolly, wheelbarrow, delivery truck, or express delivery services) or gas powered torches are prudent measures of the Digital Divide (Lankford, 2001; Moran, 2005). These are important variables as it pertains to technological sophistication of a given business, but as with every aspect of Digital Divide research, there are no set measures of this phenomenon. It is incumbent on the researcher to know the character and needs of the environment in which he or she is investigating to determine which variables would be most advantageous to measure the Digital Divide. From the perspective of this researcher, the access and utilization variables contained in this study are relevant to the economic, the labor, and the industry characteristics that have dominated small businesses in Mississippi over the last decade. Therefore, they were more than valid as a means to determine the existence of the Digital Divide.

Another limitation of this study was Hurricane Katrina. This act of nature destroyed a large percentage of the businesses in the cities that were under investigation in late August of 2005—the time designated for this study’s surveys to be returned
(Cornwell, 2005; Copeland and Eisler, 2005). It was estimated that in certain sections of Gulfport, Mississippi over 70% of the business were destroyed (Raine, 2005; Dembski, 2005). In Jackson, Mississippi, some estimate that over 20% of certain business districts were crippled critically (Nossiter, 2005).

This adversely affected the return rate for the 443 business technology surveys, 243 to Jackson and 200 to Gulfport, that were mailed to a sample population that had previously agreed to participate in the study. Hurricane Katrina caused a 13.58% return rate for Jackson and a 9.5% return rate for Gulfport. With the low response rates, in particular for Gulfport Mississippi, ideally, additional surveys would be mailed to a new sample (Gay and Airasian, 1996; Frankel and Wallen, 2003). After contacting several of the respondents that did not return their surveys from both areas and the Mississippi Development Authority, it was ascertained that it would take months to reopen the businesses that were only damaged mildly and years, if ever, to reopen the ones that the hurricane totally or critically damaged. The author decided that the present sample was robust enough in the characteristics of the small business population still in operation that the results produced would still be generalizable and pertinent to the small business communities in both cities.

The final limitation of this study was the statistical power of the MANOVA to yield statistically significant differences if they were present. A power analysis (MINISIZE) was done on the results that the MANOVA yielded. This procedure revealed that the sample size utilized in this study did not provide enough statistical power for the MANOVA to detect statistically significant outcomes on five of the six independent variables analyzed in this study—race, age, education, gross income, and
technology plan—at the .001 Alpha Level utilized in this study. However, upon examination of the estimated nondirectional probabilities for each variable with the minimum required sample sizes, this researcher determined that for the race, education, and gross income variables statistically significant outcomes would still not have been yielded at the conservative Alpha level that this study used. Moreover, the age and the e-commerce strategy variables only barely reached the criteria for statistically significant differences yielding nondirectional probability estimates of .0009 and .0008 respectively. Therefore, this researcher is confident in the results that the MANOVA yielded considering the medium to large effect sizes that these variables had.

Despite these limitations, however, this researcher stresses that this study is step in the right direction to determine whether a tangible difference exists in the realm of technology access and use between African and European American-owned small businesses in Mississippi—an area of investigation that is still in its infancy. It could possibly help answer the question of whether variables like race, age, educational attainment, income level, and the other independent variables analyzed in this study really determine whether a small business exists in the technology have-nots or have-nots side of the Digital Divide equation. Moreover, the results of this study might lead to a more thorough understanding of technology and its application in the small business environment in Mississippi. This understanding could lead to technology suggestions that could increase the overall economic productivity of these enterprises, which in turn could raise the economic vitality of the communities in which these businesses operate.
Definitions

Due to the complexity of the issue known as the Digital Divide, it is necessary to define several key technology, economic, social, and business terms that appear throughout this text. The first of the technology terms is Digital Divide. For the purpose of this study, this is defined as the unequal access to and utilization of telephone, computer, and Internet related technologies along racial lines. Another term that appears throughout this text is telephone. This word is defined as an instrument or tool used for sending and receiving sounds or video over long distances with the use of electricity. Computer is another important technology related term that appears in this text. A computer is defined as a programmable electronic device that can store, retrieve, and process data.

The term Internet in this study is defined as a global network of computers throughout a hundred countries in which each computer on this system is independent of the others. The Internet’s counterpart is the intranet—a word that is defined as a private network based on the communication standards of the Internet. The other technology related term that appears in this text is Local Area Network or LAN. A LAN is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area such as within an office building or a computer lab. The server has applications and data storage that are shared in common by multiple computer users. A LAN may serve as few as two or three users or as many as three thousand users. The final technology term prevalent in this text is server. As it pertains to a Local Area Network, the term server, in this text, is defined as a computer running administrative software that controls access to
the network and its resources and that provides resources to computers functioning as workstations on the network.

Other terms that appear in this text are economic terms. The first of these is e-commerce. A significant number of the published reports define this term broadly as any transaction accomplished over a computer mediated networks (Intranet, Electronic Data Interchange Systems or Internet) that entails the transfer of ownership or rights to use goods or services. Based on this broad definition, these transactions include those that might not have a price tag assigned to them, such as the download of software or documents, the transfer of customer lists, the sending and receiving of ordering information, and the exchange of delivery and payment information (Atrostic, Gates, & Jarmin, 2000; Humphrey, 2002; Kim, 2001; Mesenbourg, 1999; Stehling & Moormann, 2002). However, the focus of this study is narrowly interested in the electronic purchasing and selling of goods and services over the internet as a means to measure the e-commerce. The reason for this is that past studies have shown that a vast majority of the small businesses in the United States that participate in e-commerce, unlike larger firms, only use it as a means to sell and to purchase products. It was not used for the more complicated nuances that the above definition insinuates (Akbulut, Boone, Ramachandra, Sick, & Nuramandu, 1999; United States Small Business Administration 2000a; 2000b).

E-commerce in this study is defined as the electronic selling and purchasing of goods or services over the Internet (Kim, 2001). As far as e-commerce’s components, business-to-consumer and business-to-business, their definition is akin to the previously defined e-commerce definition (Kim, 2001). Business-to-consumer e-commerce is
defined as the purchasing and selling of goods and/or services to non-business consumers over the Internet. Business-to-business e-commerce is defined as the purchasing and selling of goods and or services over the Internet to other businesses (Kim, 2001).

Besides the above technology and economic terms, there are sociological terms in this text that have some extreme complexity. The first of which is the term *African American*. This word is defined as people living in the United States who are of African descent—also known as *Black*. Despite the fact that United States Census Bureau in many of its reports defines this term as those of African descent who are born in the United States, the architect of this study used the previous stated definition based on the United States Small Business Administration’s recommendation. This organization states in the vast majority of its briefs that both U.S. born African Americans and those of African ancestry that immigrate from Africa or Europe who are small business owners in the United States have the same basic economic and worker related characteristics. Therefore, to group these two factions separately would have shown little or no difference from a research perspective (United States Small Business Administration, 1998a; 1999d; 2001h). *European American*, another essential sociological term that dominates this text, is defined as any native born person in the United States who is of European origin—also known as *Caucasian* or *White*. This definition comes directly from the classification scheme of the United States Census Bureau. Unlike African American, the United States Small Business Administration in many of its studies have ascertained that the essential economic and worker characteristics are not the same for United States born Europeans and those born outside of the United States. Therefore, to
group these two groups together in a research endeavor would not produce generalizable results (United States Small Business Administration, 1997; 2001). The final sociological term that appears in this text is *minority*. This term is defined as any race in the United States that is not a part of the European American majority.

The final terms utilized throughout this text are business-related. The first of these is *minority business*. This term is defined as a business owned by a person in an ethnic group in the United States that is not a part of the European American majority (United States Small Business Administration, 2001). Another term in this category is *African American-owned Business*. This term is defined as any business in the United States in which a minimum of 51% of its stock is owned by a person of African ancestry (United States Small Business Administration, 2001). *European American-owned Business* is classified as any business in the United States in which a minimum of 51% of its stock is owned by a native born person in the United States that is of European ancestry also known as Caucasian (United States Small Business Administration, 2001).

A key point must be made about the definitions of African American-owned small businesses and European American-owned small business used in this study—they were modified depending on the nature of the small business chosen for the sample. For instance, in the case where there was no one person that owned the required 51% of the company then a different the classification scheme was used. If there was a single person that held largest portion of the business’s stock, then the business was classified based on that person’s race. However, if there was a situation where the businesses was owned equally by a number individuals, then the classification of the business was based on the race of partner who was considered as the Chief Executive Officer (CEO) or Chairman of
the Board Directors of the business—the person that is responsible for the daily operation of the business.

The final business-related term that appears in the text is *small business*. The quest to develop or to discover a definition of this term as it pertains to Mississippi was a difficult task. Mississippi is one of a few states in which the state’s small business environment, as a field of research, has not been extensively investigated. Those that have attempted to investigate it made no effort to establish a definition for this term as it relates to the whole state. The only option for developing a definition for this study was to consult the available literature on the subject from a national perspective.

A search of over 3000 small business-related studies revealed no one consensus on the definition of this term as it relates to the United States. Some studies suggested that regardless of the region of the country a small business in the United States should be defined as a firm that has no more than 100 employees (Wiatrowski, 1994). Others stated that a small business should be defined has a business that had less than 200 workers (Dickerson and Lee, 1999). Other studies suggested that a small business in the United States is one that has no more that than three workers (Dunn & Bradstreet, 1998).

Considering the prevalence of these conflicting definitions of the term *small business*, the only outlet that a researcher has to call upon to develop a creditable definition is the United States Small Business Administration (USBA). According to several of their reports done between 1997 and 2002, a *small business* is defined as a firm that has fewer than 500 employees (United States Small Business Administration, 1998a; 1999d; 2001h). In the USBA’s most recent small business profile of Mississippi, it used the “less than 500 employees” definition when it described the basic characteristics of
small business in this state (United States Small Business Administration, 2002). To maintain consistency with this federally sponsored organization, the term *small business* in this text is defined as a business in the United States that has fewer than 500 employees.
CHAPTER II

REVIEW OF LITERATURE

Summary

This chapter examines the eight studies found that measured the business technology access and use of small businesses in the United States. It discusses the results that these studies revealed about the technological sophistication of the small businesses sample across a variety of demographic categories. This chapter compares these results to the outcomes yielded from the most cited technology studies that organization like the National Telecommunication and Information Administration and the United States Department of Census have published over the last decade. This chapter also examines the methodological weaknesses that the aforementioned small business studies had.

Digital Divide

The term Digital Divide or Technological Apartheid, as many African American leaders have referred to this phenomenon, is a word that sends chills of racism streaking throughout the African American communities in the United States. It brings to mind images of lynching in the South in the early 1900s, political exclusion, and most horrid Jim Crow (Smiley, 1997; 1998; 1999). The Digital Divide, a term that was first coined
in 1991 by the then president of the John and Mary Markle Foundation Lloyd Morrisett, has come to represent, in the minds of many African American leaders, another attempt by the European American power structure to establish a *New Color Line* grounded in technological exclusion (Smiley, 2000; Hoffman & Novak, 1999). This technological deprivation has led many of these spokespeople to assert that the hi-tech driven world of the 21st Century is a *Closed Society* that African Americans are forbidden to enter (Silver, 1963).

In no other region of the United States has this technological *Closed Society* shown itself to the extent that it has in the South—an area that contains 54.8% of the African American population that exists in the United States (United States Census Bureau, 2000b; 2001f; 2002b). It has been well documented over the last several years that the South trails the rest of the nation in Internet use in the home and outside the home by 23.6%, and 27.7% respectively (Duncan & Culver, 2000; National Telecommunication and Information Administration, 2001).

A big reason for this technology gap, according to numerous researchers, is that the vast majority of the South’s large African American population does not have access to the tools of the information age and that they are also technologically illiterate (Gwin & Gwin, 2000; Kenard, 2001). Reports indicate that in some areas in the South European Americans’ level of technology literacy and access is almost three times that of African American’s (Tennessee Regulatory Authority and the Tennessee Department of Education, 2001). In the Black Belt—regions in Mississippi and Alabama that have historically had large African American populations—African Americans are almost five
to six times less likely to be technology literate or to have access to technology than European Americans (Burnham, 1997; Tennessee Regulatory Authority, 2001).

A logical outcome of this lack of technological sophistication is that it prevented African Americans in the South from partaking in the ever-expanding technology job market that dominated the late twentieth and early twenty-first centuries. Some theorists stress that this is one of the primary causes of the elevated poverty rates for African Americans in the South when compared to African Americans in other regions of the country (Kenard, 2001). In the South, these poverty rates fluctuate between 36% and 40% compared to the between 15% and 20% for this ethnic group that reside outside of the South (Kenard, 2001; United States Census Bureau, 2002a; 2002b).

The high poverty levels that grip the African American population in the South were major contributors to the South’s total poverty rate of 13.5% in early 2000 (United States Census Bureau, 2002a). Considering that the poverty rate in the Midwest was only 9.4%, in the Northeast was only 10.4%, and in the West was only 12.1%, the poverty rate in the South is rather elevated (United States Census Bureau, 2002a). The poverty levels are an indication that the South was not a very economically viable environment for its inhabitants—in particular its African American inhabitants (United States Department of Commerce, 2002; Kenard, 2001).

The huge technology chasm between southern African and European Americans, between the South and the other regions in the United States, and its possible economic byproduct has caused numerous researchers to state that the South’s African American population needs to become technologically sophisticated Hampton & Wellman, 1999;
These researchers stress that this has to occur if this region ever hopes to produce a technologically sophisticated workforce—a workforce that could receive dividends from a technology market place that has produced at minimum $500 billion a year since 1998 (United States Department of Commerce, 2000a; International Technology and Trade Association, 2000). The development of this type of workforce would have the logical outcome of maximizing the economic potential of Southern states in the technologically driven employee marketplace of the 21\textsuperscript{st} Century. Without this achievement, it would be impossible for the South to thrive as a producer of products and services in a globalized consumer market place that is increasingly becoming e-commerce centered (Doolittle, 2002; Kenard, 2001; Mesenbourg, 2001).

In no state in the South does the above characterization hold as true as it does in Mississippi. This state, which has the second largest concentration of African Americans in the United States at 36.3\%, has consistently been at the bottom rungs of American society as it pertains to technology adoption in its African American communities (Doolittle, 2002; United States Census Bureau, 2001f). Be it in the schools, the work place, or at home, African Americans in Mississippi have access to and utilize technology much less than European Americans. African American leaders in this state summarize that this lack of technology adoption is probably the most important reason that Mississippi is tied with Arkansas for the second largest poverty rate in the nation at 17.1\%, an estimate that is expected to increase to 35\% by the end of 2006 (Doolittle, 2002; Gwin & Gwin, 2000; United States Census Bureau, 2001; 2003). If the total
poverty number is broken down along racial lines, African Americans that exist at or below the poverty line range from 30.5% to as much as 34.4% in places like Jefferson, Holmes, and Sharkey counties—all of which have African American populations that exceed 69% of their totals. This is a sharp contrast to the estimated 15% to 20% of the European American population in the same counties (Doolittle, 2002; Gwin & Gwin, 2000; United States Census Bureau, 1998).

Small Business Technology Studies

Though African American leaders in Mississippi, the South, and the nation as a whole have shown great concern for the level of digital exclusion that exists in the everyday lives of African Americans and its probable economic aftermath, they have begun to focus more intensely on how this phenomenon affects African American-owned small businesses. Since the success of these enterprises in a given region have shown to create jobs for the unemployed, thus economically uplifting the areas in which they operate, these leaders conceive that a major method to help cure the economic problems of African Americans in the South is to elevate the technology readiness of this ethnic group’s small business enterprises. Unlike the Digital Divide that exists in the everyday lives of this ethnic group, there are not numerous studies, reports, and articles analyzing technological exclusion in the business arena. From examining numerous databases, it became apparent that the first extensive studies of technology in small businesses began to appear in the late 1990s. A joint effort between the Arthur Andersen’s Enterprise Group and the National Small Business United Organization (1998) produced the first of these studies. The primary focus of this study was Internet utilization by companies that
already had Internet access. This analysis stressed that the most popular use for the Internet by the 504 small businesses it polled was e-mail and research. As far as e-mail is concerned, this study found that 50% of the small businesses polled used e-mail for business-related purposes compared to 35% that used messaging services to send personal messages. This study also found that 47% of the small business polled used the Internet for research purposes.

Besides e-mail and research, this study also analyzed the use of the Internet for webpages, for recruitment of employees, and for e-commerce activities like online transactions and ordering. Of the companies polled, 23% had a Web page and 4% used the Internet to recruit employees. This research endeavor found that only 22% of the small businesses enterprises polled used the Internet to do online transactions. Only 19% of the companies polled used the Internet for placing orders (Arthur Andersen’s Enterprise Group and the National Small Business United Organization, 1998).

From a business utilization perspective, it is very apparent that on several levels the businesses polled did not maximize all the functional capabilities of the Internet. The lack of webpage utilization by over 78% of the businesses polled was very surprising. Access to a company webpage, by this time, had shown itself to be a valuable resource for a business. The technology research community had also established the importance of a webpage as a tool for the advertisement of products and services and for providing customers with answers to the most frequently asked questions concerning a particular good and or service (Attard, 2000; Silverstein, 2001). Information technology specialists and technology planners had also established the Internet’s important role in providing a
mode for customers to communicate to a business their needs and expectations for products and services (Alexander and Tate, 1999; Eccher, 2002).

The large percentage (59%) of the sampled small businesses that did not participate in e-commerce related activities such as online transactions and online ordering is an indication that these businesses might not have realized the potential of the Internet as a mode to sell products and services. It had been well documented by business technology specialists like Reynolds and Mofazali (2000), Carroll (2001), Chan, Lee, Dillon and Change (2001), Rayport and Jaworski (2001), McLaren and McLaren (2002), and Laudon and Traver (2003) that e-commerce by the late 1990’s had become one of the principle modes that consumers used to purchase goods and services in the United States. These authors stressed that by the late 1990s e-commerce had shown itself to be the primary mode in which American companies in the 21st Century would sell products and services—an assertion supported by the $1 billion in holiday business-to-consumer e-commerce sales that the business community in the United States garnered in 1997 (United Stated Department of Commerce, 2000a).

Another area of concern is the large number of small businesses (96%) that did not use the Internet for employee recruitment. As early as 1997, the potential of the Internet as a mode to recruit workers was well-publicized. The literature of the time indicated that Internet access in the United States had increased by 45% from 1995 to 1997—a sign that the Internet could be an inexhaustible source of potential workers. Online job hunting strategists such as Dixon (2000), Graber (2000), and Nemnich and Jandt (2000) stress that online resume banks had been in high use since 1996. These
experts also assert that online career websites, job listings, job discussion groups, and resume posting services had been in extensive use on the Internet since 1997. The above authors conclude that by the late 1990s the Internet had shown itself to be the primary source that employers of the 21st Century would utilize to find their needed workforce be it a workforce with specialized training or manual laborers.

Goldberg (1998) also conducted one of these earlier small business technology studies. This study not only analyzed Internet utilization but also small business overall access to the Internet. This report found that 40% of the 50,931 small businesses it sampled log on to the Internet—a figure that is very comparable to national Internet access rates during the late 1990s (National Telecommunication and Information Administration, 1999). The report also found that only 2% of the small businesses polled used the Internet for technical support—that is obtaining information about how to correct errors that their equipment produced or to receive technical help to make a particular piece of machinery do a desired function. The study found that only 18% of the small businesses surveyed used the Internet for e-mail. This study also revealed that 19.3% of the respondents used the Internet for business home page usage. Only 1.4% of the small businesses polled used the Internet for e-commerce activities. Like the previous mentioned study, the highest percentage for utilization resided in the realm of research—35.4% (Goldberg, 1998).

Like the study done by Arthur Andersen’s Enterprise Group and the National Small Business United Organization (1998), the Goldberg (1998) study’s result shows that on several levels the businesses it sampled with Internet access did not realize the
full potential of this mode of communication. The vast majority of the sampled companies, 98% to be exact, with Internet access did not use the Internet for technical support. This is a surprisingly high number considering that by late 1997, one report suggests that over 97% of the fortune 500 companies and 45% of large firms had some form of online support for their goods and or services (National Telecommunication and Information Administration, 1997). The lack of utilization of this service by the small businesses sampled could have possibly slowed down their productivity. The valuable person-hours that these businesses might have been spent trying to contact specified companies over the telephone about the utilization of a purchased product could have been utilized in other areas such as in product development, production, and marketing (Bredin, 2001).

Other elements of lost Internet potential in this study resides in the following areas: e-mail utilization, webpage ownership, and e-commerce participation. Over 82% of the small businesses with Internet access did not use it for e-mail, 80.7% of this grouping did not have a business webpage, and 98.6% of the Internet users did not participate in e-commerce related activities. Considering that several of the National Telecommunication and Information Administration’s studies (1999; 2000) indicate that e-mail use among citizens of the United States with Internet access was around 95%, the lack of e-mail use by the small businesses in this study is shocking. The ease in which e-mail can allow for almost instantaneous communication be it within the office or with retailers or customers thousands of miles away causes this lack of e-mail utilization to be even more disturbing. These utilization percentages indicate that the businesses in this
study were not receiving the full benefits that this Internet utilization tool offers (Tedeschi, 2003).

As stated earlier with the study done by Arthur Andersen’s Enterprise Group and the National Small Business United Organization (1998), the relative low occurrence of business web-page access and e-commerce is also disturbing. Webpages had shown themselves to be viable tools for both advertisements and for customer service related activities since the mid 1990s (Alexander and Tate, 1999; Attard, 2000; Eccher, 2002; Silverstein, 2001). Some estimate that Internet utilization for both customer service and advertisement activities had increased business-related revenues by as much as 200% between 1995 and 1998 (Eccher, 2002). As with the breakdown of the Andersen’s Enterprise Group and the National Small Business United Organization’s (1998) study, the miniscule level e-commerce activity is also deplorable considering huge revenues that companies garnered from Internet related sales in the late 1990s (United States Department of Commerce, 2000a).

Dun and Bradstreet Small Business Solutions (1998) also conducted a study of the technology aptitude of small businesses in the United States. The primary focus of this study was also on the access and the use of Internet related technologies. The architects of this study found that 47% of the small businesses it polled had Internet access. Of those with Internet access, 35% maintained a company website. Of those with a website, one out of three, or 33.33%, of these businesses conducted transactions through their website.
The Internet access and use percentages presented in this study were not exorbitant. However, they were extraordinarily high when compared to the technology percentages in the same categories in the two previously discussed studies. However, certain these percentages, as with the earlier two studies, do indicate that the small businesses sampled who had Internet access on a whole did not fully capitalize on the total functionality of this tool, in particular as it pertained to web-page access and e-commerce participation. Approximately 65% of the sampled small businesses did not have a website and 66.67% did not conduct transactions or e-commerce through their website. As stated earlier, these numbers are a powerful indicator that the vast majority of the small businesses under analysis were not reaping the maximum benefits that these two Internet functions can produce. The advertisement of products and or services and the selling of goods and or services to an almost unlimited consumer base that the Internet can provide was simply an untapped resource by the small businesses sampled (Cooper, 2003; Information Gatekeepers, 2001a; 2001b; Sherman, 2003).

Though the previous three studies did a great deal to enlighten the business community about the lack of technological sophistication of small businesses in the United States, they were by no means the most prominent done during the late 1990s. A joint effort between IBM and the United States Chamber of Commerce (1998) produced the most prominent study of small business technology. Among other things, this study examined the use, access, and the perceptions of technology by small businesses in the United States. Of the businesses sampled, 90% of the small businesses used technology for things such as billing, accounting, and finance. As far as technology access was
concerned, 96% of the businesses polled owned a personal computer. Of those that had computers, 83% reported that they had a modem and a CD-Rom drive. Of the small businesses that participate, 67% had access to the Internet. However, only 24% stated that their companies had a company website (IBM and the United States Chamber of Commerce, 1998).

This study also examined the extent in which the businesses polled utilized the Internet. Of the companies with Internet access, 30% used it to promote their services. An even larger percentage, 49%, used it to find out about potential customers. The study also revealed that 69% of the companies polled used the Internet to answer specific questions that they might have had on a subject. Furthermore, 85% of the small businesses polled used the Internet for e-mail—be it business-related or personal correspondence (IBM and the United States Chamber of Commerce, 1998).

Another essential aspect that this study analyzed was the prevalence of e-commerce related activities. Only 25% of the small businesses polled were familiar with e-commerce. However, the study revealed that 37% of the companies using the Internet used it to do an e-commerce activity like placing orders. Of the Internet access grouping, 29% of the businesses used the Internet to receive orders from consumers. Approximately 9% of the Internet users used forms of electronic funds transfer to pay to their suppliers (IBM and the United States Chamber of Commerce, 1998).

The most vital aspects of this study reside in the attitudes about technology that it discovered concerning small business owners it sampled exhibited. Of all the small businesses that had a website, only 46% of this grouping believed that websites were
worth the time it took to develop them. Around 37% of this grouping was uncertain about a website’s value and 17% felt that these sites were not worth the time and the effort it took to develop and maintain them.

The study also exposed that small business owners sampled were very cautious when it came to purchasing technology. The vast majority of the small businesses owners surveyed, 61%, stated that they would buy technology only after it had had success for several years. Of the small business owner that had a company website, 31% stated that they would only buy technology when the prices fell. Approximately 54% of the owners declared that they would only buy a piece of technology after hearing of the experiences of others with that technology.

Besides gauging attitudes toward websites and purchasing technology, this study also gauged the following: (a) if the owners’ were in favor of technology, (b) if the owners thought that there was value in technological innovation, and (c) if the owners were confused when it came to purchasing technology. The results indicated that 47% of the owners that had a website described themselves as being in favor of technology, 47% were neutral as it pertains to the value of technology, and 5% of this grouping stated that they had concerns about the real value of technology. Of all the small businesses owners polled, 55% considered technology to be more of a cost than an investment. Of the owners with a website, 60% stated that they had some degree of confusion when it came to purchasing technology (IBM and the United States Chamber of Commerce, 1998).

These attitude percentages indicate that, on many levels, the owners of the small businesses under analysis were struggling to see the real value of technology because of
their lack of familiarity with the various Internet and computer related innovations that the technological market place was readily developing. These attitudes signaled that the small business owners lacked knowledge about the value that technology could have to a business that was trying to prosper in a technology driven economic market place that was steadily expanding its dominance over the American economic system of the late 1990s. These attitudes are the most logical cause of the rather low percentages that were prevalent in the several of the previous discussed technology use and access categories—in particular, the low levels of e-commerce participation, of Internet use for promotional related activities, and of company web-page access. These three technology categories by the time that this study was done had shown, as stated in the analyses of the previous studies, to be important modes to increase a company’s productivity and its profit margin. These potential business advancements are factors that could have aided in the desired business expansion that 83% of the small business owners in this study stated that they most wanted (IBM and the United States Chamber of Commerce, 1998).

The studies discussed to this point have analyzed small businesses’ technology use and access on a whole not considering individual demographic variables such as the gender, the age, the educational level, the economic status, and the race of the business owner. Prior Digital Divide studies over the last decade have stressed that these indicators might be significant determinants of the level of technology sophistication of people residing in the United States. Therefore, an analysis of the level of technology use and access of small businesses along these variables should logically produce some meaningful results (National Telecommunication and Information Administration, 1995;
In the early 2000s, the Center for Women Business Research (2002) produced one of the first studies to consider multiple demographic factors when analyzing the technology urbaneness of small businesses. In its survey, it analyzed the affect that the gender, the age, and the education level of the small business owners had on the level of Internet use of their small businesses.

A sample of a 1000 respondents revealed that 63% of the women owners used the Internet for their businesses compared to 62% of the men. Of the business Internet users, slightly more men than women owners had websites dedicated to their business enterprises—54% and 50% respectively. As it pertains to this sample, these numbers indicate that gender was not a significant determinant in either Internet use or webpage ownership. This result is not surprising considering that the United States Department of Commerce (2001) most recent study indicated that the level of Internet use between men and women had been relative the same between the years of 1997 and 2001.

As a farther mode to analyze Internet utilization, the Center for Women Business Research’s (2002) study also analyzed online activities of the small business owners. The activities measured were the following: (a) e-mail use, (b) transmitting files and documents, (c) conducting fact finding research, (d) collaboration with businesses partners or suppliers, (e) seeking business opportunities, (f) bidding for contracts, (g) hiring/recruiting employees, (h) conducting online meeting, (i) selling product and services, and (j) purchasing products and services.
The survey revealed that 35.54% of the women owners used the Internet for e-mail compared to 35.93% of their male counterparts. Approximately 26.56% of the women stated that they used the Internet to transmit files and documents compared to 31.51% of the men. As far as online fact-finding and research was concerned, 34.37% of the women used the Internet for this purpose compared to 38.23% of the male business owners. The female owners also used the Internet to collaborate with business partners or suppliers slightly less often than their masculine correlates—26.17% and 28.57% respectively. Females in this sample also used the Internet to bid for contracts less often than the men—15.23% and 16.48% respectively.

Women also used the Internet to hire and recruit employees slightly less than their male correlates—5.85% versus 8.82%. The men sampled also used the Internet to conduct online meetings more frequently than their female equivalents, 7.56% and 6.64% in that order. As far as e-commerce is concerned, women small business owners less frequently participated in business-to-consumer e-commerce than the men did, 20.31% and 21.42% respectively. However, women participated in business-to-business e-commerce at a higher rate than their masculine counterparts did, 29.29% and 26.47% respectively. As with total Internet use, gender of the owner in this study seemed not to be a significant determinant of the extent to which the small businesses participated in the online activities that this study analyzed.

Besides measuring the above methods of technology utilization, this study also compared the perceived benefits of the Internet along gender lines. The respondents were allowed multiple responses to the following Internet benefits: (a) easier information
gathering, (b) e-mail, (c) responding to clients faster, (d) opening more business opportunities, (e) saving time, (f) giving more time flexibility, (g) making employees more efficient, (h) saving money, (i) allowing greater mobility, (j) tracking industry trends, (k) increasing sales, (l) a wider marketing reach, and (m) tracking competitors. Both the females and the male respondents had same relative high opinion—above 40% positive response—of the value of Internet as it pertained to its ability to allow a person to easily gather information, to use e-mail, to respond to clients faster, and its ability to serve as a time saver. For female members of the sample, 61% of them felt that the value of the Internet resided in the fact that it allowed them to gather information easily compared to 55% of the males. As far as the value of the Internet as an e-mail tool, 54% females and 52% of the males believed that it was of great value as it pertained to this task. A significant portion of the women and men sampled stressed that another major incentive for using the Internet was that it allowed their small businesses to respond faster to the needs of their clients, 48% and 43% in that order. A considerable number of both sexes, 44% of the women and 46% of the men, also agreed that Internet use serves as a time saver because of its ability to provide a wide variety of services in a speedy a manner. As far as these categories are concerned, gender seemed not a determinant of how an owner responded to these Internet opinion questions—an assertion supported by the fact that none of the gender related differences exceeded 5%.

Both sexes, however, had low opinions—40% and below—of the value of the Internet as it pertained to its ability to be used as a mode to accomplish several tasks. These tasks were the following: (a) increase business flexibility, (b) increase business
opportunities, (c) save the company money, (d) make employees more efficient, (e) allow greater mobility, (f) track industry trends, (g) increase sales, (h) create a wider marketing reach, and (i) track competitors. Around 39% of the women thought that the Internet made their businesses more flexible compared to only 27% of their male correlates. In the category of whether or not the Internet opened more business opportunities, 40% of the women thought that it did compared to only 27% of the men. Only 35% of the women and 40% of the men viewed the Internet as a mode to save them money. In addition, only 33% of the females and 32% of the men perceived the Internet as an instrument that made their employees more efficient. As far as mobility is concerned, 30% of the women and 27% of the men thought the Internet allowed them to have greater mobility.

An even lesser portion of both sexes envisioned the Internet as a valuable tool to track industry trends—29% of the women and 23% of the men. As far as the Internet’s value as being able to increase business sales, a minute percentage of the males and females sampled thought that the Internet was a value in this manner, 28% and 22% respectively. An even smaller percentage of the male and the female owners thought the Internet was of value when came to reaching a wider market, 23% and 22% correspondingly. The smallest portion of both sexes viewed the Internet as being useful in tracking their competitors—approximately 18% of the women and 13% of the men.

The only Internet opinion options in this low opinion grouping that gender seemed to determine were the increased business flexibility and the increased business opportunity options—all of which had differences that exceeded 10%. The drastic
differences in attitudes toward the value of the Internet as methods to do these functions along the gender variable is very significant if these results were indicative to all small businesses owners in the United States during the late 1990s. It would mean intrinsically that the vast majority of the male small business owners, who represented the majority of small business owners in the United States, had no concept of the value the Internet as a mode to make a business more flexible. Since the mid 1990s, the increased business flexibility that the Internet provides allowed business in the United States to go from an extreme production phase of product development to the extreme market phase at any time because of this tool’s ability to provide and to dispense information globally in mere seconds (Mehling, 1999). Moreover, it would imply that this male majority did not realize how the Internet could open up new business opportunities. Since the late 1990s, there have been many examples of enterprises gaining additional profits by becoming Internet Service Provider for the communities in which they operated or by selling advertisement time on their online environment to other businesses within their communities (Clancy, 2003).

Other elements of concerned in the low opinion grouping are the fact that a significant portion of both sexes did not realize that the Internet could save them money, could increase their market share, could increase their sales, could increase the efficiency of their workers, could aid them in tracking industry trends, and could allow them to track competitors. Numerous experts over the last several years have stressed that the Internet can provide a cheaper source of advertisement for the products and or services when compared to other mediums like television or radio. It has been shown that the
Internet can quickly open up new markets for goods and or services, thus, increasing sales. Some reports reveal that this mode of communication can increase a small business market share by 24% and sales by as much as 20% over a two-year span (Mehling, 1999).

Technology specialists over the last several years have also presented strong evidence that the Internet can increase workers efficiency. It accomplishes this task by allowing them to obtain information that can aid them in accomplishing job related tasks in a speedy manner. The Internet has also proven to be a valuable asset in tracking industry trends. It provides access to thousands of industry related databases. These databases provide information about numerous business-related topics. The millions of business websites dedicated to company related information such as quarterly sales figures, number of customers, and future products and or services also allow a small business to track a competitor’s present and future moves with ease (Clancy, 2003).

Besides analyzing the affect that gender had on the above attitudes toward technology, this study also examined the extent which gender determined the level of a small business’s Internet activity—a role which was not significant. The results indicated 3% of the men and 2% of the women reported that their online activity had decreased over the past twelve months. In addition, the study revealed that over a twelve-month period only 4% of the male owned small businesses reported exponential growth of Internet activity compared to only 1% of the women. However, 17% of the female owned firms reported that their on-line activity had grown significantly over a twelve-month period compared to 16% of the men. Around 34% of the women and 30% of the
men small businesses owners reported that their businesses’ on-line activities had only somewhat grown over the last year. The most significant portion of the sampled small businesses stated that their online activity had not change over the past year—45% of the women and 43% of the men.

A correlation might exists between the of lack benefits that these enterprises were seemingly receiving from their websites and from e-commerce, the Internet utilization methods contained in the low opinion grouping, and the rather stagnant online activity rates. Over a three to six month period, this study revealed that only 22% of both the male and the female small business owners stated that their online revenues were lower than the costs for maintaining the site. Moreover, 36% of the men and 37% of the female owners stated that their websites’ cost and the revenue produced by them were the same. Only 24% and 27% of the women and men respectively declared that the revenues produced from their websites exceeded the cost for maintaining these online environments. It is obvious that on a whole the small business owners in this study were not obtaining the positive financial outcome on their investment that the technology experts stress that they should have yielded.

As far as e-commerce participation was concerned, 32% of the women and the 40% of the men participated in business-to-business ecommerce. With that said, 12% of the women and 11% of the men stated that this form of commerce accounted for less than 10% of their total sales. Moreover, 15% of the men and 11% of the women stated that this form of commerce accounted for 10% or more of their total sale. Taking into account total e-commerce sells including business-to-consumer e-commerce, 40% of the
female and 40% of the male owned small businesses polled stressed that these sells represented between 1% and 24% of their total sales. Only 10% of these businesses stated that total e-commerce comprised 25% or more of their total sells.

The low e-commerce percentages and lack economic productivity from the business websites that were prevalent in this sample are foreboding. There are two possible scenarios for this occurrence. One option is that the Internet is not as economically viable as the vast majority of reports suggest. The other option is that the small businesses that took part in this study had problems with their utilization of the Internet that prevented them from gaining the benefits that they should have obtained. The most logical explanation is the latter. The reason behind this assertion is twofold. Firstly, a significant number of small businesses during the late 1990s and early 2000s had economic gains in profits that went from 20% to as much 48% over a two-year span after the initial utilization of Internet related technologies. Secondly, these profits, in many instances, represented between 20% and 30% of these businesses’ total sales over this time span (Mehling, 1999a; 1999b; 1999e; D’Innocenzo, 2003).

Considering the drastic differences in technology related revenues between the businesses sample in this study and those that dominate the literature, what utilization problems could have cause such drastic differences in outcomes? Numerous technology reports have indicated that if Internet utilization is not taken in stages than it will not represent an economically viable alternative for a small business. Mass adoption of a series of Internet related technologies, without detailed planning for the adoption in stages, would place an economic strain on a business’s funds. The profits that this
technology will cause the company to gain over the first several years of this mass utilization would not come close to equaling the financial drain placed on the business (Mehling, 1999a; 1999b; 1999c; 1999d; 1999e).

Besides gender, this study also analyzed Internet utilization along the age demographic. As far as the age factor is concerned, this study analyzed this variable on four intervals—under 40 years of age, between 40 and 49 years of age, between 50 and 64 years of age, and 65 years of age and older. For the under 40 grouping, 23% of the women used the Internet in their businesses compared to only 19% of the men. For the between 40 and 49 years of age grouping, 35% of the men used the Internet in their businesses compared to 31% of the women. The grouping consisting of those between the ages of 50 and 64 had 38% of the women using the Internet compared to 40% of the men. For the final age grouping—those 65 and over, the study revealed that 7% of the women owners used the Internet in their businesses compared to 6% of men. These numbers indicate that as far as age was concerned, it did not determine the level of Internet use. In fact, there was virtually no difference in the Internet use of both genders regardless of the age interval examined.

In one respect, these results are very consistent with the Internet use and access numbers that were prevalent in the everyday lives of people in the United States. The studies done by both the National Telecommunication and Information Administration (1999; 2000b) and by the United States Department of Commerce (2001) showed that as far as Internet use and access was concerned there has been steady equalization in the level of access and use of this technology between the genders in the United States.
since the late 1990s. However, these results do not agree with the above studies as it relates to manner in which age affects the level of Internet usage in the following age intervals: (a) under 40 years of age, (b) between 40 and 49 years of age, and (c) between 50 and 64 years of age.

Instead of the increases that were prevalent in this analysis when going from the lower age intervals to the higher age intervals, the National Telecommunication and Information Administration (1999; 2000b) and the United State’s Department of Commerce (2001) studies show a significant decrease in Internet use for people as age increases in the years between 1997 and 2001. An examination of the Internet use rates of people at the ages 35 and 64—ages in which Haynes and Ou (2002) found that the majority of the people in the United States operate small businesses—in one of the most recent studies done by the United States Department of Commerce (2001) illustrates this point dramatically. In 1997, as much as 18.5% separated a 35-year-old person and a 64-year-old person in favor of the 35-year-old person. For 1998, there was 21% difference between these grouping in favor of the 35-year-old. In 2000, the gap had increased even wider to a 35% difference in favor of the 35-year-old. By 2001, this study revealed that the difference had decreased slightly to 29% in favor of the 35-year-old.

The most probable answer for the different flow of Internet utilization numbers between these studies and the Center for Women Business Research’s (2002) study is that maybe the members of the sample that fell between the ages of 40 and 64 in this study had been in businesses a shorter time, thus, were apart of the technological revolution that occurred in the 1990s. The fact that all the firms using the Internet were
younger than the ones that were not supports this hypothesis. Female Internet users owned their firms for an average of 13 years compared to the 18 years of operations of the female owners that did not use the Internet. For the male small business owners, the Internet users had been in operation for 16 years compared to the 20 years of those that did not use the Internet.

Besides age, this study also analyzed the affect that education had on access to and use of Internet related technologies. The results indicated that regardless of gender the well-educated small business owners were the ones that had higher levels of both access and use of the Internet. The men that had some graduate school had Internet use rate of 64.86%. Of the men that had some college, 56.14% used the Internet. For the men with a high school education or less, only 24.44% used the Internet. The education variable was an equally strong indicator of Internet use for the women in the sample. Of the women with some graduate school, 73.07% were Internet users. Moreover, 55.08% of the women with some college used the Internet. As for the women with a high school education or less, 31.37% of them used the Internet. The major digital divide studies that have been done over the last decade yielded similar result; thus, giving validity to this outcome (Harlan and Weisz, 2001; Hoffman & Novak, 1997a; 1998; 1999; National Telecommunication and Information Administration, 1995; 1999; 2000b; United States Department of Commerce, 2001).

Gender seemed to determine the level of Internet use at two educational levels—those with a high school education or less and those with some graduate school. On both of these educational levels, the differences in internet use exceeded 6%, which by most
rational criteria would be deemed as significant, in favor of the female owners. The presence of these differences along these levels of the educational and gender interaction is an unexpected phenomenon. As stated earlier, the vast majority of the studies done over the last decade have shown an equalization of Internet access and use between the genders. The only rational explanation for this difference is that maybe a significant portion of the men on these educational levels was African American. More sociological digital divide studies done by Ervin and Gilmore (1999) and by Katz, Rice, and Aspden (2001) indicate that African American men are more apt to believe that the Internet is a tool that the government is using to spy on members of the African American community. Therefore, it is probable that the African American men in the sample succumbed to this fear, thus, decided not use this form communication.

Internet usage and access are important measures of the level of technology sophistication of small businesses in the United States. There are, however, other important technology related measures, computer access and utilization. In the most recent United States Small Businesses Administration’s (2003) study, it analyzed the role that computers played in the lives of those who were self-employed. Like the Center for Women Business Research’s (2002) study, it too analyzed its measures of technological sophistication along certain demographic characteristics. These characteristics were gender, educational level, and income.

On a whole, the survey results indicate that between the years 1998 and 2000 computer ownership by the self-employed increased by 14.7%. The study also revealed that in 2000 63.4% of all the self-employed sampled had at least one computer. Around
23.2% had two computers and 12.4% had three or more computers. As far as utilization was concerned, 54% of the self-employed in 1997 used the computer for the business-related work that they did at their homes compared to around 65% in 2000. The major computer utilization method was the Internet. Of the self-employed individuals sampled, 83.2% had Internet access, and they used it for a variety of online activities (United States Small Businesses Administration, 2003).

The first factor that this survey addressed from demographic perspective was the role that gender played in computer and Internet access. Male businesses owners in 2000 were 65.2% more likely to have a computer and dial-up access than the owners who were women. Self-employed men were twice as likely to have a high-speed Internet connection compared to the women in 2000.

As previously stated, the computer access gap between male and female small business owners does not correspond with the computer access percentages that the United States Census Bureau, the National Telecommunication and Information Administration, and the United States Department of Commerce have released over the last seven years. All of these reports show a dramatic decline in the gap in computer access between men and women. In 1997, for example 42.1% of the male homeowners in the United States had a home computer compared to only 28.7% of their female correlates—a difference of 13.4% (United States Census Bureau, 1997). By 1998, however, women household owners had decreased that difference to 4.1% (National Telecommunication and Information Administration, 1999). This decreased continued in 2000, with only a 2.7% separation in computer access between male and female
householders (National Telecommunication and Information Administration, 2000). By 2001, there was only 1.2% separation between male and female householders as it pertained to home computer access with the females outpacing the men (United States Department of Commerce, 2001).

As far as the Internet access disparity between males and females that this study reveals, it also fails to correspond with the results of some of the most extensive Internet access studies that have been done since 2000 (Lebo and Weisz, 2000; 2001). Two Internet studies done by Lebo and Weisz (2000; 2001) illustrate this point dramatically. One of these studies that examined Internet access in 2000 revealed that at ages of 36 and 45, ages that most business expert agree that people begin or are operating small businesses, there was only a 3.7% difference that separated males and females in Internet access favoring the males (Lebo and Weisz, 2000). The small differences in Internet access rates between men and women in the above age grouping was still present in the second study done by Lebo and Weisz (2001), which analyzed total Internet access and use for 2001. For the ages of 36 and 45, the Internet access disparity had only increased by 1.4%.

The most probable explanation for this difference resides in the realm confidence about the Internet. In the United States Small Business Administration’s (2003) study, the author asserted that the women sampled were more likely to be very concerned about information confidentiality problems that might arise when using the Internet. For instance, the women were more concerned than the men about someone stealing their social security number or their credit card information over the Internet. This fear could
have adversely affected the female small businesses owners’ desire to have access to the Internet and to its computer mate.

If this lack of confidence in Internet security is prevalent in the vast majority of the female small business owners in the United States, it might cause a great chasm to develop in Internet access between the women and men small business owners. This would prevent female small firm owners from fully participating in the benefits that Internet and computer access has shown to produce be it in the speedy manufacture of products, the mass advertisement of products and services, businesses related research, internal business communication, or e-commerce. Without these benefits, it would be almost impossible for a company, regardless of the consumer need for its product, to be economically robust in the United States’ economic environment. This economic ecosystems is becoming increasingly global as a result of the Internet’s ability not only to transfer information to far off places with great speed, but also its ability to sell products and or services to a consumer base that is not limited to a single geographical location.

Besides gender, this study also examined the role that education played in determining computer access, in particular determining the number of computers owned by the self-employed. The results indicated that the more extensive the education that the small businesses owners had the greater likelihood that they would have more than one computer. Only 14.7% of the self-employed person with less than a high school diploma owned two computers compared to 18.8% of those who were high school graduates, 21.6% of those who had either an Associate Degree or some college, and 23.3% of those that had a Bachelor’s Degree or better. Only 6% of those with less than a high school
diploma had three or more computers compared to 7.4% of those with who were high school graduates, 11.7% of the owners that had some college or an Associate Degree, and 16.8% of those that had a Bachelor’s Degree or higher.

A significant portion of the research on computer related issues in the United States over the last decade supports this trend of education level being an indicator of the level of computer access. The National Telecommunication and Information Administration’s (1995; 1999; 2000) studies, collectively entitled the *Falling Through Net* series, reveal that education dictates the level of computer access regardless of such demographic factors such as race, locale, or gender. These reports indicate that a 9.2% difference in computer access separates those with an elementary education from those individuals with at least some high school, in favor of the latter (National Telecommunication and Information Administration, 2000). These studies also revealed that there was a 15% difference in access to computers between those with high school diploma or GED and those with at least some college, in favor of the better-educated (National Telecommunication and Information Administration, 1999). One of these studies even indicated that there was a 48.1% difference in home computer access between those with four or more years of college and those with an elementary education or less (National Telecommunication and Information Administration, 1995).

The National Telecommunication and Information Administration’s reports were not alone in its results indicating that education played a significant role in determining the level of computer access. In the most recent study done by the United States Census Bureau (2001e), its results revealed that a 24.3% difference existed between those with
less than high diploma and those with a high school degree or GED, in favor of the
individuals with either a high school degree or a GED. When comparing those with a
high school diploma or GED and those with some college, the report revealed that
grouping which had some college outpaced the high school diploma or GED grouping in
computer access by 19%. A 15.1% difference existed in home computer access when
examining the access rates of those with some college and those with a Bachelor’s
Degree or more, in favor the latter grouping.

The final demographic factor that the study analyzed was the relationship between
income and computer access of the self-employed. The analysis of this variable yielded
some interesting results. Instead of revealing a positive correlation between income and
the number of computer owned—a reasonable expectation—, the opposite occurred
across several of the income groupings. The self-employed individuals who had incomes
less than $20,000 had a greater percentage with two computers than those that had yearly
incomes that fell between $20,000 and $29,000, 18.7% and 16.75% respectively. Those
persons with annual incomes that ranged between $20,000 and $29,000 had more
individuals with two computers than those with incomes that varied between $30,000 and
$39,000, 16.7% and 14.9% respectively. Self-employed individuals that had yearly
incomes that varied between $50,000 and $59,000 had a higher percentage with two
computers than those whose incomes ranged between $60,000 and $74,000, 22.4% and
20.8% in that order. For those individuals that had three computers, the income anomaly
rested solely in $40,000 to $49,000 and the $50,000 to $59,000 income groupings—
categories in which the percentage of those with three computers was 10.1% and 7.7% respectively.

For the remainder of annual income groupings, the greater the income meant the greater the percentage of those self-employed individuals with more than one computer. For those with two computers, there was an increase from 14.9% to 18.7% when going from the $30,000 to $39,000 income category to the $40,000 to $49,000 category. There was an increase in the number of self-employed individuals with two computers when going from the $60,000 to $74,000 grouping to the $75,000 or more grouping—20.8% and 29.2% respectively. For those with three computers, the number of the self-employed with three computer increased form 4.4% to 5.3% when going from the less than $20,000 a year income grouping to the $20,000 to $29,000 income grouping. There was also a consistent increase in the number of individuals with three computers when going from the $20,000 to $29,000 grouping to the $30,000 to $39,000 grouping to the $40,000 to 49,000 grouping—5.3%, 8%, and 10.1% in that order. The percentage of the self-employed with three computer also increased from 7.7% to 13.1% to 18.9% respectively when the incomes rose from the $50,000 to $59,000 grouping to the $60,000 to $74,000 grouping to the $75,000 or more annual income category.

As with the education variable, the vast majority of the studies over the last decade indicate that as income increases the level of access to a computer increases. The previous mentioned United States Census Bureau’s (2001e) report illustrates this point. It revealed an increase of 7.5% in the level of computer ownership when the annual incomes of families increased from the under $15,000 income bracket to $15,000 to
$19,000 income bracket. There was an increase of 3.5% and 12.7% respectively when the incomes rose from the $15,000 to $19,999 income level to the $20,000 to $24,999 income level to the $25,000 to $34,999 income grouping. There was a further increase in the level of computer ownership when going from the $25,000 to $34,999 income category to the $35,000 to $49,000 income category to the $50,000 to $74,999 income category—13% and 14.7% respectively. Furthermore, there was an increase in the level of computer ownership of 12.7% when going from the $50,000 to $74,999 income grouping to the $75,000 or more income category.

Considering the relationship between income level and the level of computer ownership presented in the United States Census Bureau’s (2001e) report and numerous others studies, what might account for the anomalies that show the opposite occurring on certain income levels in this research endeavor as it pertains to the ownership of multiple computers? After a detailed analysis of this United States Small Business Association’s (2003) study, there is no concise answer to this question. However, there are several probable explanations for this occurrence. The initial one is that maybe those individuals in the lower economic strata in these anomalous areas saw computers as a mode to uplift themselves and their children from their present economic surrounding characterized by extreme financial distress. Therefore, they might have made a conscious attempt to purchase these devices. Another possible explanation is that there might have been an unknown extraneous variable such as a government or organizational sponsored program that might have given the individuals in the lower income anomaly levels multiple computers as a mode to correct the Digital Divide.
The most probable explanation, however, is that those self-employed persons in the anomaly groupings at the higher income brackets were not married. The abovementioned United States Census Bureau’s (2001e) study revealed that marital status affects a person level of computer access significantly. This report revealed that married households’ computer ownership outpaced the male and the female single householders by 18.6% and 21.5% respectively. Considering these numbers, it is most probable that the individuals in this study who were widowed, divorced, separated, or never married—a faction that comprised 20.74% of the 10,530,000 self-employed home computer owners sampled in this study—caused the strange anomalies that appeared in the data.

Though the computer and Internet related access information that this study presented was very enlightening, the most significant aspect of this study resides in the utilization of computers and the Internet by the self-employed individuals sampled. Whether the self-employed Internet users were incorporated or unincorporated their most important use for computers and the Internet in their home was checking personal e-mail—a utilization method that was used by 64.1% of this group. Only 9.4% of the sample used the Internet to do job related tasks. An even lesser percentage, 7.9% to be exact, used the Internet to search for information. As far as doing personal e-commerce related activities, only 2.3% of the self-employed person used the Internet to do tasks like shopping and paying bills.

These results might indicate one of two possibilities. One scenario is that these small businesses were of the type such as mom and pop catering services, hair salons, cleaning services, and car repair. These types of enterprises operate from the home and
require only the most rudimentary utilization of Internet such as for e-mail or at most a basic web page.

It might also signify that the vast majority of the participants in this study had offices outside of the home where they completed business-related Internet activities. If this scenario is correct, it would mean that those offices would have had to have the necessary technological infrastructure for these devices to function. From an examination of the economic data, this scenario is more probable because 47.82% of the self-employed individuals sampled had personal incomes that were $60,000 or more. With this type of personal financial worth, it is more than likely that these individuals used offices outside of the home to do most of their business-related tasks.

The two studies completed by Center for Women Business Research (2002) and by United States Small Business Association (2003) presented very informative information about the extent in which variables like gender, age, income, and educational level affected the level of access and use of technology in small businesses in the United States. However, they ignored probably the most cited predictor of the level of the technology access and use, race. The first study to investigate extensively the role that race played in determining the level of technology access and utilization of small businesses was done by Dickerson and Lee (1999). In this study, the authors analyzed the level of Internet use of small businesses along racial lines.

This business technology survey consisted of a sample of 1500 small businesses in Los Angeles County, California. The results revealed that minority owned small businesses in this area lagged behind their non-minority counterparts in utilization of
Internet related technologies. The data indicated that 44% of European American-owned small businesses had a website. Conversely, 33% of the African American-owned small business sampled and 23% of the Latino and Asian American owned small businesses sampled had a website.

This study also measured the small businesses use of the Internet for advertisement and for business-to-consumer e-commerce related activities. The results revealed that 40% of the European American-owned small businesses polled used the Internet to market their products and to troll for sale leads. This was twice the level of the Asian and the Latino American owned small businesses surveyed and almost three times the level of the African American-owned small businesses that were polled. As far as business-to-consumer e-commerce is concerned, 15% of European American-owned businesses with a website participated in business-to-consumer e-commerce. Only 12% of the African American-owned small businesses, 8% of the Asian American owned small businesses, and 7% of the Latino American owned small businesses that had a website participated in this activity (Dickerson & Lee, 1999).

These numbers are indicators of two things. The first of which is that the small businesses’ use and access to technology in this study was miniscule. This outcome is very surprising considering the very positive economic characteristics of La County during the time that the study was conducted. This county had around 4,000,000 payroll workers, which small businesses employed 70%. Moreover, it was the largest county in the nation with one of the largest budgets at around $10.8 billion. In addition, its per capita income ranked fifteenth nationally at $25, 719 (LaCounty Online, 2003). This
county also had one of the lowest poverty rates, 9.9%, in the nation. With these rather above average economic figures, a logical assumption would be that the small businesses would have had a higher level of technological sophistication than was actually present in the analysis of Dickerson and Lee’s (1999). One possible reason for this anomaly is that the vast majority of the firms polled had been in operations between ten and twenty years. This would have made their starting dates between 1979 and 1989. This interval of time was a period when the information and communication technological revolution was still in its infancy; therefore, it might be that the owners of these companies still saw the Internet as a foreign and unneeded tool (National Telecommunication and Information Administration, 1995; 1999; 2000; 2001; United State Small Business Administration, 2003).

Secondly, these outcomes signify that race played a role in determining both the level of access and the level of technology use by the small businesses surveyed. This was particularly true as it pertained to web site access, e-commerce, and using the Internet to both market products and to troll for sales—all which had the minorities lagging behind their European American correlates by as much as 21% in several of these categories. This outcome is not surprising considering that researchers like Kominski (1992), Kominski and Newburger (1999), Hoffman and Novak (1997; 1999a; 1999b), Stanley (2001), Ervin and Gilmore (1999), and Haythornthwaite (2001) have done numerous studies that showed that as far as access to and utilization of computer and Internet related technologies were concerned, race mattered. These researchers’ results indicate that if a person in the United States is of African, Hispanic, or Native American
ancestry than he or she exists in a state technological inactiveness while their European American correlates are actively utilizing all the technological innovations in the technology marketplace.

Beside the study completed by Dickerson and Lee (1999), the Microsoft Corporation (2002) also conducted a study that examined the technological utilization gap between small business owned by minorities and European Americans in the United States. This study’s primary focus was e-commerce strategy. A survey of over 3000 small businesses revealed that 35% of European American-owned small businesses had an e-commerce strategy. However, for the minorities, it was much less. Of the Latino or Hispanic small businesses polled, only 6% had e-commerce strategy and only 2% of the African American-owned small businesses sampled had access to such a strategy. As with the previous study, race seemed to matter as it pertained to the technology related variable that this study analyzed.

The significance of an e-commerce strategy or plan is that it is a business plan that details how a firm can maximize the potential of their digital resources (Roy, 2003). The development of this plan encompasses analyzing organizational goals, business practices, advertisement, promotions, current technology infrastructure, and technology constraints. This is done in order to insure the e-commerce plan of action is viable for the intended business environment in which it will function. A plan matched perfectly to the environment will allow the business to garner dividends from their technology investments in a speedy manner.
The most essential part of this e-commerce strategy from a cost and benefit perspective, which small businesses are most concerned, is the e-commerce website. It has been well documented that for a customer to online purchase a product from a particular company the website must be simple. Consumers desire only to choose their desired product, pay for it, and then leave the website in a speedy manner, just as if they were conducting business in a retail store. If an e-commerce site exhibits these characteristics, an online shopper is more likely to purchase his or her desired product from that online environment. A report conducted by Bizarte.com (2001) supports this declaration. Of the 75% of online shoppers it surveyed that left a website without sale, 13% stated that they absconded because of poor site organization and 21% left because of slow response time. The report reveals that of the percentage that left a website without a sale, 44% stated that they purchased the same or similar product from a competitor’s website (Cummings, 2003).

Therefore, not only do small businesses owned by minorities have to participate in e-commerce to obtain access to these potential dividends, but they also have to have a sound e-commerce strategy to be competitive. It is essential for this strategy to have a web environment that is user friendly, easily navigable, and functional in order to maintain the attention of the perspective customers that navigate that environment (Anderson, 2001; Traupel, 2003). Without such a strategy, it is very unlikely that these enterprises will be able to garner the full economic potential from their online sells in a World Wide Web environment dominated by millions of retailers selling a variety of goods and services (Clark and McNaughton, 1999; Messmer, 2000).
The studies done by Dickerson and Lee (1999) and by the Microsoft Corporation (2002) did a great deal to illustrate the extent that race influenced technology access and use. They were not, however, the most detail studies of the racial aspect of the Digital Divide. The Department of Information Technology of the city of Seattle (2003) did one of the most detailed studies of business technology and the probable link between race and technology access and use. This study took more of a scientific approach to its analysis of the technology level of the small businesses it surveyed than any of the previous discussed studies. It did this by breaking down its analysis into five business technology categories—Technology Capacity, Importance of Technology, Technology Spending and Planning, Learning about Technology, and the Impact and Barriers to Technology Adoption.

The Technology Capacity category analyzed four variables—the level of knowledge of technology, the level of computer use, the level of Internet access, and the presence of a Local Area Network (LAN) in the premises of the business. As far as level of technology knowledge is concerned, the report revealed that only 54% of the small business owners polled felt that they were informed about computer and Internet related technologies. The remainder of the sampled small business owners stated either that they were somewhat informed about these technologies or were not informed at all—34% and 12% respectively.

The relative high level of small business owners who felt that they were either somewhat or not at all informed about computer and Internet related technologies is consistent with the results from the previously discussed studies done by the Center for
Women Business Research (2002) and by IBM and the United States Chamber of Commerce (1998). All of these studies showed that a large percentage of the small business owners surveyed had little or no knowledge of information and communication technologies. Moreover, the vast majority did not understand how they could successfully apply technology to their individual fields. It has been well established that technological innovation is encouraged from the top down (Kabay, 2002; Krazit, 2002). These owners will have to become technologically enlightened. The newly developing global economy requires it from any business owner that hopes to partake in the globalized economy—an economy technologically driven from a business production, manufacturing, advertisement, and sales perspective.

The second aspect of the Technology Capacity section investigates the level of computer use of the businesses surveyed. It revealed that 53% of the sampled small businesses used one or more computers in their daily operations compared to 47% that did not. The high level of none computer use is very disturbing considering the affordability of computers and their peripherals by the time this study was undertaken in May of 2002. Companies like IBM, Del Computers, and Gateway in early 2000 had numerous programs available that pushed the cost of complete computer systems to as low as $599 (Krazit, 2002a; Krazit, 2002b; Karp, 2002; Gray, 2002). Since the vast majority of the sampled small business came from low-income communities, however, the low cost of these systems might have still been too expensive for the small businesses in this study to purchase. When a business is only garnering enough revenue to cover pay roll and other operating expenses, it is hard to rationalize an additional expense that
might not produce instant dividends. This theory is supported by the fact that a significant number of the companies analyzed had gross revenues that were less than $100,000. Considering that Seattle’s cost of living index was 48.2% above the national average for the forty-five largest cities in the nation, it further strengthens the above assertion.

The next technology measure contained in the Technology Capacity section is the availability of a Local Area Network (LAN). Of the sampled small businesses that had more than one computer, 46% indicated that they did not have a computer network. The high number of small businesses with multiple computers that did not have some form of computer network is a dilemma that will have to be addressed if these companies hope to garner the positive outcomes that a network can produce. It has been established that networked computers increases a business effectiveness by allowing multiple computers to have access to the same information simultaneously. It allows individuals within the business universal access to a variety of programs without having to install them on individual computers, thus, standardizing the technology environment. This technology standardization has shown to increase the efficiency of technology use and as a byproduct a business’s overall productivity (Ferguson, 2001; Gittlen, 2003).

The final technology measure in the Technology Capacity section is Internet access and use. For the respondents, 82% of the small businesses declared that they had Internet access. This is the highest small business Internet access percentage of any of the studies discussed to this point that measured this aspect of the Digital Divide. The large number of companies that had Internet access leads to the question of how they accessed
it since 47% of the sample did not have computers. A detailed examination of the technology demographics of the businesses sampled does not provide a plausible explanation for this query. However, it is very probable that these companies could have used devices like Web TV, cellular telephones, or Personal Digital Assistances to access the Internet. As the previously mentioned United States Small Business Administration (2003) study revealed, the owners of these companies might have also used their home computers to access the Internet for business-related tasks.

Besides Internet access, this section also analyzed the level of utilization of certain Internet tools. The Internet utilization methods or tools that are measured were e-mail access, website access, website content, and business-to-consumer e-commerce. The results indicated that 76% of the small businesses surveyed that had Internet access had a company e-mail address. Only 51% of those with Internet access had a company web page. As far as web-page content is concerned, 85% of the web-page access grouping had content that consisted of basic information about their businesses. Moreover, 59% of this grouping had webpages that contained online forms or other methods for their customers to submit information online. As with the total Internet access percentage in this study, the web-page access and content percentages are the highest of any of the studies that have been analyzed. The high levels of utilization of the above tools maybe an indication that the small businesses surveyed were beginning to learn how the Internet could serve their needs for both company promotion and customer service.

With these high Internet access and utilization numbers, an individual might assume that a significant portion of the small businesses in this study utilized business-to-
consumer e-commerce. This assumption would be incorrect. Only 34% of the small business that had a webpage sold their goods or services online. Despite the fact that the e-commerce numbers were the highest of any of the previously discussed studies, it is very minimum considering the level of Internet access and utilization that was prevalent in the small businesses sampled. It is obvious from the previous mentioned levels of Internet access and utilization that the small businesses polled knew the value of this mode communication; therefore, the low level of e-commerce utilization is puzzling. A probable reason for these low percentages might be that the small businesses sampled produced regional specific services and goods, not something that could be marketed to a global market place. This is a very possible explanation considering that a significant portion of the sampled small businesses were in communities that were in low-income areas. These communities have historically contained enterprises that are very community specific. Another probable explanation is that the previously mentioned low gross revenues might have made any additional expenses incurred by e-commerce participation to much of an economic burden to bear.

The next major analysis section, Importance of Information Technology, ascertained the perceived importance of information and communication technology. The results indicated that 61% of the small businesses polled thought that computers were essential to their businesses. However, only 35% viewed the Internet as being essential. This low percentage is surprising considering that a higher percentage of the business surveyed had Internet access than utilized computers. Despite this occurrence, it is very significant that only 9% of the businesses polled felt that the Internet was not
essential. This is very positive indication that the businesses under analysis were beginning to integrate technology into their daily operations, thus, better enabling them take advantage of the positive outcomes that technology use can produce.

Besides the importance of the Internet and computers, this section also gauged the perceived importance of information and communication technology to do the following business-related tasks: research, business promotion, advertisement, storing customer information, and bookkeeping. As far as research is concerned, 53% of the polled small businesses thought that information and communication technology was important as a research tool for a business. Moreover, 53% of the small businesses sampled thought that a web page was an important tool for promotion a businesses. An even larger percentage, 58%, of these businesses believed that information and communication technology as a whole was an important mode for advertising the goods and services that a company produced. Approximately, 66% of the small businesses polled believed that information and communication technology was very important when it came to storing a business’s customer information. The highest rated task, however, was bookkeeping. Of the businesses polled, 70% of the respondents stated that the bookkeeping ability of this type of technology was either important or very important to a business.

The high value that the vast majority of the sampled businesses placed on information and communication technology to do the above tasks is a very positive sign. It indicates that the small businesses sampled, unlike several groups of their counterparts in the previous discussed studies, were coming to the realization that this technology could make their businesses more efficient operationally. This in turn could potentially
increase the businesses’ over all product output and sales (Roy, 2002). It also signifies that computer and Internet related technologies were becoming a significant utilization tool in Seattle’s small business environment. This outcome can only have the positive effect of creating a demand for a technologically sophisticated workforce. The salary of this workforce would far exceed the wages it would have received as unskilled labor; thus, furthering the economic uplift of the communities in which the workforce resides.

The third analysis section contained in this study is Technology Spending & Planning. This section, as its names suggests, measured the willingness of the sampled small businesses to engage in technology spending. This section also measured if the sampled businesses had a technology plan. The results indicate that 50% of the businesses stated that they would engage in technology spending in the upcoming year. Of this group, 43% stressed that they would be spending their money on either purchasing or upgrading computers. Of those intending to purchase technology, 25% stressed that they would spend funds on software. Another 25% of this grouping stated that they would spend funds on hardware devices like servers, Personal Digital Assistances (PDAs), printers, and scanners. Of this technology-spending faction, 18% stated that they planned to spend funds on website development and 13% asserted that they would spend money on Internet or network related development. Surprisingly, 5% of this assemblage actually declared that they would spend company funds on technology related training and education.

The percentage of small businesses that intended to purchase technology and the proposed technology devices that they declared that they might purchase is very
significant. Approximately, 10% of the small businesses intended to set aside funding for the purchasing or upgrading computers were those businesses that were currently not using computers. The wide range of devices that the companies stated that they might purchase and the intended expense for technology training and education are indications that these small businesses were beginning to utilize a variety of technology to aid in their development. These percentages also suggests that the small businesses in this sample that resided on the have not end of the Digital Divide were becoming technology urbane; thus, equipping themselves to compete in the technologically dominated marketplace of the 21st Century.

The technology planning measure also yielded some very interesting findings. Considering the high levels of technology access and use by the businesses contained in this study, it might be assumed that the vast majority of them would have had a written technology plan. This assumption would be incorrect. Only 10% of the enterprises polled had a written technology plan. A mere 23% of the sample had a designated information technology budget or a budget line item for technology within their general business budget. When the question was posed about the amount of their last year technology budget, only 17.14% of the businesses answered it. Of those that responded to the question, 36% stated that their technology budget was $500 or less and 31% declared that their technology budget was between $1,000 and $3,000. On a whole, 85% of the businesses that responded to the technology budget question emphasized that their technology budgets were less than $6,000.
Due the vital role that a technology plan plays in producing positive results from technology adoption and use, the high percentage of the small businesses polled that did not have a written technology plan is a very serious occurrence. A technology plan, “a living document that constantly repositions your business to meet the demands of a globally competitive and technically savvy marketplace”, is simply a way to utilize technology resources to achieve positive outcomes (Allen & Weisner, 2003, p.2; Conway, 2003). The initial part of this planning process usually involves asking the owner or CEO of a company several questions. What element of this business needs to be more efficient and prolific? Is it the business’s competitive analysis? Is it the business’s cash flow analysis? Is it the business’s human resource planning? Is it the business’s internal or external communication? Is it the business’s marketing? Is it the business’s product development? Is it the business’ product production, or is it another area? For each one of these business processes, there is a suitable information and communication technology that, “if properly implemented, can have an immediate impact on the bottom line by reducing operating costs and helping control expenses” (Conway, 2003, p.1). The numerous companies, both small and large, that have developed and adopted these written technology plans “proudly boast of how efficiency, cash flow, profit-and-loss, customer service, and employee morale have benefited” (Conway, 2003, p.1).

An examination of the demographic information of the businesses contained in this study revealed only one logical reason why these business technology users did not have a written technology plan. It was the lack of technology sophistication of the owners or CEOs of the small businesses analyzed. As stated earlier, half of the small
businesses owners polled stated that they were either somewhat informed or not informed at all about technology. This likely means that the technology related purchases of a significant portion of the small businesses in this study were made by other individuals in the company who had some technology knowledge—an incident that occurs throughout numerous small businesses in the United States according certain technology experts (Applegate, 1999; Smith, 2001;). This kind of environment caters to situations in which the chosen technology person in the small businesses becomes the technology plan. This circumstance can make the technology environment inconsistent because it is subject to the whims of one person and not based on a set plan of action designed to help a business to accomplish its goals. If the small businesses investigated in this study hope to maximize their benefits from technology use, they will have to develop well-defined and written technology plans that map out their technology plan of action and possible expenditures that those actions will levy on the company (Kooser, 2003).

Besides measuring technology capacity, the importance of information technology, and technology spending and planning, this study also tried to determine the modes in which the owners of the small business surveyed learned about technology. This section of the analysis, which is under heading of *Learning About Technology*, analyzed the diverse methods in which the small business owners sampled learned about technology. The study revealed that 27% of the owners learned about technology from classes while 33% of these respondents stated that they learned about technology from trade associations. The highest percentages of respondents stated that they learned about
technology from the Internet, books, and from colleagues—54%, 55%, and 57% respectively.

The high percentage of the small business owners in this study that learn about technology from the Internet, books, and from colleagues is not surprising. There are millions of websites dedicated to business technology such as Techweb: The Business Technology Network Home Page, the Business Technology Association Home Page, and the North Carolina Small Business and Technology Development Center (SBTDC) Home Page. These websites contain millions of articles that detail the various business-related hardware and software technologies. They also explain in detail how executives can apply these technologies to an assortment of business environments. There are also thousands of books, authored by such renowned business technologist as Rasmussen and Eichorn (2000), Honda and Martin (2002), and Murphy (2002), that describe in detail business technology, its benefits, and the decision making process that a owner or technology consultant must go through when determining which technologies a business should acquire. Business magazines like Fortune and Black Enterprise contain numerous articles describing how business owners acquire knowledge about new technologies from colleagues who have already utilized them (Applegate, 1999; Beech, 1997; Lidsky, 2003; Muhammad, 1997; Witt, 2003).

The Internet, books, and business colleagues can provide valuable information about technology and its application to the business setting; however, they can be subject to bias. In the case of the books and the Internet, technology companies that have a stake in promoting a specific product sponsor many of these sources. As far as the idea of
gaining technology information from a business colleague, it can also be bias. Many technology firms offer their customers incentives, be it discounts on products or free services, for those that aide them in acquiring additional customers. Therefore, small business owners that obtain information from these sources should scrutinize the data closely.

Many business experts advise owners to use a method that few in this study stated that they used—technology classes. Experts suggest that classes, especially online classes from academic or academic affiliated professional organizations, provide the best information and analysis of business-related technology and its application. These academic or academic affiliated institutions operate on the principle of academic freedom—a code that dictates unbiased investigation of prudent issues. Many technology experts recommend that owners of small businesses take advantage the online educational programs in technology offered at ITT Tech and the University of Phoenix (Cox, Mathews, & Associates, 2001; D’Orio, 2001; Nicolle, 2000). These universities have shown themselves as institutions that have instructors who have a high level of training in technology and its application in the business world. The classes are very flexible. A person can attend them at any time or place without having to go to a physical classroom (Cox, Mathews, & Associates, 2001; D’Orio, 2001). This factor allows a small business owner to participate in these classes in his or her spare time, thus, not intruding on his or her business-related work hours (Lahey, 2002).

This section also analyzed the methods that the owners of the businesses believed would help their workers use technology more effectively. The results revealed that 45%
of the owners polled thought that on-site staff training would help their workers utilize
technology more effectively. An even higher percentage, 48%, thought that off-site
technology training classes would help their workers. The highest percentage of small
business owners, 50%, thought that better technical support would help their workers use
technology to its maximum potential.

The available literature on this subject supports the belief in the value of on-site
staff training, off-site classes, and technical support in helping a company’s employees
effectively use technology. Numerous articles have appeared in the trade magazine
*Business Wire* that stress that the onsite training of a business’s employees can serve as
means to give the worker an onsite demonstration of how a specified technology should
be used in their work environment (Business Technology Editors, 1999; Galagan, 2000;
Hi-Tech Editors, 2001). This trade magazine also had an equal amount of articles
dedicated to the value of off-site technology training classes. In particular, these articles
focused on training workers to do complicated tasks on a delicate machine or training
them to master a variety of different software packages like a Quark Express, Excel,
Math Cad, or SPSS. Experts agree that training of this type is more suitable for an off site
training environment away from the distractions that are apart of the everyday work
settings (Business Editors and High-Tech Writers, 2002; Business and Technology
Editors, 2000). Business technology journals like *Telecomworldwire*, *Computer Dealer
News*, and *InfoWorld* contain hundreds of articles that stress services like telephone
automated tech support and online tech support are essential innovations that can provide
a business help quickly. They can insure that a customer obtains a high-level technical help in a speedy manner (Business Technology Editor, 1999; 2000; Mitchell, 1998).

The final section of analysis contained in this study, entitled Impacts and Barriers, analyzed two aspects of the small business milieu. It analyzed the impact of information and communication technology on the productivity and revenues of the small businesses sampled. It also analyzed if the lack of knowledge of this technology, its cost, or the time spent learning it prevented the businesses sampled from adopting this innovation. The results indicated that 75% of the businesses polled stated that this technology positively influenced their productivity. Moreover, 62% of the businesses polled stated that it had a positive impact on their revenues. On the negative side of these issues, only 7% and 18% of the small businesses respectively stated that this technology had either a negative impact or no impact at all on their businesses’ productivity. Only 8% of the businesses polled stated that this form of technology had a negative impact on their revenues and only 30% stated that it did not have an impact.

A key point must be made about the technology impact results; a direct correlation seems to exist between the numbers of computers that a businesses had and how those businesses surveyed felt about the impact of technology on their productivity and their revenues. Around 71% of the small businesses with one or two computers stressed that information technology had a positive impact on their productivity compared to an astounding 91% of those with three or more computers. This type of relationship was also prevalent when analyzing revenue category. Only 59% of the businesses with one or two computers stated that information technology had a positive
impact on their revenues. However, 75% of the businesses polled with more than three computers stated that information technology positively affected their revenues.

The fact that the vast majority of the businesses polled stressed this form of technology had a positive impact on productivity and revenue is very significant. It logically implies that these companies were utilizing technology in a manner that caused tangible positive outcomes. The fact that their seemed to be a positive correlation between number of computers and perceived positive impact of information and communication technology might also indicate that the more technologically oriented the small businesses were the more substantial the positive results that this technology yielded in these two business areas.

If there is a link between level of technological sophistication and business productivity and revenues as these results suggests than the only hope for small businesses in the 21st Century is to continue to advance their technological infrastructure. This increased infrastructure would place more of the businesses inputs and outputs processes in the hands of specialized technologies designed to maximize their efficiency. This would in turn have a positive impact on both business productivity and revenues. Once this happens, the economic downturns that seemingly grip the low income communities in which a large percentage of the small business in the United States are located would evaporate.

Besides gauging the impact of information and communication technology on business productivity and revenues, this section also analyzed the barriers that prevented the businesses surveyed from using this technology effectively. The first barrier analyzed
was lack of knowledge. The results revealed that only 8% of the businesses polled stated that lack of knowledge prevented them from using this technology effectively. Only 9% of the small businesses polled stated that the amount time spent learning the technology prevented them from utilizing information and communication technology effectively. However, around 43% of the businesses surveyed stated that the cost of information technology prevented them from using it effectively.

As stated in the analysis of previous sections of this study, the income demographic seemed to dictate whether the small businesses surveyed deemed cost as a major barrier to their using information technology effectively. Approximately, 42% of the total sample had incomes that were much less than $100,000. It would be a logical assumption that those businesses in this lower income bracket would indicate cost as a major inhibitor to technological effectiveness. A breakdown of the barrier categories along income lines proves this assertion. For those businesses with incomes less than $100,000, they were more likely to see cost as barrier compared to the other businesses polled—56% and 33% respectively.

The abovementioned analyses sections in this study did an excellent job in describing the numerous aspects of technology in the small business environment in Seattle, Washington. However, the most prudent aspect of this study was the racial characteristics of technology use contained in the sample. The architects of this study chose to analyze the racial character of technology use across two issues. The first of which was computer use. The second was whether the businesses under analysis viewed cost as being a barrier to using technology effectively. Though not stated in the text, the
most probable explanation for the breakdown of only these two measures along racial lines is that most studies over the last decade have used computer access as one of the primary measures of technological sophistication. These studies have also shown a linkage between income related issues and race as it pertains to the level of access and use of technology in the United States (Ervin and Gilmore, 1999; Hoffman and Novak, 1999; Hoffman, Novak, and Venkatesh, 1997; Office of Institutional Research Northern Virginia Community College, 1998; Stanley, 2001).

Of the 350 small businesses polled, only 6% of the European American-owned small businesses and 4% of the Asian American-owned small businesses did not use computers in their daily operations. However, 17% of the African American-owned small businesses did not use computers. The results also indicated that the African American-owned small businesses were more likely than any other ethnic group polled to see cost as the barrier that was keeping them from using technology. To be more specific, 57% of the African American-owned small businesses polled made the above declaration compared to 44% of the Asian American-owned small businesses and 39% of the European American-owned small businesses.

As with the technology measures in the studies done by Dickerson and Lee (1999) and the Microsoft Corporation (2002), race seemed to matter as it relates to the above two technology categories. For this study, the technology have-nots on both of these two measures were the African American-owned small businesses. This racial divide is not a usual occurrence. The foremost Digital Divide studies that have been done in the United States over the last decade stress that African Americans have the one of the lowest,
not the lowest, levels of technology access and utilization of any ethnic group in the United States (National Telecommunication and Information Administration, 1995; 1999; 2000). In order for the small business community in Seattle to maximize its full economic potential, there has to be a concerted effort to raise the technology level of the African American-owned small businesses to a point where they are equal or close to equal to other ethnic groups. This would allow these enterprises to compete on an equal footing with businesses owned by other ethnic groups. This might lead to increase business revenues for small businesses owned by African Americans; thus, making a positive contribution to the overall economic advancement of the entire small business community in Seattle.

Research Limitations

All the previously discussed studies presented valuable insight about the level of technology use and access in the small business arena in the United States. However, they suffered from several limitations. The first limitation resides in the predictors that the studies used. There are several key factors or predictors that prior research endeavors have shown might be significant determinants of the level of technological sophistication of an individual or a group in the United States that the vast majority of these studies chose not to analyze. Race, which has shown in numerous studies can affect computer access by 22.9% and Internet access by as much 22.5%, was only examined in three of the eight of the eight studies (United States Census Bureau, 2000a). Region of the country was not used in any of the studies. The absence of region of country as a predictor variable was surprising considering the technology literature. In the series of
studies done by the National Telecommunication and Information Administration and the United States Census Bureau over the last seven years, the results indicate that region of the country can affect computer access by as much as 10.1% and Internet access by as much as 8.7% (United States Census bureau, 2000a; National Telecommunication and Information Administration, 1999).

Other factors like locale (central city, rural, or urban), which has shown to affect the level of Internet access by as much as 5.2% and use by as much as 8.3%, was also ignored by all of the studies discussed (National Telecommunication and Information Administration, 1999; 2000). None of the studies examined the role that community technology infrastructure played in determining the level of technology access and use of the small businesses sampled. Fouler (2002) stresses the lack of technology infrastructure is the cause of the global digital divide that exists between United States and countries in Africa and other politically, financially, and socially depressed regions of the world. Only one of the studies analyzed the presence of an internal technology infrastructure, such as a Local Area Network, in the businesses under investigation. Like its global infrastructure counterpart, the presence of a community technology infrastructure, such as Internet Service Providers and telephone services providers, in a specific community can dictate the level of technology access and use of a small business in the United States (Department of Information Technology of Seattle, Washington, 2003).

The other important detriment that these studies had resides in the fact than none sought to analyze the level in which the small businesses polled actually utilized
technology to accomplish essential business tasks besides such Internet related uses as e-commerce, research, online advertisement, and e-mail or software related issues such as word processing or accounting. A more meticulous investigation of business technology use should also include questions that ascertain the extent in which small firms employ technology to design and to produce the products and the services they sell to consumers from a manufacturing perspective. This investigation should also ascertain the extent in which small businesses use technology to do all the customer service related issues such as logging complaints, handling complaints, notifying customers of new product developments, and solving possible functionality problems that might occur with a particular product or service.

An additional limitation that all eight studies suffered from is that none used data analysis techniques that could truly determine if a significant difference was present on the technology access and utilization variables they analyzed. All the studies discussed were descriptive research (Fraenkel & Wallen, 2000). This type of research is used to “provide an accurate description or picture of the status or characteristics of a situation or phenomenon” (Johnson & Christensen, 2000, p. 302). The main mission of this type of research is not on how to search out cause and affect relationships “but rather on describing the variables that exists in a given situation, and sometimes on how to describe the relationships that exists among those variables” (Johnson & Christensen, 2000, p. 302). This type of research uses descriptive statistics to aid in describing the characteristics within an environment. This type of statistics, which consists of such things as the mode, medium, mean, and frequencies, is used to organize and summarize a
data set, not to test whether differences are present among variables. Moreover, this type of statistic is not used to generalize to a larger population from which a sample is taken. Its only function is to fulfill the purpose of descriptive research by describing the characteristics of a phenomenon that are presence in the sample (Fraenkel & Wallen, 2000).

Considering these points, it is obvious that the architects of the studies discussed in this analysis, in many instances, did the opposite of what the edicts of descriptive research and descriptive statistics stress are appropriate for analyzing data. The authors of several of the studies did not attempt to describe the characteristics of the technology phenomenon contained in data. Nor did they attempt to explain what the phenomenon might indicate about the individuals sampled. The studies done by Arthur Andersen’s Enterprise Group and the National Small Business United Organization (1998), Goldberg (1998), Dun and Bradstreet Small Business Solutions (1998), and by the Department of Information Technology of Seattle Washington (2003) all suffered from this detriment.

The second violation of the rules of descriptive research that is apparent in these studies is that some of the authors actually made determinations that certain differences on certain of the variables were significant. The Microsoft Corporation’s (2002) study declared that a 4% difference in access to an e-commerce strategy between African and Hispanic American owned small businesses was a significant difference. In the study done by Dickerson and Lee (1999), it declared that a 4% difference in business-to-consumer e-commerce participation between Asian and African American-owned businesses was significant. In the United States Small Business Administration’s (2003)
study, the authors stressed that a 2.9% difference in the number of individuals with one computer when comparing the less than $20,000 and the $20,000 to $29,000 income brackets was significant. The Center for Women Business Research’s (2002) study alluded to the fact that a 5% difference between the number of women and the number of men that envisioned the Internet as mode to save money was significant. These small differences by any reasonable standard seem to be minuscule, irrelevant, and not significant.

This leads to final violation to the edicts of descriptive research prevalent in several of these studies—the idea that descriptive research results are generalized beyond the sample. As stated earlier, one of the primary edicts of both descriptive research and descriptive statistics is that the results can not be truly generalized to a larger population—something that falls into the realm of inferential statistics. Five of the eight studies analyzed suffered from this weakness. The authors of these studies claimed that their results could be generalized to the larger small business environment in the United States. The studies done by Arthur Andersen’s Enterprise Group and the National Small Business United organization (1998), Goldberg (1998), the Microsoft Corporation (2002), IBM and the United States Chamber of Commerce (1998), and the Center for Women’s Business Research’s (2002) all suffer from this detriment. For the unsuspecting reader not schooled in research methodology, it leads him or her to make assumptions about the state of technological sophistication of small businesses in the United States that are invalid.
Even if it was valid from a research design perspective to generalize to a larger population, the studies that fall into this category have sampling procedures that would make generalization impossible. The study done by Arthur Andersen’s Enterprise Group and the National Small Business United organization (1998) asserted that its technology results could be applied to all small business in the United States but an analysis of the sample indicates that over 96% of the 504 small businesses analyzed came from Northern states like New York, California, and Illinois. Some of the sample was also comprised of midsized businesses; yet, the authors did not attempt to separate the results based on the size of the business. To the untrained reader, it promotes the false assumption that both types of businesses have the same basic characteristic, which they do not. It would be very improbable that the outcomes revealed could be applied to businesses outside of those that were sampled or to Southern states that have drastically different economic and racial demographics than Northern states.

The Goldberg (1998) study, which had 50,931 members in its sample, also suffered from sample problems as it relates to the region of the country. This study had over 70% of its sample taken from northern states; yet, like the study done by Arthur Andersen’s Enterprise Group and the National Small Business United organization (1998), its authors also claimed that the technology use characteristics that they discovered would be prevalent in all small business in the United States. Similarly, the Microsoft Corporation’s (2002) study also claimed that its results could be applied to all small businesses in the United States; yet, only 5% of the 3000 small businesses it sampled came from the southern states like Mississippi, Alabama, and Louisiana whose
level of technology access and use have always been less than Northern states (Duncan and Culver, 2000).

The study done by IBM and the United States Chamber of Commerce (1998) made sure that its sample was stratified along regional lines but it only sampled large metropolitan cities; thus, ignoring rural areas. It has been well documented by a variety of different organizations that rural areas have historically had a significant number of small *mom and pop* owned small farms, convenient stores, funeral homes, and pharmacies that are not prevalent in large urban areas (Wasfy, 2001). Moreover, it has been well established that these areas, on a whole, do not have the technological infrastructure from a community perspective that would enable them to gain access readily to the Internet unlike urban areas. Needless to say, the latest Internet or computer related technologies that the technology market has produced would, to a large extent, be useless for the businesses in these areas to purchase (Culver and Duncan, 2000; Southern Rural Development Center, 2002). Therefore, the probability that the technology characteristics of small businesses in these rural areas are the same as the urban areas is unlikely; thus, any generalization based on outcomes from one group cannot be applied to another group without some serious reservations.

The study done by the Center for Women's Business Research (2002) also claimed that its results could be generalized to the entire small business environment in the United States, but it too had a sampling detriment that makes this assertion invalid—over 80% of the females sampled were European American. Women of other ethnic categories have educational and economic characteristics that are completely different
from European American women. Therefore, a sample that is not stratified based on the gender characteristics that are prevalent in the entire United States cannot be generalized for a specific gender.

Regardless of the methodological problems that these studies had, however, they reveal some relevant information about the technological status of small business in the United States. However, it is obvious that factors such as region of the country, race, gender, economic status, education, and technology infrastructure should be investigated in unison to determine their affect on both technology access and utilization in the small business environment in the United States. Furthermore, the methods of analysis of these future studies should be inferential in nature; thus, allowing for a stable and consistent test for group difference and for generalizations to be made to the larger population from which the samples will be taken. It is also apparent that a detailed study of technology studies of small business should be undertaken in a Southern state like Mississippi—a state that not only has one of the largest percentage of African American its population but also has a total citizenry that resides on the lowest rungs of the educational and economic scale.
CHAPTER III

METHOD

Summary

This chapter examines the research methodology used in this study. It discusses the participants, the instrumentation, the special apparatus, the design, and the procedures used in conducting this research. This chapter also explains the chosen data analysis method—the MANOVA—, its assumptions, and the other related issues that have to be addressed when using this inferential technique.

Participants

Employer businesses in Mississippi numbered at 53,303, according to the most recent statistics (United States Small Business Administration, 2002). Of that total, 96.8% of these businesses were small businesses. Moreover, an estimated 97,586 individuals in the state were self-employed. As far as gender is concerned, 22.8% of the small businesses owners were female and generated $6 billion in revenues for the state. Of the female small business owners, 16.7% had employees (United States Small Business Administration, 2002). Minority owned businesses comprised 13.1% of the states’ businesses and of that total, 15.9% had employees.

Of the two largest metropolitan areas in Mississippi from which the sample of
small businesses in this study was selected, Jackson has the largest population at 184,256. According to the latest statistics, this city has 9,443 employer firms. Of this total, 8,592, or 90.98%, were classified as small businesses—having less than 500 employees. Approximately 85.05%, or 7,308, of these small businesses had less than 20 employees. However, small businesses employer enterprises did employ 91,040 employees—a number that represented 44.87% of the total number of employees that employer firms employed in Jackson. These small businesses also had an annual payroll of $2,371,407—an amount that comprised 42.33% of the total annual payroll of employer businesses in the city (United States Small Business Administration 2003c).

The second largest city in the state is Gulfport—an urban area that has a population of 71,127. There were 5,873 small businesses employer firms in Gulfport and its surrounding areas, which represented 92.31% of the total employer firms. Approximately, 87.58%, or 5144, of these businesses had less than 20 employees. Small businesses employer firms employed 52,769 individuals, or 39.82% of the employees that were employed by employer firms. In addition, small business employer firms had an annual payroll of $1,161,298, an amount that was 33.87% of total annual payroll of employer firms (United States Small Business Administration 2003c).

**Sample Size**

The researcher considered several factors when determining the total sample size utilized for this study. The factors were as follows: (a) the total sample size and per cell sample size needed in order to use the intended data analysis technique, (b) the expected effect sizes that might have been generated by the variables under analysis, and (c) the
statistical assumptions of the intended data analysis procedure. Hair, Anderson, Tatham, and Black (1998) stress that each cell of the analysis should have at minimum of twenty observations per cell in order for the MANOVA to have sufficient statistical power to detect possible differences. However, these authors stress that as long as the sample in each cell is greater than the number of dependent variables than the MANOVA should have enough statistical power to detect group differences if they are present. Since this study only contained two dependent variables, it was initially determined that power was not issue.

The author of this study also considered the potential effect sizes of the variables under analysis when determining the sample size gathered in this study. The reason that effect size, the standardized measure of group differences, is important as it pertains to the MANOVA is that it has a direct impact on the power of the MANOVA to detect group differences. Regardless of the sample, the larger the effect size the greater the power of the statistical tests the MANOVA uses. If a researcher expects effect sizes of the treatments under analysis to be minute, then a greater total sample size and per cell sample size are needed in order to give the MANOVA the needed power to detect possible statistical significant differences. Like wise, if the effect size is large then a smaller total and per cell sample sizes will have enough statistical power to detect possible statistical significant differences (Hair, Anderson, Tatham, & Black, 1998).

Effect size was of particular concern as it pertains to this study because the vast majority of Digital Divide studies that had been published since the mid 1990s were descriptive statistical in nature; thus, they did not supply information about effect sizes of
the variables being analyzed. After analyzing the raw data from the most extensive studies of the Digital Divide during this period—with both univariate and multivariate procedures—, estimated effect sizes were obtained for the vast majority of the most cited independent variables in the available literature over the last decade and a half. In particular, the major ones like race, educational level, economic status, age, and gender were analyzed for effect sizes (Center for Women Business Research, 2000; Kominski, 1992; Kominski & Newburger, 1999; National Telecommunication and Information Administration, 1995; 1999; 2000; Northern Virginia Community College, 1998; United States Census Bureau, 1997a; 2001e; United States Small Business Administration, 2003a).

In a series of MANOVAs and ANOVAs that were ran on several technology access and use data sets that were collected between the years of 1995 and 2005, the race variables yielded Cohen’s $\phi$ (or f) effects sizes between .23 and .29 for all the computer and Internet related technologies access variables analyzed—values that corresponds to medium effect sizes. However, the Cohen’s $\phi$ effect sizes of the race variable were .01 and lower for several of the utilization variables such as frequency of shopping online and frequency of surfing online. These effect sizes are extremely small and some might argue that they are inconsequential. The education variable yielded Cohen’s $\phi$ effect sizes that were between .27 and .39 for the computer and Internet related access and utilization variables analyzed. These effect sizes are considered medium to large effects. The economic status (or income) variable also yielded medium to large effects— Cohen’s $\phi$ between .29 and .41—for the Internet and computer access and utilization variables.
examined. The age variable yielded Cohen’s $\phi$ of .20 for the computer access and utilization variables analyzed—a value that represents a small to medium effect size. The age variable yielded Cohen’s $\phi$ between .35 and .45 for the Internet access and utilization variables analyzed—scores that represent medium to large effect sizes. Unlike the educational level, income level, and age, however, the gender variable had relative small effect sizes on all the access and utilization variables analyzed—Cohen’s $\phi$ that were .06 or less. Due to this relative small or insignificant effect sizes that the gender variable yielded on all of the access and utilization variables, the author decided that the gender variable would not be included as an independent variable in this study.

Lastly, the architect of this study considered potential violations to the assumptions of the MANOVA when determining the size of the intended sample. It has been well documented that the problems produced by the violations to the assumptions of the MANOVA, in particular the Equality of Variance-Covariance Matrices, are lessened when the per group sample sizes are equal or close to equal—a factor that can caused the Alpha Level to be understated or over stated depending on whether the larger variance in the specified dependent variable is contained in the smaller group or the larger group (Hair, Anderson, Tatham, & Black, 1998). This was of particular concern for this study due to the fact the available literature did not provide information about the tendency of digital divide data to violate this assumption because most of this research used descriptive statistical procedures.

Considering these factors, initially, a total sample of 443 African and European American-owned small businesses was drawn from the small business populations of
these two metropolitan areas in Mississippi. Jackson was to contribute 243 and Gulfport 200 small businesses to the sample equally stratified by race—all of which a prior agreed to participate in the study. However, due to the horrific destruction of businesses that Hurricane Katrina caused in both cities response rates of 13.58% for Jackson and 9.5% for Gulfport were yielded. With the low response rates, in particular for Gulfport Mississippi, a researcher should ideally mail additional surveys to a new sample (Gay & Airasian, 1996; Frankel & Wallen, 2003). However, after contacting several of the small business owners that did not respond to the survey, it was ascertained that it would take months to reopen the business that were only damaged mildly and years, if not never, to reopen the ones that had been totally or critically damaged by the hurricane. Considering these facts, this researcher decided that the sample already obtained was large enough and it was robust enough in the characteristics of the small business population still in operation in both cities to produce generalizable and pertinent results.

Sample Demographics

Of the total sample, 74.1% was European American and 25.9% was African American. Males comprised 70.4% of the sampled businesses and females represented 29.6% of the sampled small businesses. Only 24.1% of the small business owners sampled was between the ages of 55 and 64, and an even smaller percentage, 18.5%, was 65 years of age and older. The largest portion of the small business owners sampled—57.4%—was 54 years of age or less. Owners that had a high school education, some or associate degree, and bachelor’s degree represented 16.7%, 24.1%, and 25.9% of the
sampled small business owners respectively. The greatest portion of the small
business owners sampled, 33.3%, was educated beyond a bachelor’s degree. The marital
characteristics indicated that 3.8%, 5.7%, and 7.5% of the small business owners
respectively were single, widowed, and divorced. However, 83% of the small business
owners were married. Around 25.5% of the total sample had one child in the household
and 35.3% had two or more children in the household. The largest percentage of small
business owners, 39.2%, did not have any children.

The vast majority of the business sampled, 44.4%, were classified as being other
services. Both retail trade and construction represented the classification of 14.8% of the
businesses sampled. The remainder of the business sampled, 26%, were in the following
fields: (a) health care and social services, (b) real estate, rental and leasing, (c)
management of companies and enterprises, (d) arts, entertainment and recreation, (e)
finance and insurance, (f) whole sale trade, and (g) and manufacturing.

Of the businesses sampled, 5.6% were in operation less than five years. An
additional 16.7% of the businesses had been in operation between five and nine years.
The largest portion, 77.8%, reported that they had been in operation for 10 or more years.

Only 1.9% of the businesses sampled had individuals working for them that were
of an ethnic group other than African and European American. African Americans
represented 29.6% of the workforce of the businesses sampled from Jackson and
Gulfport. European Americans, on the other hand, represented 81.5% of the workforce
of the businesses sampled.
Significant portions of the workforce in these businesses were fulltime employees. According to the workforce data collected, 81.5% of the business reported that less than 20% of their workforce was part time. Only 16.7% of the businesses sampled reported that part time workers represented 20% to 39% of their employee workforce. Only 1.9% of the businesses sampled stated that part time workers comprised 40% or more of their workforce.

European Americans represented the largest group of consumers that purchased goods from the businesses sampled—71.7%. African Americans were the next largest purchasing block for the small businesses sample at 29.6%. Those consumers that were of other ethnic groups besides African and European Americans comprised only 7.5% of the sampled businesses’ consumer base.

The businesses sampled were in two income categories—those that grossed less than $50,000 the past fiscal year and those that grossed $50,000 and more the past fiscal year. Only 23.1% of the businesses that participated in this study had gross incomes the past fiscal year that were less than $50,000. Conversely, 76.9% of the businesses polled had gross incomes the past fiscal year that either equaled or exceeded $50,000.

**Instrumentation**

The instrument packet in this study had two parts. The first part consisted of a cover letter, a self-addressed and stamped postcard, and a self–addressed and stamped envelope. The cover letter contained the researcher’s name, the researcher’s university, and the researcher’s graduate department. It informed the chosen sample that the information that they were supplying to the researcher would be kept confidential.
Furthermore, the letter contained a brief description of the study and its significance to Mississippi’s economic future. In addition, it informed the respondents that they would be sent a copy of the results of this study. It also included the researcher’s contact information—address, telephone number and webpage and e-mail addresses. Lastly, it informed the respondents that by returning the self addressed and stamped postcard in the survey packet with a check on the blank that corresponded with the expression “I will participate” they were agreeing to participate in the study. The letter also informed them that the stamped and self-addressed enveloped should be used to return the survey once it was completed (See Appendices A.1- A.6).

The second part of the survey instrument packet consisted of the actual questions, which was comprised of two sections. The first sectioned contained owner demographic questions, business demographic questions, technology attitude questions, and community technology infrastructure questions. The second section consisted of all the computer, internet, and telephoned related technology access and utilization questions. Each one of these section also had detail instructions on how the questions should had been answered (See Appendix B.1).

With any survey instrument, two additional issues must be addressed—validity and reliability. The validity question that this study addressed was content-related-evidence-validity, which refers to the content and the format of the instrument. The content of the instrument, or the adequacy of the sample of content in the survey, was assured by two ways. Initially, the content of the instrument was assured because each question on the survey was based on the available literature on the subjects of the Digital
Divide and business technology access and use. To further insure the content integrity of the instrument, two boards of technology experts, one consisting of three members of the Department of Business at Millsaps College and the other consisting of members of the Departments of History, Educational Psychology, and Instructional Systems and Workforce Development at Mississippi State University, examined its content.

**Content-Related-Evidence-Validity**

As far as the available literature is concerned, it supports the inclusion of all the questions that were included in this instrument. The demographical questions originated from studies done by National Telecommunication and Information Administration, United States Small Business Administration, and the United States Bureau of the Census. The technology related studies produced by these organizations have standard demographic questions that ask for information like gender, race, income, marital status, educational attainment, number of children in the household, and city of origin. All of these studies stress that these variables are key predictors of the level of technology access and use (National Telecommunication and Information Administration, 1995; 1999; 2000; United States Census Bureau, 1997; United States Small Business Administration, 1997; 1999; 2001; 2003).

As far as the technology measures included in this instrument, the literature on the subject also supports the inclusion of these measures. To the extent that the access measures are concerned, it has been well documented by numerous technology articles that access to several important technological innovations are important for a business’s
future—all of were measured in this study. For instance, an abundance of articles over the past ten years have stressed that a well-defined business technology plan is essential for the success of a small business in today’s marketplace (Long, 1999; Regan, 2003; Roberts, 1999). Numerous articles have also appeared in magazines that stress that access to a technology infrastructure within a business and within the community in which the business is located is vital to a company’s success in the twenty-first century (Arquette, 2001; Kimmelman and Cooper, 2001; Raymond, 2001; Rohan, 2003).

From a technology infrastructure perspective, these articles assert that these business environments should contain computer, Internet, and telephone related technologies. As for the community technology infrastructure, these articles emphasize that the communities in which these businesses operate should contain electrical companies, television stations, radio stations, telephone companies, Internet Service Providers, and satellite service providers that provide both basic and advanced telecommunication services (Arquette, 2001; Kimmelman and Cooper, 2001). Even in financial related articles, they stress that access to these technologies and to a communication infrastructure is vital to the success of a business. It is deemed so vital that many financial institutions in the United States are developing technology focus groups to keep abreast of business and community technology infrastructures and their overall development in the United States. These articles argue that these institutions are doing this so that they can maximize the economic gains that they obtain from the communities in which they invest (Hopkins, 2001; Sklar, 2002).
As far as utilization measures are concerned, two of the most influential online business journals or databases, ChannelWeb and BusinessWeek Online, contain thousands of articles that indicate, in detail, the most prudent utilization activities for the above-mentioned technologies in the business environment—the vast majority of which are included this instrument. The importance of telephone, Internet, and computer related technologies to aid a business in its daily operation, such as doing accounting related tasks, maintaining a customer database, preparing and or presenting business-related presentations, and in the production and manufacturing of goods and services, appear throughout the articles contained in these two journals (Mehling, 2003a, b; Miller, 2003; Raymond, 2001; Roberts, 2003a, b). In addition, the importance of the use of e-mail as a mode to communicate within the office, to communicate with customers, and to market products is also prevalent throughout the articles contained in these journals (Forsman, 2001; Klein, 2002; Wildstrom, 2002).

The vital importance of using the Internet to do business research related activities like investigating the products of competitors, polling Internet users about the potential use of a future product, and as an employee recruitment tool has also been discussed in detail in many articles that have appeared in these online news environments (Mehling, 1999; Wellner, 2000). Moreover, the great significance of the utilization of an Internet based website as a mode to help promote products or services and to provide general company information has been prevalent in the literature that these journals have produced for the last several years (Mehling, 1999a; 2003a). The positive attributes of using the Internet to train workers or executives to accomplish work related tasks appear
frequently in these online periodicals. They indicate that this mode of training has shown itself to be a more efficient, speedy, and cost effective method of educating personnel than the more traditional classroom mode of education (Clancy, 2003; Ellison, 1999; Jouvancy, 2001; Myron, 1999; Torode, 1999; 2000). Lastly, the importance of a small business utilizing both business-to-consumer and business-to-business e-commerce in order to insure its economic vitality in the globalized economy of the twenty-first century has also permeated the literature in these two online journals over the last few years (Black, 2001; Crow, 2001; D’Innocenzo, 2003; Ferguson, 2000; Forsman, 2001; Gonsalves; 2003; Hagendorf and Mehling, 2003; Kharif, 2001; Konrad, 2003; Mehling, 1999b,c,d; Mehling, 2000b; Mehling, 2003b,c; Roberts, 2003a,b,c; Rooney, 2003d; Wasserman, 2003).

The available literature also supported the inclusion of questions gauging a small business owner’s attitude toward technology. There are numerous articles and reports that have appeared in industry and trade magazines that stress how the positive or negative attitudes that an owner has toward technology can adversely affect his or her business’s access and use technology (Minority Business Development Agency, 2001a; 2001b; United States Small Business Administration, 1998a; 2001h). These articles also declare that an owner’s level of knowledge about the application of technology to his or her particular business environment can also affect his or her business’s level of access and use of the technological innovations of the information age (Brandt, 2003; Cogswell, 2002; Doolittle, 2002; Reed Business Information, 2003; Schick, 2003). Finally, the extent in which an owner’s information security concern can adversely affect technology
adoption is also prevalent in the business technology literature (Jones, 2003; Lake, 2000; Savin, 2003; Stern & Ozgar, 2002; Quinn, 2002; Wallraff, 2001).

The last mode used to establish the content-related-evidence validity of the instrument was a board of technology experts. A board of technology experts at Mississippi State University and at Millsaps College also helped assure the content-related-evidence-validity of the instrument by examining it for both prudent information and for its over all aesthetic and structural appearance. It is asserted that these experts, who had developed and evaluated numerous technology plans for both business and educational technological environments, have tested and re-tested their conceptions of technology in those environments. Therefore, these experts’ consistent or reliable conceptual framework of technology allowed them to establish the content-related-evidence-validity of an instrument used to measure a technological phenomenon known as the Digital Divide.

Reliability

Reliability, which refers to the consistency of the scores obtained from one administration of an instrument to another and from one set of items to other sets, cannot be established by many of the traditional methods. The equivalent forms method, which involves using two different but equivalent instruments being administered to the same group during the same period and then calculating a reliability coefficient, can not be used because an equivalent form of this instrument does not exists. There are no set measures for the Digital Divide phenomenon because it can be measured by various technology access and utilization measures besides the ones chosen for this analysis. As
for the split-half procedure, which involves scoring two halves of the test separately for each person in the sample and then calculating a reliability coefficient, it could not have been used because the two halves of the instrument do not provide the same results because they will not be measuring the same thing. The KR21 formula, which uses the number of the items on the instrument and the mean and standard deviations to calculate a reliability statistic, also could not have been used. The reason is that it can not be assumed that the questions on the instrument were of equal difficulty. Its counterpart, the KR20, does not require that the test items contained in the instrument be of equal difficulty, but it does require that the questions on the instrument be dichotomous—scored right or wrong. Since the questions in this instrument were based on a multi-leveled scoring system, this method also could not have been used to establish its reliability.

The only mode to establish the reliability of this instrument was the test-retest method. Ideally, this method involves administering the same tests twice to the same group after a certain period has passed and then calculating a reliability coefficient. Applying this method of reliability to a subject like the Digital Divide required the use of a pilot study. A pilot study consisting of fifty purposively selected small business owners, equally stratified by race and gender, in Jackson, Mississippi was used to test the survey as it pertains to its clearness of sentence structure, its aesthetic appearance, and its reliability. The individuals sampled were purposely assigned into one of two groups—the aesthetic group or the reliability group. The aesthetic group was comprised of twenty individuals and the reliability group contained 30 participants. Each group was equally
stratified by gender and race. The reason that these groups were divided equally along gender lines is that numerous philosophers have stressed that women and men have different views on what is aesthetic pleasing (Korsmeyer, 2004). By equally sampling along gender lines, there was a high probability that the instrument produced might positively appeal to both groups equally; thus, making those individuals sampled from both genders more eager to answer the questions contained in the survey. The purpose of the racial stratification was to insure the representation of both races’ characteristics in the initial analysis.

The aesthetic group was given the instrument first and attached to it was two opened ended questions. The first was the following: “Did you find any of the questions or the directions difficult to understand and if you do what are they and what about them do you find confusing?” As for the second question, it was as follows: “Do you think there should be another technology related question (or questions) added to the survey that is (or are) applicable to the small business environment in Mississippi and if so, what is (or are) it (or they)?” From the comments that were given to these questions, the primary researcher modified the survey as necessary to make it clearer, more aesthetically pleasing, and more applicable to the small business environment in Mississippi. Once the survey was changed based on the aesthetic group’s comments, the board of experts examined the instrument again for content and then the instrument was given twice to the reliability group—two weeks apart. From the scores on these two applications of the instrument, reliability or consistency estimates were calculated for each question contained in the instrument. The reason that a reliability estimate was not
generated for the entire instrument is that the estimate produced would not have told the researcher whether an individual question was weakly consistent from the first application of the instrument to the second. Therefore, the modification or deletion of a weekly consistent question in order to produce a more reliable instrument could not have taken place. In order to produce a reliability estimate for each question in the instrument, a statistical expert advised this researcher to quantify the consistency as the percentage (from 0-100) of the giving the same response to a specified question from the first to the second administration of the instrument to the reliability grouping (David Morse, personal communication, January 27, 2006).

The reliability estimates for the all the access and utilization questions were perfect—having a 100% agreement (see Appendix B.2). There were also perfect reliability for demographic questions contained in the study—all of which also had a 100% agreement.

Apparatus

This researcher developed a special computer database called Mississippi Small Businesses in the Digital Age (MSBD). The researcher used this database to record the information as the members of the sample group return the instrument. MSBD database was designed to record the answers to each question by the name of the company. Access to the database was granted only with the input of a password—a code that only the author of this study was privy. The primary function of this database was storage and security of the data until it was transferred into the selected statistical software—SPSS 13.0—for analysis.
**Design**

This study utilized a mail-in-cross-sectional survey design methodology to collect the data. This survey methodology, defined as collecting information from a sample that has been drawn from a predetermined or selected population with the use a mailed survey, was ideal for this research endeavor. It allowed the researcher to collect precise technology related information without having to go through huge amounts of irrelevant data. Since something as systematic as ascertaining computer related data could be obtained by using such an unobtrusive measure, this researcher summarized that this methodology was the best mode to gather data from a business environment that rationalizes time as precious and valuable resource.

**Response Rate**

Despite the positive aspect of this survey design, it has a major drawback—response rate. Simply, the questionnaires might get lost in the mail, the sample member might misplace the survey, or selected members of the sample might refuse to participate in the study. This researcher addressed these problems in several ways. The researcher made a telephone call to the chosen sample members asking them to participate in this study. Initially, out of a total 500 randomly selected potential respondents 443 respondents agreed to participate.

Moreover, within the survey packet that was mailed to the respondents, there was a self addressed and stamped envelop for the respondents to return the surveys. This packet also contained a stamped postcard. The documentation within this packet instructed the potential respondent to place a check on the appropriate line on the
postcard based on his or her willingness to participate in the study. This served two functions. It allowed the researcher to determine whether the respondent had received the survey packet. It also allowed the researcher to determine whether the chosen sample member desired to participate in the study.

If two weeks after the survey packet was mailed, the researcher had not received the postcard in the mail, a reminder letter was sent to the respondent reminding him or her about the survey. Within this letter contained another self-addressed and stamped postcard, which the respondent was requested to fill out as described above and then mailed back to the researcher. On this postcard, there was also an additional blank. The respondent could have placed a check in this blank if he or she wanted another survey mailed to them (see Appendix A.6). A week later, if there was still no response with the completed questionnaire or the postcard, the researcher mailed another questionnaire packet to the respondent. If there was no response two weeks after this mailing, the researcher placed a telephone call to the selected sample asking them verbally if they wanted to participate in the study. If they agreed, the researcher gave them one of the following options to choose from: (a) another survey being mailed, (b) the questions asked to them over the telephone and their answers recorded, (c) an onsite interview, and (d) to complete the survey online. If this did not encourage the chosen sample participant or participants to take part in the survey, then another random sample was taken to replace the respondent or respondents that did not agree to participate.

This processed worked well for the first several months of the study. Steady responses from potential sample members agreeing to participate in the study were
received. Out of the 443 respondents that agreed to participate over the telephone, all mailed postcards positively affirming their willingness to participate in the study. However, a month before all the surveys were due to return Hurricane Katrina destroyed coastal areas in Mississippi. The destruction of businesses and homes because of this disaster were so significant in Gulfport, Mississippi that it caused the federal government to declare it a disaster area. As for Jackson, Mississippi, it too was affected badly by the hurricane in that numerous homes and business were either destroyed or crippled. This caused the response for this study to be relatively low for both areas—a 13.58% return rate for Jackson and a 9.5% return rate for Gulfport. In all, 54 respondents returned surveys—33 from Jackson and 21 from Gulfport.

Variables

The available literature on technology continually mentions 29 independent variables and 39 potential dependent variables as being as being important as it relates to business technology access and use. Of the possible 29 independent measures, six most related to the characteristics prevalent in the small business environment in Mississippi; thus, they were used in this study. The first set of independent variables was demographic related. They were the following: (a) race of the business owner, (b) the age of business owner, and (c) educational level of the business owner. The next independent variable was economic related. The variable was called the gross income of the business in the past fiscal year. The next set of independent variables was planning and infrastructure related. They were as follows: (a) presence of a business technology plan and (b) access to an e-commerce strategy.
Instead of creating a study with 39 separate dependent variables, the researcher initially decided to group these variables into eight dependent variables—some of the variables were composite of several different attitude, access, or utilization measures. In total, there were initially three access dependent variables and four utilization dependent variables. The members of each grouping were determined by the access or the utilization functions they accomplished for the small business environment; thus, grouping together measures that were potentially highly correlated. The first of the access dependent variables was to be called *Total Business Telephone Access*. This variable was comprised of the measure entitled the Number of Separate Telephone Lines on the business premises (including cellular telephones). The second access variable was to be entitled *Total Business Computer Access*. This variable was comprised of the following computer access measures: (a) number of desktop computers owned or rented by the business, (b) the number of computer related peripheral technology owned or rented by the business, (c) the number of other computer related technology owned or rented by the business, (d) the number of laptops owned or rented by the business, (e) the number of dumb terminals owned or rented by the business, and (f) the availability of some form Network Access on the premises of the business. The third access variable was to be entitled the *Small Business Internet Access*. This variable comprised of the measure entitled the availability of Internet access for the computers on the business premises.

The initial utilization dependent variable was to be entitled *Telephone Utilization for Daily Business Operational Tasks*. This variable was to consist of the following
telephone utilization measures: (a) the level of utilization of the telephone for interoffice communication, (b) the level of use of cellular telephones to communicate with employees or the employer whom are away from the premises of the business, (c) the level of utilization of the telephone to market goods and services, (d) the level of utilization of the telephone to handle customer complaints, (e) the level of utilization of the telephone to serve as a mode for customers to get product assistance when possible functionality problems arise from a particular good or service, and (f) the level of utilization of the telephone to sell goods and services. The second utilization variable was to be entitled *Total Business Computer Utilization*. This variable was to be comprised of the following computer use measures: (a) the level of use of the computer and its related software to store customer and business-related information, (b) the level of use of the computer and its related software to do word processing tasks, (c) the level of use of the computer and its related software to do accounting related activities, (d) the level of use of the computer and its related software to do production and manufacturing related activities for the goods or services sold to customers, and (e) the level of use of the computer and its related software to prepare and or present business-related presentations. The third utilization variable, named *Internet Utilization for Daily Business Operational Tasks*, was to comprise the following measures: (a) the level of use of the Internet as an online learning tool to teach workers to do job related tasks, (b) the level of the use of the Internet to communicate with customers or other businesses with the aid of e-mail, (c) the level of the use of the Internet to do business-related research, (d) the level of use of the Internet to do online banking, (e) the level of use of the Internet to pay
taxes, (f) the level of use of the Internet to obtain needed business-related licenses from either the local, the state, or national government, (g) the level of use of the Internet as a mode to advertise products and services via e-mail, (h) the level of use of the Internet as a mode for the customer to obtain help for problems that might arise with a product or service via online support staff, (i) the level us of the Internet as a mode in which a customer can log complaints about a particular good or service, (j) the level of use of the Internet by the company as a mode to find out how to make a particular good or service that it purchased do a desired function, (k) the level of use of the Internet to recruit employees, (l) the level of use of Internet for web conferencing, and (m) level of the webpage use to advertise products and services. The fourth utilization variable was called *Total E-commerce*. It comprised the following measures: (a) the level of use of the Internet as a mode to sell products and services to individual consumers, (b) the level of use of Internet to purchase goods or services from other business or to sell its goods or services to other businesses, and (c) the level of use of the Internet to sell goods and services to government agencies.

The final dependent variable was to be entitled *Total Technology Attitude Score*. This variable was to be composed of several attitude measures. They were the following: (a) attitude toward the role technology played in the present success of the small business enterprise, (b) attitude toward the role technology will play in the future success of the small business enterprise, (c) level of comfort with technology as it pertains to its application to the environment of the business, and (d) level of confidence in technology’s ability to secure vital information of customers.
**Point System**

As a mode to give a quantifiable measure to the access measures, the utilization measures, and the technology attitude measures, a 100-point system was used to acquire a quantified measure, or score on each of these inquiries. Each question that related to telephone, computer, and Internet related utilization and technology attitudes had five choices. One choice represented 20 points, one choice represented 40 points, one choice represented 60 points, one choice represented 80 points, and one choice represented a 100 points. In this system, 20 represented the absolute lowest score for the variable and 100 points represented the highest. Any scores on an individual measures that was less than 60 was considered as low, scores equal to 60 but less than 80 were considered average, and scores 80 or greater were considered excellent or high. For the analyzed dependent variables that were composite variables—comprising several measures, they were tabulated by adding up the individual scores on the measures that comprised that variable. The value system, as it was applied to the dependent variables used in this analysis, is summarized in Table 3.1 and 3.2.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Low Score</th>
<th>Average Score</th>
<th>Excellent Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Access</td>
<td>Less than 60</td>
<td>60 to 79.999</td>
<td>80 or Above</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>Less than 60</td>
<td>60 to 79.999</td>
<td>80 or Above</td>
</tr>
<tr>
<td>Total Business Computer Access</td>
<td>Less than 360</td>
<td>360 to 479.999</td>
<td>480 or Above</td>
</tr>
<tr>
<td>Telephone Utilization For Daily Business</td>
<td>Less than 360</td>
<td>360 to 479.999</td>
<td>480 or Above</td>
</tr>
</tbody>
</table>
Table 3.1 (continued)

<table>
<thead>
<tr>
<th>Total Computer Utilization</th>
<th>Less than 300</th>
<th>300 to 399.999</th>
<th>400 or Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Utilization For Daily Business Operational Tasks</td>
<td>Less than 780</td>
<td>780 to 1039.999</td>
<td>1040 or Above</td>
</tr>
<tr>
<td>Total E-commerce</td>
<td>Less than 180</td>
<td>180 to 239.999</td>
<td>240 or Above</td>
</tr>
<tr>
<td>Total Technology Attitude Score</td>
<td>Less than 240</td>
<td>240 to 319.999</td>
<td>320 or Above</td>
</tr>
</tbody>
</table>

Table 3.2

DEPENDENT VARIABLE SCORING AND VALUE SYSTEM (TRANSFORMED TCOMPU)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Low Score</th>
<th>Average Score</th>
<th>Excellent Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Computer Utilization</td>
<td>Less than 90000</td>
<td>90000 to 99999</td>
<td>100000 or Above</td>
</tr>
</tbody>
</table>

*The power transformation was simply \( x^2 \) where \( x \) was the initial base line score of 300.

The reason that the aforementioned scoring system was used was for statistical analysis purposes. Digital Divide data intrinsically caters to a descriptive environment because the information gathered is categorical in nature. However, descriptive statistics, with its methods of analysis consisting of using the mode, median, or mean, does not allow for a powerful examinations of possible group differences that might be present at several different levels of the variable or variables under analysis as inferential statistical techniques allow. Only a few researchers have attempted to assign numerical value to Digital Divide data in an attempt to analyze it with inferential methods of data analyses.
Of the studies that did, their methods of value assignment were either never detailed enough for replication or they dealt with subject matter that this research endeavor was not investigating (Dasgupta, Lall, and Wheeler, 2002; Foulger, 2002; Jenner, 2002; Katz, Rice, and Aspden, 2001).

Prior attempts of by the architect of this study to assign a value system to digital divide data revealed a unique occurrence. Many of the inferential statistical procedures used by this researcher to analyze the data like an Analysis of Variance (ANOVA), Analysis of Covariance (ANCOVA), Multivariate Analysis of Variance (MANOVA), Multivariate Analysis of Covariance (MANCOVA), and Multiple Linear Regression (MLR) tended to yield assumption violations for the statistical procedures—in particular violations to univariate normality, homogeneity of variance, and constant variance of error term. This was especially true when it came to values assigned to the data that were multiples of three such as having three, nine, and twelve as representing value assignments for the various technology options—with three being the lowest score and nine being the highest score for each question. However, through this process of analysis of various data sets, it was discovered that a multiples of twenty-value assignment for elements categorical data, in many instances, alleviated the assumption violations that occurred when using inferential statistical procedures like the aforementioned.

As far as the determining the classification of the scores as small, average, or high, several reports done by the United States Small Business Administration and the TeleNomic Research, LLC gave the basis for this ranking system. The reports done by these agencies on small business technology access and use in the United States gave the
average and above average levels of access and use of the various Internet, computer, and telephone related technologies that were measured in this study (Pociask, 2004; United States Small Business Administration, 1990c; 1998k; 1999e; 2003a). Based on these studies, access to the technology measures was assigned certain values. Likewise, the level utilization of the different types of technology measures were assigned certain values.

**Procedures**

Over a ten-week period, a pilot study was done to establish the reliability of the Mississippi Small Business Technology Instrument that was used in this study. The instrument was administered to two groups of small business owners from the city of Jackson, Mississippi—each group equally stratified by race and gender—in the library at Millsaps College. One group, the aesthetic group, contained twenty individuals and the other group, reliability grouping, contained 30 participants. For the first day of Week 1 of the pilot study, the researcher administered the instrument to the aesthetic group. Week 2, the researcher examined and modified the instrument, if necessary, based on the comments of the aesthetic group. After these modifications were completed, on Week 3 and Week 4 the initial board of business technology experts examined the modified instrument. The experts consisted of three professors in the Department of Business at Millsaps College. After they examine the instrument over this week and made written suggestions for modifications, each professor returned instrument to the researcher with written suggestions on possible modifications. Week 5, the researcher modified the instrument based on the suggestions of the experts.
On Week 6 and Week 7, the new instrument was given to the board of technology experts at Mississippi State University for final approval. This group comprised of three doctoral committee members from the Department of Instructional Systems, Leadership, and Workforce Development, one committee member from the Department of Educational Psychology, and one committee member from the Department of History. After they examined document over this two week period, suggest modifications if necessary, and approve the instrument, the researcher then made the modifications to the apparatus. On the first day of Week 8, the researcher gave the new instrument to the reliability group for the first time. On the first day of Week 10, the researcher administered the instrument to reliability group for the second time. A reliability estimate was derived. Perfect reliability was obtained for every question on the instrument.

Once the reliability coefficient was obtained, a computerized random number generator was used to gather the sample of 500 small businesses from the computer databases of the United States Small Business Associations of the aforementioned cities and from the Mississippi Development Authority. At that point, telephone calls were placed to these businesses to obtained oral notification that they would like to participate in the study. Of the 500 calls, 443 small businesses agreed to participate in the study. Once the sample was obtained, the initial series of questionnaire packages were sent to the members of the sample. As each questionnaire was returned, the results were imputed into the MSBD database. Data collection continued for three months and then data analysis began.
Data Analysis

The data produced in this study was analyzed using a Multivariate Analysis of Variance (MANOVA). A MANOVA, developed by S.S. Wilks in 1932, is a method for measuring group differences across multiple metric dependent variables concurrently, based on a series of non-metric categorical variables acting as independent variables. This procedure gives information on the nature and predictive power of the independent variable in addition to the relationships and differences seen in the dependent measures—all of which allow a precise examination of the technology data gathered in this study (Babcock, 2000; French & Poulsen, 1998).

Major Assumptions

When using this statistical procedure, three major assumptions were considered. The first of which is independence of observation. This refers to the fact that the all the cases from the variables should be independent of each other (one observation should not be dependent on selection of one or more earlier observations). There is no mode to test statistically for this assumption (Hair, Anderson, Tatham, & Black, 1998). This is purely a design issue that a researcher must address in the development of both the variables of the study and the procedural process that will be used to conduct the study (Good III, 2000). Violations to this assumption can have a detrimental affect on the results that the MANOVA yields. Like its ANOVA counterpart, moderate amounts of dependence of observation among observations produces an actual Alpha much greater than the nominal Alpha set. This effect is expected, since the dependence of observations lead to an
underestimation of variance. This has the effect of decreasing the mean square error. Because of this decrease, the size of the F statistic is increased; thus, a false statistical significance is obtained. Considering these facts, it is not surprising that experts stress that the MANOVA is not robust when it comes to violations of this assumption (Rencher, 1995).

The second assumption that was addressed is multivariate normality. This refers to the fact that the dependent variables and the linear combinations of these variables should be normally distributed. Moreover, all subsets of the variables under consideration must have a multivariate normal distribution. Like the independence of observation assumption, there is no direct way to test for the Multivariate Normality assumption. With that said, however, most researchers test for univariate normality for each variable. Despite the fact that univariate normality does not assure multivariate normality, Hair, Anderson, Tatham, and Black (1998) argue that if the variable meet the univariate normality requirement, then any lapses from multivariate normality are usually insignificant. Because previous analysis of Digital Divide data shows that this type of data usually violates univariate normality, this assumption was an issue for this research endeavor (Jones, 2001). The Shapiro-Wilks Test of Normality was used to test for univariate normality in this study.

The final assumption that was addressed is the Equality of Variances and Covariance Matrices assumption. This assumption is concerned with the substantial differences in the amount of variance of one group versus another for the same variable under analysis. For this statistical procedure, the variance-covariance matrices of interest
are those of the dependent variable. Violations to this assumption can cause the Alpha levels of this statistical procedure to be under stated or over stated depending on which group the larger variances reside; thus, causing either a Type I error or a Type II error. Violations to this assumption have little impact when the group sizes are close to equal. According to one expert, if the size of the largest group variance divided by the smallest is less than 1.5 then any violation to this assumption is insignificant (Hair, Anderson, Tatham, & Black, 1998). However, if the difference in variances is equal or exceed the 1.5 threshold than this problem has to be addressed. The statistical package that was used to analyze the data in this study provided a method to check for these differences in variances—the Box M Statistic. Therefore, this statistic was used to tests for violation to this assumption.

**Other Issues**

Besides these three major assumptions, there are three other issues that this researcher addressed—linearity, multicollinearity, and outliers. Like Multiple Linear Regression, the MANOVA also constructs a linear relationship between the variables it analyzes. Unlike the Multiple Linear Regression, however, this linear construction is done with the dependent variables. With that said, a researcher must first examine his or her dependent variable data thoroughly to determine whether there is a nonlinear relationship in the data. If nonlinearity exists, the researcher has to make the determination on whether to incorporate it into the dependent variable set for the sake of greater representativeness but increased complexity as it pertains to interpretation or to delete this relationship. Prior analyses of the type Digital Divide data collected in this
study did not reveal a tendency of producing nonlinear relationships as it pertains to
the dependent variables (Jones, 2001).

Another important consideration that was addressed was the presence of
multicollinearity among the dependent variables—a phenomenon that occurs when a
single dependent variable is highly correlated with a set of other dependent variables.
The presence of this phenomenon indicates two things—redundant dependent measures
and decreased statistical efficiency. For the MANOVA, the most important aspect of this
phenomenon is the redundancy issue and its effect on the statistical power of this
procedure. The greatest power of the test is when the dependent variables share a high
negative correlation. This indicates that the MANOVA procedure is optimized by adding
dependent variables that have high negative correlations. This issue of redundancy was
of vital concern with this research because this study analyzed both access and utilization
measures which can be both highly positive in some instances and highly negatively
correlated in other instances (Barker & Barker, 1984; Hair, Anderson, Tatham, & Black,
1998). For this reason, if statically significant positively correlated dependent measures
were contained in this study, the researcher decided that they would be deleted.

The negative affects that outliers had on the data analysis was also considered.
MANOVA, like its ANOVA correlate, is very sensitive to outliers in that they increase
the chances of a Type I error—rejecting a null hypothesis that is actually true. French
and Poulsen (2000), Westerberg (1999), and Hair, Anderson, Tatham and Black (1998)
strongly suggest that a researcher examines his or her data carefully for these occurrences
and if possible delete them from the analysis because of their ability to give false
statistical significance. Because Digital Divide data is technology originated, it might produce some outliers particularly in a state like Mississippi that has numerous educational and economic extremes within a single geographical region of the state. It was decided that if extreme outliers were present in the data then they would be deleted from the data set.

**Significance Test**

Most statistical experts recommend one of two procedures—Pillai-Barlett trace, V or the Wilk’s lambda, U—for test statistics when using the MANOVA (Carey, 1998; French & Poulsen, 2000; Hair, Anderson, Tatham, & Black, 1998; Westerberg, 1999). The above experts emphasize that these two procedures on the whole are most robust against violation of MANOVA’s assumptions but still maintain the greatest statistical power. With this said, however, evidence suggests that Pillai-Barlett trace V is more robust than Wilk’s lambda U and should utilized if the Equality of Variance-Covariance Matrices assumption is violated, sample sizes decreases, or inequality in cell sizes appear (Olson, 1976). Bearing in mind that the MANOVA procedure had never been used on technology data, that the point system that was used to quantify this data had not been extensively tested, and that there was a high probability of assumption violations, this researcher, for the sake statistical safety, used Pillai-Barlett trace, V as the test static in this study.
**Alpha Level**

Because of the uniqueness of the chosen point system used to quantify the digital divide data and the lack of prior utilization of the MANOVA procedure on this type of data, a conservative Alpha Level of .001 was used for this analysis.

**Pos-Hoc Procedure**

It was determined that this study would utilize, if needed, the most conservative of post hoc procedures as it relates to power and risk of Type I error—the Scheffe. This test is also the most unrestrictive as it pertains to sample size and the number of comparisons to be made. This post hoc procedure is also the most unrestrictive as it pertains to the type of comparison to be made. Lastly, it is moderately immune against violations of the major assumptions of the MANOVA. This type of statistical safety was of paramount importance in this research endeavor because, as stated earlier, of the lack of extensive testing of the point system used in this research endeavor and the lack of extensive use of the MANOVA procedure on technology access and utilization data.

**Interaction Effects**

If statistically significant interactions were prevalent in the data analysis, it was a priori determined that Multivariate simple effects tests would be done on them to determine at which level of the interacting variables the differences were ubiquitous. SPSS provides several MANOVA algorithms that can facilitate the investigation of lower and higher order statistically significant interactions among the variables contained in an interaction.
**Descriptive Discriminant Analysis**

If statistical interactions or main effects occurred, the author of this study a priori decided that Descriptive Discriminant Analysis (DDA) was to be used (Huberty, 1994; Whitaker, 1997, p.1). Bray and Maxwell (1985) breaks down the importance of using DDA when a statistical significant difference is found with a MANOVA into four distinct areas. It allows the determination of the minimum number of dimensions that underlie the group differences on the variables under analysis. It facilitates the determination of how the individual variables relate to the underlying dimensions and to the other variables under analysis. DDA also enables the researcher to determine which of the variables are the most vital for group separation. Lastly, it allows the researcher to see “how these groups can be represented geometrically in this reduced discriminant space” (Bray & Maxwell, 1985, p. 43).

**Missing Data**

The researcher decided that if any returned survey had over 70% of its data missing or not interpretable then it would be deleted. The reason for this drastic step was that this researcher wanted to insure the robustness of the data set as it related to the technological characteristics examined.
CHAPTER IV

RESULTS

Summary

This chapter discusses the results yielded from the MANOVA analysis. The chapter contains five sections. The initial section examines the assumptions of the MANOVA. The second section discusses the other issues that could have affected the results that the MANOVA yielded. The third section explains what the MANOVA’s outcomes mean as they relate the five hypotheses of the study. The fourth section examines the nature of the effect sizes generated by each of the independent variables. The final section examines the means of the analyzed dependent measures and each of the means of the access and utilization measures that these variables represent.

MANOVA’s Assumptions

Independence of Observation

This assumption was not an issue in this study because the data analyzed was technology access and use information, not a treatment affect.
**Multivariate Normality**

A Shapiro-Wilk was done on the dependent variables in this study. The results indicated that only the TCOMPU variable had violations to the univariate normality assumption. Therefore, it was declared that a violation to multivariate normality might be present (see Appendix C.2-C.7). A Power transformation (even number: 2) was done on the TCOMPU variable and the univariate normality assumption was satisfied (see Appendices C.8-C.13). It was then declared that violations of multivariate normality were not present in the data set.

**Equality of Variances and Covariance Matrices**

The Box \(M\) Statistic results indicated that this assumption had not been violated, \(p = .890, p > .001\).

**Other Issues**

**Linearity**

Graphs of the independent and dependent variable did not reveal any nonlinear relationships.

**Multicollinearity**

After running a Pearson Correlation on the initial eight dependent variables, the test revealed several singularities or redundancies. Seven of these variables were statistically significantly positively correlated with either the Total Business Computer Utilization variable or the Telephone Utilization for Daily Business Operational Tasks variable (see Appendix C.1). The Total Business Computer Utilization variable was
statistically significant correlated at a .01 Alpha Level with six of the remaining seven
dependent variables. The *Telephone Utilization for Daily Business Operational Tasks*
variable held a statistically significant correlation at a .05 Alpha Level with only one of
the dependent measures—the only measure that the computer utilization dependent
measure did not yield a statistically significant correlation. Moreover, both variables
shared only a mild correlation. Due to the level of correlation with the other dependent
variables and the lack of correlation between each other, it was determined that only the
two abovementioned variables would be the dependent variables analyzed (Grice, 2005).

**Outliers**

There were no extreme outliers present in the data set in this study. Therefore,
data deletion was not necessary.

**Missing Data**

Of the 54 surveys returned, two of them had over 95% of their access and use data
either missing or uninterruptible. These two were deleted from the sample. For those
surveys utilized in the study that had small amounts of missing access and use data, the
researcher used the serial mean to replace the missing data.

**Hypotheses**

\((H_1)\) : There will be a statistically significant difference in the level of access to and the
level of utilization of all the telephone, computer, and Internet related technology access
and utilization variables on the race variable.

This hypothesis is rejected (Pillai’s Trace=.047, \(p>.001\)).
There will be a statistically significant difference in the level of access to and the level of utilization of all the telephone, computer, and Internet related technology access and utilization variables on the business gross income variable.

This hypothesis is rejected (Pillai’s Trace=.011, $p>.001$).

There will be a statistically significant interaction between the race variable and the education variable, the age variable and the education variable, and the age variable and the income variable.

This hypothesis is rejected as it relates to statistically significant interactions between the race and the education variable (Pillai’s trace=.109, $p>.001$), the age variable and the education variable (Pillai’s trace=.244, $p>.001$), and the age variable and the gross income variable (Pillai’s trace=.329, $p>.001$).

There will be a statistically significant difference in the level of access to and the level of utilization of all the telephone, computer, and Internet related technology access and utilization variables on the education and the age variables.

This hypothesis is rejected as it relates to statistically significant outcomes on the age and the education variables. The age variable yielded the following statistically insignificant result: Pillai’s Trace=.378, $p>.001$. The educational level variable yielded the following statistically insignificant result: Pillai’s Trace=.287, $p>.001$.

There will be a statistically significant difference in the level of access to and the level of utilization of all the telephone, computer, and Internet related technology access and utilization variables on the e-commerce strategy and the business technology plan variables.
This hypothesis is rejected as it relates to statistically significant outcomes on the e-commerce strategy and the business technology plan variables. The statistically insignificant outcome on the e-commerce strategy variable was as follows: Pillai’s Trace = .269, \( p > .001 \). The statistically insignificant outcome on the technology plan variable was as follows: Pillai’s Trace = .206, \( p > .001 \).

**Descriptive Discriminant Analysis**

Since the analysis yielded no statistical significant outcomes, a discriminant analysis was not required on the data.

**Effect Sizes**

The majority of the independent variables in this study had large effect sizes. The age variable, the education variable, the e-commerce strategy variable, and the technology plan variable yielded effect sizes of this nature—Cohen’s \( f \) effect sizes that exceeded .50. The hypothesized interactions of these variables also had medium to large effects sizes—Cohen’s \( f \) effect sizes that exceeded .30. Several variables, however, did have relative small effect sizes. Both the race variable and the gross income variable yielded effect sizes that were small—Cohen’s \( f \) sizes that were less than .25.

Due to small effect sizes apparent on several of these variables, close inspections of the means produced from all the independent measures were undertaken to see if any extremely large differences were present—an occurrence that might indicate that statistical power might have been a problem. In addition, a post hoc power analysis was done on the independent variables to determine if the MANOVA had enough statistical
power to detect group differences. Table 4.1 summarizes the Cohen’s $f$ effect sizes for the independent variables in this study.

Table 4.1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Partial Eta-Squared</th>
<th>Eta-Squared</th>
<th>Cohen’s F</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>.047</td>
<td>.047</td>
<td>.222</td>
<td>Small</td>
</tr>
<tr>
<td>Gross Income</td>
<td>.011</td>
<td>.011</td>
<td>.105</td>
<td>Small</td>
</tr>
<tr>
<td>Age</td>
<td>.191</td>
<td>.345</td>
<td>.725</td>
<td>Large</td>
</tr>
<tr>
<td>Education</td>
<td>.143</td>
<td>.266</td>
<td>.601</td>
<td>Large</td>
</tr>
<tr>
<td>E-Commerce Strategy</td>
<td>.269</td>
<td>.269</td>
<td>.606</td>
<td>Large</td>
</tr>
<tr>
<td>Business Technology Plan</td>
<td>.206</td>
<td>.206</td>
<td>.509</td>
<td>Large</td>
</tr>
<tr>
<td>R X E</td>
<td>.109</td>
<td>.109</td>
<td>.349</td>
<td>Medium</td>
</tr>
<tr>
<td>A X E</td>
<td>.122</td>
<td>.233</td>
<td>.551</td>
<td>Large</td>
</tr>
</tbody>
</table>

Note: This table lists the Partial Eta-Squared, the Eta-Squared, and the Cohen’s F for the Independent variables contained in this study. The criteria used to make the classification judgments were based on Cohen’s Guidelines for Effect Size Estimates. See Appendix F Cohen’s Guidelines for Effect Size Estimates.
**Examination of Means**

As far as the race variable was concerned, African American small business owners had a slightly higher average mean score on the TELEUBDO variable and European American small business owners had a slightly higher average mean score on the TCOMPU variable. Approximately, 60.38 and 6,296.26 mean points separate the two grouping on the TELEUBDO and the TCOMPU variables respectively. Table 4.2 summarizes the mean scores on the two dependent variables along racial lines.

A researcher might conclude that the MANOVA might not have had enough statistical power to detect a difference considering the small effect size generated by the race variable. A MINSIZE power analysis on the race variable indicated that the above assertion might be true. The analysis revealed that the minimum sample size needed to detect a statistical significant difference at the .001 Alpha Level on the race variable was 237 cases—a size that is far beyond the total sample size used in this study. However, the resulting nondirectional probability estimate for the F-ratio for this sample size still would not have yielded a statistical significant outcome ($p=.001$) at the .001 Alpha Level set for this study. Therefore, this researcher is confident in the insignificant outcomes on the race variable.

Table 4.2

<table>
<thead>
<tr>
<th>MEAN AND STANDARD ERROR OF RACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>SMEAN(TELEUBDO)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

a. Based on modified population marginal mean.
The small business owners in the 54 years of age or less and the 55 to 64 years of age grouping had excellent means scores on the TCOMPU variable. The rest of the age groupings yielded average mean scores on the TELEUDBO and the TCOMPU variables. As far as the other means are concerned, there was little difference in the scores along the age variable as it relates to the TELEUDBO variable. However, there were several large mean differences on the TCOMPU variable. The 54 years of age or less grouping outscored the 55 to 64 age grouping and the 65 years of age or older grouping by 27,839.07 and 46,155.42 mean points respectively. The 55 to 64 age category outscored the 65 years of age or older grouping by 18,316.35 mean points. Table 4.3 summarizes the mean scores of each dependent variable on the age independent variable.

A MINISIZE power analysis indicated that there might be statistical power issues on this variable due to sample size. The analysis revealed that a minimum sample size of 65 cases—13 more cases than were analyzed in this study—would be needed to detect a statistically significant outcome on the age variable at a .001 Alpha Level. The nondirectional probability estimate generated with estimated F-ratio for this sample size, however, only barely reached the criteria for statistical significant difference (p=.0009) at the .001 Alpha Level. Considering this factor, this researcher is still confident in the results that the MANOVA yielded as it relates to the age variable.
Table 4.3

MEAN AND STANDARD ERROR OF AGE

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Age</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>54 Years of Age Or Less</td>
<td>378.786(a)</td>
<td>25.239</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>396.324(a)</td>
<td>37.803</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>383.064(a)</td>
<td>42.865</td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
<td>54 Years of Age Or Less</td>
<td>145522.40(a)</td>
<td>12758.105</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>117683.33(a)</td>
<td>19109.322</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>99366.974(a)</td>
<td>21667.935</td>
</tr>
</tbody>
</table>

a. Based on modified population marginal mean.

On the gross income of the business the past fiscal year variable, only those in the less than $50,000 grouping on the TELEUDBO variable had low mean scores. The rest of the groupings yielded average or excellent mean scores on both the dependent variables. A mean difference of 34,304.83 points separated the mean scores of the less than $50,000 income grouping and the $50,000 or more income grouping on the TCOMPU dependent measures, in favor of the higher income grouping. The mean scores and standard errors of the dependent variables as they relate to the business gross income independent variable are summarized in Table 4.4.

The MINSIZE power analysis indicated that a minimum sample size of 974 cases would have been required to detect a statistically significant outcome at a .001 Alpha Level. However, even with this sample size the power analysis’s nondirectional probability (p=.001) for the estimated F-ratio still would not have yielded a statistically significant outcome at the .001 Alpha Level used in this study. Therefore, this researcher is confident that statistically insignificant outcome yielded by the MANOVA on the income variable is reliable.
The owner’s educational level independent variable produced scores on the dependent variables that were low, average, or excellent. The high school education level grouping produced low mean scores both dependent measures. The rest of the education categories on the dependent measures produced average or excellent mean scores. On the TCOMPU dependent measure a mean difference of 31,624.997 points existed between those owners with a high school education and those with some college or an associate degree, in favor of the better educated. An even larger mean difference of 68,158.337 points separated those individuals with some college or an associate degree and those with a bachelor degree, in favor of the higher educated. A mean difference of 98,521.767 points separated those in the high school educated grouping and those that had an education beyond a bachelor’s degree, in favor of the better educated. Table 4.5 summarizes the mean scores and the standard errors produced on the dependent variables as they related to the educational level independent variable.

The MINSIZE power analysis revealed that a sample size of at least 111 cases would have been needed to detect a statistically significant difference at the .001 Alpha Level used in this study. However, even with this sample size, the power analysis program indicated the resulting F-ratio and its nondirectional probability estimate (p=.001) still would not have elicited a statistically significant difference at the Alpha level.
Level used in this analysis. With that said, this researcher is confident in the statistically insignificant results on the education variable that the MANOVA obtained.

Table 4.5

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Education</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>High School</td>
<td>342.320(a)</td>
<td>45.881</td>
</tr>
<tr>
<td></td>
<td>Some College or Associate Degree</td>
<td>395.417(a)</td>
<td>37.803</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
<td>380.833(a)</td>
<td>35.386</td>
</tr>
<tr>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>400.214(a)</td>
<td>34.308</td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
<td>High School</td>
<td>61033.333(a)</td>
<td>23192.577</td>
</tr>
<tr>
<td></td>
<td>Some College or Associate Degree</td>
<td>92658.333(a)</td>
<td>19109.322</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
<td>160816.67(a)</td>
<td>17887.290</td>
</tr>
<tr>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>159555.10(a)</td>
<td>17342.305</td>
</tr>
</tbody>
</table>

*Based on modified population marginal mean.

The technology plan independent variable produced either average or excellent mean scores on all its individual levels on both dependent variables. However, there was seemingly a large difference produced on the TCOMPU dependent variable. Those small businesses that had a technology plan of some form outscored those that did not have a technology plan by 34,876.74 mean points. Table 4.6 summarizes the mean scores and the standard errors for the technology plan variable as it related to the two dependent variables.

The MINSIZE power analysis indicated that a minimum sample size of 64 cases would have been needed to detect a statistical significant difference at a .001 Alpha Level. Even with this sample size, however, the resulting F-ratio and its nondirectional probability (p=.0008) only barely reached the criteria for statistically significant difference at the .001 Alpha Level used in this study. For this reason, this researcher is confident in the statistically insignificant results that the MANOVA yielded on the technology plan variable.
Table 4.6

MEAN AND STANDARD ERROR OF BUSINESS TECHNOLOGY PLAN

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Technology Plan</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>No business Technology Plan</td>
<td>382.574(a)</td>
<td>23.137</td>
</tr>
<tr>
<td></td>
<td>Some Form of Business Technology Plan</td>
<td>385.219(a)</td>
<td>32.782</td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
<td>No business Technology Plan</td>
<td>117269.60(a)</td>
<td>11695.829</td>
</tr>
<tr>
<td></td>
<td>Some Form of Business Technology Plan</td>
<td>152146.34(a)</td>
<td>16571.060</td>
</tr>
</tbody>
</table>

a. Based on modified population marginal mean.

The e-commerce strategy variable also yielded mean scores on the dependent measures that were either average or excellent. The levels of the TELEUDBO variable produced average mean scores. Both levels of the TCOMPU variables had excellent mean scores. However, on the TCOMPU variable, a mean difference of 50,542.35 points existed between those that did not have an e-commerce strategy and those that did not in favor of the latter. This difference is rational in that those with an e-commerce strategy of some form would have had greater use of computers because the e-commerce environment would dictate it. Table 4.7 summarizes the mean scores and standard errors for the e-commerce strategy variable as it related to both dependent measures.

The MINSIZE power analysis indicated that the sample size of this study was large enough to detect a statistically significant difference if one was present. Therefore, this researcher is confident that the statistically insignificant outcome on the e-commerce strategy variable that the MANOVA yielded is reliable.
## Table 4.7

### MEAN AND STANDARD ERROR OF E-COMMERCE STRATEGY

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>E-commerce Strategy</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>No E-commerce Strategy</td>
<td>391.292(a)</td>
<td>24.700</td>
</tr>
<tr>
<td></td>
<td>E-commerce Strategy of Some Form</td>
<td>371.078(a)</td>
<td>29.415</td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
<td>No E-commerce Strategy</td>
<td>10903.45(a)</td>
<td>12485.841</td>
</tr>
<tr>
<td></td>
<td>E-commerce Strategy of Some Form</td>
<td>159575.80(a)</td>
<td>14869.218</td>
</tr>
</tbody>
</table>

*a. Based on modified population marginal mean.*

The vast majority of the mean scores on the hypothesized interaction variables also had either average or excellent mean scores on the two dependent measures. There were several exceptions. On the interaction between age of the owner and gross income of the business the past fiscal year, those in the 65 years of age and older grouping had low mean scores on the TELEUDBO and the TCOMPU dependent measures. The interaction between the age of the owner and the education level of the owner produced low mean scores on the TELEUDBO measure for the following categories: (a) owners between the ages of 55 to 64 with a high school education and (b) those owners 65 years of age and older with a high school education. The TCOMPU measure produced low mean scores on this interaction for those owners 55 to 64 with a high school education and those 65 years of age or more either with a high school education or with some college or an Associate Degree. The interaction between race and education produced low mean scores on the following categories: (a) European American with high school education on both the dependent measures, (b) European American with some college or associate degree on the TOCMPU dependent measure, and (c) African Americans with a high school education on the TCOMPU variable.

Several mean differences on these interactions were large. On the age and income interaction on the TELEUDBO variable, a mean difference of 154.235 points existed
between those owners who were 65 years of age or older whose business gross income was less than $50,000 and those whose business gross income was $50,000 or more in favor of the $50,000 and over income grouping. On this same interaction on the TCOMPU variable, a mean difference of 58720.493 points existed between these same age and income grouping in favor of the $50,000 and over gross income category. On the age and education interaction on the TELEUDBO variable, a mean difference of at least 166.373 existed between those in the 55 to 64 category with a high school education and those in the higher educational groupings in favor of those that were better educated. On this same dependent variable, there was also at least a 170-point mean difference between the owners 65 years of age and older with a high school education and those in the other educational categories in favor of the more educated.

On the TCOMPU dependent variable, a mean difference of at least 77,891.003 existed between those owners who were 54 years of age or less with a high school education or that had associate degree or some college and those in the higher educational grouping in favor of the latter. On this same dependent measure, a mean difference of at least 74,500 points existed between those in the 55 to 64 grouping with a high school education and those in the higher educational categories in favor of those in the higher educational groupings. On the TCOMPU dependent variable, a mean difference of at least 108,133.33 existed between those in the 65 years of age and older grouping with either a high school education or some college or associate degree and those in the higher educational categories in favor of the higher educational groupings.

As far as the race and education interaction is concerned, a mean difference of 146.52 existed between African American and European Americans with a high school education.
education on the TELEUDBO dependent variable in favor of the African American grouping. On the TCOMPU variable for this interaction, a mean difference of 76,550 existed between African Americans and European Americans with high school education in favor of the European American grouping. A mean difference of 46,733.337 existed between African and European Americans with some college or an associate degree on the TCOMPU variable in favor of the African American grouping. There was also a mean difference of at least 18,433.33 on the TCOMPU variables between European Americans with some college or associate degree and those in the higher educational groupings in favor of the latter. Tables 4.8 -4.10 summarize the mean scores on dependent variables as they related to the independent measures and their hypothesized interactions.

Despite the low statistical power levels that the MINSIZE program indicated that vast majority of the independent variables in this study had, this researcher concludes that these limitations did not adversely affect the outcomes of the MANOVA as it relates to the interactions because of the extremely conservative Alpha Level that was used in this analysis. This researcher asserts that the .001 Alpha Level used in this study would not have allowed statistical significant interaction to be achieved even if the sample size met the minimum requirements as it relates to the statistical power of the MANOVA. The reason for this assertion is that the abovementioned power analysis for each of the independent variables revealed that the resultant F-ratios and their nondirectional probabilities—with the minimum required sample sizes—on a whole did not reach the criteria for statistical significant difference at the .001 Alpha Level. Therefore, this researcher is confident that the statistical insignificant results the MANOVA yielded on
the interactions are reliable.

Table 4.8

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Age</th>
<th>Gross Income</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>54 Years of Age Or Less</td>
<td>Less Than $50,000</td>
<td>364.930(a)</td>
<td>47.327</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>385.714(a)</td>
<td>29.551</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>Less Than $50,000</td>
<td>440.000(a)</td>
<td>88.541</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>381.765(a)</td>
<td>40.860</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>Less Than $50,000</td>
<td>286.667(a)</td>
<td>72.294</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>440.902(a)</td>
<td>53.125</td>
</tr>
<tr>
<td>SMEAN(TCOMPU)</td>
<td>54 Years of Age Or More</td>
<td>Less Than $50,000</td>
<td>118305.11(a)</td>
<td>23923.673</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>159131.04(a)</td>
<td>14938.049</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>Less Than $50,000</td>
<td>130000.000(a)</td>
<td>44757.094</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>113577.78(a)</td>
<td>20654.464</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>Less Than $50,000</td>
<td>126666.667(a)</td>
<td>36544.014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$50,000 or Over</td>
<td>121387.16(a)</td>
<td>26854.256</td>
</tr>
</tbody>
</table>

* Based on modified population marginal mean.

Table 4.9

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Age</th>
<th>Education</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>54 Years of Age Or Less</td>
<td>High School</td>
<td>442.222(a)</td>
<td>63.757</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>378.667(a)</td>
<td>49.032</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>346.667(a)</td>
<td>51.119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>379.216(a)</td>
<td>42.894</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>High School</td>
<td>263.627(a)</td>
<td>76.679</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>450.000(a)</td>
<td>76.679</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>430.000(a)</td>
<td>65.995</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>453.333(a)</td>
<td>72.294</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>High School</td>
<td>200.000(a)</td>
<td>125.217</td>
</tr>
</tbody>
</table>
Table 4.9 (continued)

<table>
<thead>
<tr>
<th>SMEAN(TCOMPU)</th>
<th>Age Group</th>
<th>Education Level</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>54 Years of Age Or Less</td>
<td>High School</td>
<td>91066.667(a)</td>
<td>32228.791</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>99853.333(a)</td>
<td>24785.356</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>183466.67(a)</td>
<td>25840.520</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>168957.67(a)</td>
<td>21682.670</td>
</tr>
<tr>
<td></td>
<td>55 to 64</td>
<td>High School</td>
<td>41500.000(a)</td>
<td>38760.780</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>116000.00(a)</td>
<td>38760.780</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>158200.00(a)</td>
<td>33359.968</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>151866.67(a)</td>
<td>36544.014</td>
</tr>
<tr>
<td></td>
<td>65 Years of Age or More</td>
<td>High School</td>
<td>10000.000(a)</td>
<td>63296.089</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>10000.00(a)</td>
<td>44757.094</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>118133.33(a)</td>
<td>36544.014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>140178.60(a)</td>
<td>36544.014</td>
</tr>
</tbody>
</table>

a Based on modified population marginal mean.

Table 4.10

MEAN AND STANDARD ERROR OF RACE AND EDUCATION INTERACTION

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Race</th>
<th>Education Level</th>
<th>Mean</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMEAN(TELEUDBO)</td>
<td>European American</td>
<td>High School</td>
<td>293.480(a)</td>
<td>52.693</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>372.667(a)</td>
<td>42.154</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>366.250(a)</td>
<td>42.865</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beyond a Bachelor’s Degree</td>
<td>387.974(a)</td>
<td>42.171</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>High School</td>
<td>440.000(a)</td>
<td>88.541</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some College or Associate Degree</td>
<td>433.333(a)</td>
<td>72.294</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bachelor’s Degree</td>
<td>410.000(a)</td>
<td>62.608</td>
</tr>
</tbody>
</table>
Table 4.10 (continued)

<table>
<thead>
<tr>
<th>SMEAN(TCOMPU)</th>
<th>European American</th>
<th>Beyond a Bachelor’s Degree</th>
<th>414.902(a)</th>
<th>55.999</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>86550.000(a)</td>
<td>26635.789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College or Associate Degree</td>
<td>75133.333(a)</td>
<td>21308.639</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>171075.00(a)</td>
<td>21667.935</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beyond a Bachelor’s Degree</td>
<td>157228.39(a)</td>
<td>21317.342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>10000.000(a)</td>
<td>44757.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College or Associate Degree</td>
<td>121866.67(a)</td>
<td>36544.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>140300.00(a)</td>
<td>31684.045</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beyond a Bachelor’s Degree</td>
<td>162347.16(a)</td>
<td>28306.872</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Based on modified population marginal mean.

**Access and Utilization Measures**

Although the chosen dependent measures share a statistically significant amount of the same variation with the initial set of dependent measures and the measures that comprised these measures, the above analysis alone does not provide a clear picture of the nature of technology access and use by the small businesses sampled. The reason for this is that a large portion of the variation in all the 39 technology measures that comprise all the dependent variables was not explained. Therefore, it was most prudent to analyze how each one of these technology measures related to the independent variables and the hypothesized interactions; thus, strengthening the rejection of the hypotheses, reaffirming the statistically insignificant finding, and providing a truer picture of the nature and the character of telephone, computer, and internet related technology access and use.
European and African Americans-owned small businesses in Jackson and Gulfport Mississippi accessed the tools of the information age at extremely low levels. Both races had low mean scores on the desktop computer, the computer peripheral devices, the laptop computer, the dumb terminal, the additional computer related devices, and the network access variables. Both races had extremely high or excellent scores on the telephone access variable. The only large mean difference apparent in the access measures resided in the Internet access or more correctly type of Internet access measure. While European American-owned small businesses had a mean score slightly over 60, African American-owned small businesses scored slightly over 40. In real life terms, African American-owned small businesses on average utilized the slower Internet access method through the telephone line. European American small businesses owners, however, on average used faster modes of access such a cable modem or WebTV. Table 4.11 summarizes the mean scores on the access variables as they related to race.

Table 4.11

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>European American</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>48.2350</td>
<td>46.1538</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>50.5882</td>
<td>40.0000</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>30.0000</td>
<td>29.0000</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>27.6471</td>
<td>24.6154</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>28.8235</td>
<td>26.1538</td>
</tr>
<tr>
<td>Network Access</td>
<td>40.0000</td>
<td>35.3846</td>
</tr>
</tbody>
</table>
Table 4.11 (continued)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Access</td>
<td>62.3529</td>
<td>44.6154</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>86.4706</td>
<td>80.0000</td>
</tr>
</tbody>
</table>

**Race and Telephone Utilization**

African Americans had average telephone utilization levels for interoffice communication, cellular telephone offsite communication, marketing goods and or services, handling customer complaints, and doing customer service related activities—all of which had mean scores that only slightly exceeded 70. European Americans, on the other hand, had average telephone utilization for cellular telephone offsite communication, handling customer complaints, providing customer service, and doing customer service related activities—measures that yielded mean scores slightly exceeded 60. Both grouping had low levels of utilization on the selling goods and or services over telephone measure—mean scores slightly above 55. European Americans, however, also had extremely low levels of telephone use for interoffice communication and for the marketing of goods and or services—mean scores that were respectively 27.73 and 20.90 lesser than the African American-owned small businesses’ scores on the same measures. Table 4.12 summarizes the mean scores of telephone utilization by race.
Table 4.12
MEAN SCORE OF TELEPHONE UTILIZATION BY RACE

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>European American</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>47.6471</td>
<td>75.3846</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>74.7059</td>
<td>73.8462</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>52.9412</td>
<td>73.8462</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>62.3529</td>
<td>70.7629</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>69.4118</td>
<td>75.3846</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>55.8824</td>
<td>55.3846</td>
</tr>
</tbody>
</table>

**Race and Internet Utilization**

Both African and European American small business owners surveyed had extremely low levels of Internet utilization for the vast majority of the Internet applications measures—mean scores that were in most instances less than 60 and in some extreme cases less than 30. European American small business owners did have average levels of utilization on two of the 16 Internet utilization measures—e-mail use for business communication with customers or other businesses and Internet use to do business-related research. In sharp contrast, the African American small business owners did not have a single Internet utilization measure in which they had an average level of use. On a measure-by-measure basis, European Americans had a slightly higher level of utilization on the Internet uses examined. In fact, 12.53 mean points separated African and European Americans on using the Internet to learn how to make a particular good or service purchased accomplish a desired function and a 16.42 mean point separation
existed between these two groups on the use of business-to-business e-commerce. Table 4.13 summarizes the Internet utilization measures mean scores by race.

Table 4.13
MEAN SCORE OF INTERNET UTILIZATION BY RACE

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>European American</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>28.2353</td>
<td>21.5385</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>62.9412</td>
<td>53.8462</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>37.0588</td>
<td>32.3077</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>41.1765</td>
<td>36.9231</td>
</tr>
<tr>
<td>Research</td>
<td>60.0000</td>
<td>56.9231</td>
</tr>
<tr>
<td>Functionality (Goods and Services)</td>
<td>41.7647</td>
<td>29.2308</td>
</tr>
<tr>
<td>E-learning</td>
<td>38.2353</td>
<td>33.8462</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>29.4118</td>
<td>29.2308</td>
</tr>
<tr>
<td>Online Banking</td>
<td>51.7647</td>
<td>43.0769</td>
</tr>
<tr>
<td>Government (selling goods or services)</td>
<td>29.4118</td>
<td>32.3077</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td>47.6471</td>
<td>40.0000</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td>37.6471</td>
<td>36.9231</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>29.4118</td>
<td>26.1538</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>34.1176</td>
<td>30.7629</td>
</tr>
</tbody>
</table>
Table 4.13 (continued)

| E-commerce (Business-to-Consumer) | 36.4706 | 29.2308 |
| E-commerce (Business-to-Business) | 44.1176 | 27.6923 |

**Race and Computer Utilization**

Both racial categories had low levels of computer use to accomplish business-related presentation using software such as Powerpoint or Corel Presentation—mean scores for these measures were less than 48. However, European American-owned small businesses alone had low levels of use of computer to accomplish manufacturing, production, and service related activities for the goods and or services they produced. African American-owned small businesses had an average level of use of this measure. For the rest of computer utilization measures, such as for storage, word processing, and accounting related activities, both racial categories had levels computer utilization classified as either average or excellent—with mean utilization scores on these measure ranging between 69.2308 and 81.7641. Table 4.14 summarizes mean computer utilization scores by race.

Table 4.14

**MEAN SCORE OF COMPUTER UTILIZATION BY RACE**

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>European American</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>75.2941</td>
<td>69.2308</td>
</tr>
<tr>
<td>Word Processing</td>
<td>81.7641</td>
<td>70.7692</td>
</tr>
<tr>
<td>Accounting</td>
<td>77.6471</td>
<td>81.5385</td>
</tr>
</tbody>
</table>
Table 4.14 (continued)

<table>
<thead>
<tr>
<th>Production, Manufacturing, Service</th>
<th>58.8235</th>
<th>60.0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentations</td>
<td>47.6923</td>
<td>40.0000</td>
</tr>
</tbody>
</table>

**Race and Technology Attitudes**

African American and European American-owned small business owners had average levels of confidence in technology’s role in the present and future success of their enterprises. Small business owners from both ethnic groups also had average comfort levels with how technology could be applied to their individual business environments. However, both groups of business owners had rather low levels of confidence in technology’s ability to secure the vital information of their customer—information such as a customer’s credit card, social security, and bank account numbers. Table 4.15 summarizes the technology attitude mean scores by race.

Table 4.15

<table>
<thead>
<tr>
<th>MEAN SCORE OF TECHNOLOGY ATTITUDES BY RACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude Measure</td>
</tr>
<tr>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Technology (Present Business Success)</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
</tr>
</tbody>
</table>
**Age and Access**

There were low levels of access to desktop computers, computer peripheral devices, laptops, dumb terminals, additional compute related devices, and networks across all the age intervals analyzed in this study—all of which yielded mean scores less than 60. For those owners in the 54 years or less and the 65 years or more age categories, they had low levels of Internet access—that is either having no Internet access or having access only through the telephone line. Those in 55 to 64 grouping, however, had average levels of Internet access in that they had faster modes of Internet access through either a cable modem or WebTV. All age intervals had high levels of telephone access—mean scores that exceeded 80. In real life terms, it means that all the individuals in these age intervals had at least three separate business telephone lines. Table 4.16 summarizes the mean scores of the technology access measures by age.

Table 4.16

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>54 or Less</th>
<th>55 to 64</th>
<th>65 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>47.1429</td>
<td>52.7273</td>
<td>42.5000</td>
</tr>
<tr>
<td>Computer Peripheral Devices</td>
<td>49.2857</td>
<td>52.7273</td>
<td>35.0000</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>27.8571</td>
<td>40.0000</td>
<td>22.5000</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>25.7143</td>
<td>34.5455</td>
<td>27.1429</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>36.3636</td>
<td>58.5714</td>
<td>45.4545</td>
</tr>
<tr>
<td>Network Access</td>
<td>40.7143</td>
<td>36.3636</td>
<td>35.0000</td>
</tr>
<tr>
<td>Internet Access</td>
<td>55.7143</td>
<td>67.2727</td>
<td>50.0000</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>85.0000</td>
<td>85.4545</td>
<td>82.5000</td>
</tr>
</tbody>
</table>
**Age and Telephone Utilization**

All age intervals had average levels of telephone use for handling customer complaints, offsite communication (cellular telephones), and providing customer assistance—mean scores that exceeded 66. All age intervals also had low levels of telephone utilization for interoffice communication. As far as marketing goods and or services over telephone, business owners between ages of 55 and 64 had average levels of use of telephone marketing while the other two age intervals had low levels of utilization. Table 4.17 summarizes the telephone utilization mean scores by age.

Table 4.17

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>54 or Less</th>
<th>55 to 64</th>
<th>65 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>58.574</td>
<td>45.4545</td>
<td>57.5000</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>73.5714</td>
<td>74.5455</td>
<td>77.5000</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>55.0000</td>
<td>69.0909</td>
<td>57.5000</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>66.4286</td>
<td>61.8182</td>
<td>62.5000</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>69.2857</td>
<td>72.7273</td>
<td>75.0000</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>55.0000</td>
<td>60.0000</td>
<td>52.0000</td>
</tr>
</tbody>
</table>

**Age and Internet Utilization**

There were low levels of Internet utilization for the following tasks across all owner age intervals: (a) employee recruitment, (b) e-mail marketing, (c) website advertisement, (d) research, (e) functionality of goods and services, (f) e-learning, (g) web conferencing, (h) online banking, (i) selling to government agencies, (j) pay or file
taxes, (k) obtaining business-related licenses, (l) online support staff, (m) online complaint database, (n) business-to-consumer e-commerce, and (o) business-to-business e-commerce. Those owners between the ages of 55 and 64 had average levels e-mail utilization to communicate with customers or other businesses; however, there were moderately low levels for the other age intervals. Those individuals that were between ages of 55 to 64 had high levels of online complaint database use and those 65 years of age and older had average levels of utilization. However, those in the 54 years of age or less grouping had extremely low levels of online complaint database use when compared to the other age intervals—a mean score of 34.5455 compared to mean scores of 83.5714 and 70.9091 for the 55 to 64 and the 65 and older age intervals respectively. Table 4.18 summarizes the mean scores of Internet utilization by age.

Table 4.18

MEAN SCORE OF INTERNET UTILIZATION BY AGE

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>54 or Less</th>
<th>55 to 64</th>
<th>65 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>25.7143</td>
<td>30.9091</td>
<td>22.5000</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>58.5714</td>
<td>69.0909</td>
<td>55.0000</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>36.4286</td>
<td>38.1818</td>
<td>30.0000</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>42.1429</td>
<td>40.0000</td>
<td>32.5000</td>
</tr>
<tr>
<td>Research</td>
<td>67.8571</td>
<td>43.6364</td>
<td>50.0000</td>
</tr>
</tbody>
</table>
### Table 4.18 (continued)

<table>
<thead>
<tr>
<th>Functionality (Goods and Services)</th>
<th>40.7143</th>
<th>38.1818</th>
<th>30.0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-learning</td>
<td>38.5714</td>
<td>34.5455</td>
<td>35.0000</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>30.0000</td>
<td>34.5455</td>
<td>20.0000</td>
</tr>
<tr>
<td>Online Banking</td>
<td>57.8571</td>
<td>41.8182</td>
<td>30.0000</td>
</tr>
<tr>
<td>Government (selling goods or services)</td>
<td>32.1429</td>
<td>29.0909</td>
<td>25.0000</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td>45.7143</td>
<td>49.0909</td>
<td>40.0000</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td>37.8571</td>
<td>41.8182</td>
<td>30.0000</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>27.8571</td>
<td>36.3636</td>
<td>36.4286</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>34.5455</td>
<td>83.5714</td>
<td>70.9091</td>
</tr>
<tr>
<td>E-commerce (Business-to-Consumer)</td>
<td>39.2857</td>
<td>32.7273</td>
<td>20.0000</td>
</tr>
<tr>
<td>E-commerce (Business-to-Business)</td>
<td>46.4286</td>
<td>32.7273</td>
<td>25.0000</td>
</tr>
</tbody>
</table>

**Age and Computer Utilization**

The 54 years or less age group of small business owners had high levels of computer usage as a storage device while the 55 to 64 age grouping had average levels usage, and the 65 or over age category had extremely low levels of usage. The 54 years
or less and the 55 to 64 age groupings had high levels of computer usage for word processing tasks, mean scores of 82.1429 and 83.6364 respectively, while the 64 and over age grouping had only an average level usage. The 55 to 64 age interval and the 65 and over age interval had average levels of computer usage to do accounting related activities. In contrast, the 54 years or less age category had high levels computer usage to accomplish accounting related activities. In fact, this grouping’s utilization mean score on this measure was 15 points larger than the other two age groupings. All the age intervals had low levels of computer utilization for business-related presentations with the 54 years or less grouping having the highest level of use of the three categories. As for computer use to do manufacturing, production, or service related activities, the 54 years or less age group alone had an average level of computer use to do this task while the other two age categories had low levels of use. Table 4.19 summarizes the mean scores of computer utilization by age.

Table 4.19
MEAN SCORE OF COMPUTER UTILIZATION BY AGE

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>54 or Less</th>
<th>55 to 64</th>
<th>65 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>83.5714</td>
<td>70.9091</td>
<td>42.5000</td>
</tr>
<tr>
<td>Word Processing</td>
<td>82.1429</td>
<td>83.6364</td>
<td>60.0000</td>
</tr>
<tr>
<td>Accounting</td>
<td>85.0000</td>
<td>69.0909</td>
<td>70.0000</td>
</tr>
<tr>
<td>Production, Manufacturing, Service</td>
<td>64.2857</td>
<td>50.9091</td>
<td>52.5000</td>
</tr>
<tr>
<td>Presentations</td>
<td>57.1429</td>
<td>45.4545</td>
<td>35.0000</td>
</tr>
</tbody>
</table>
**Age and Technology Attitudes**

All the age categories had average technology attitude scores as it related to technology’s role in the present and future success of their businesses. However, only the 54 years or less and the 55 to 64 years categories had average comfort levels with how technology could be applied to their individual business environments. Moreover, all three age grouping had rather low levels of confidence in technology’s ability to secure the vital information of their customer—information such as a customer’s credit card, social security, and bank account numbers. Table 4.20 summarizes the mean technology attitude scores by age.

Table 4.20

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>54 or Less</th>
<th>55 to 64</th>
<th>65 or More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology (Present Business Success)</td>
<td>75.4043</td>
<td>75.5746</td>
<td>75.0000</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
<td>79.6857</td>
<td>75.5636</td>
<td>75.0000</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
<td>76.1186</td>
<td>75.5746</td>
<td>65.0000</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
<td>53.1630</td>
<td>57.7622</td>
<td>47.5000</td>
</tr>
</tbody>
</table>

**Education and Access**

Those owners that had either a high school education or some college or an associate degree had extremely low levels access on all the computer, the dumb terminal, and the Internet and the network related access measures—mean scores that were less
than 35. However, both of these educational categories had average to excellent
levels of access to the telephone—mean scores that were 75 or greater. For those with a
bachelor’s degree, they too had low levels of access to all the computer, the dumb
terminal, and the network access measures—all of which had mean scores that were less
than 45. Those in this educational category, however, did have average levels of access
to the Internet and excellent levels of access to the telephone—mean scores that were 60
or above and 89 or above respectively. Small business owners that had educational
training beyond a bachelor’s degree had the highest levels of access on the measures of
any of the educational grouping. They had average levels of access to both desktop
computers and computer peripheral devices. Moreover, this grouping had average to
excellent levels of access to the telephone and Internet—mean scores that exceeded 88
and 72 respectively. Though this group’s access to Local Area Networks, laptop
computers, dumb terminals, and additional computer related devices exceeded the other
educational groupings, the mean scores still represented low levels of access for these
technology measures—mean scores that were less than 48. Table 4.21 summarizes the
mean scores of the technology access measures by education.

Table 4.21
MEAN SCORE OF TECHNOLOGY ACCESS MEASURES BY EDUCATION

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>High School</th>
<th>Some College Or Associate Degree</th>
<th>Bachelors Degree</th>
<th>Beyond Bachelor’s Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>40.0000</td>
<td>35.0000</td>
<td>50.7692</td>
<td>60.0000</td>
</tr>
</tbody>
</table>
Table 4.21 (continued)

<table>
<thead>
<tr>
<th>Computer Peripherals Devices</th>
<th>37.5000</th>
<th>33.3333</th>
<th>53.8462</th>
<th>60.0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop Computers</td>
<td>22.5000</td>
<td>23.3333</td>
<td>26.1538</td>
<td>42.8571</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>25.0000</td>
<td>23.3333</td>
<td>26.1538</td>
<td>31.4286</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>22.3000</td>
<td>26.6667</td>
<td>26.1538</td>
<td>35.7143</td>
</tr>
<tr>
<td>Network Access</td>
<td>30.0000</td>
<td>28.3333</td>
<td>44.6154</td>
<td>47.1429</td>
</tr>
<tr>
<td>Internet Access</td>
<td>42.5000</td>
<td>46.6667</td>
<td>60.0000</td>
<td>72.8571</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>75.0000</td>
<td>81.6667</td>
<td>89.2308</td>
<td>88.5714</td>
</tr>
</tbody>
</table>

**Education and Telephone Utilization**

All the educational categories had low levels of use of the telephone for interoffice communication except for those that had an education beyond a bachelor’s degree—a group that had an average level of usage. All the educational categories had at least an average level usage of cellular telephones for offsite communication. Only the some college or associate degree and the bachelor’s degree educational classifications
had average levels of use of telephones to market goods and or services; the other two categories had low levels of usage on this measure. The some college or associate degree, the bachelor’s degree, and the beyond bachelor ’s degree groupings had average levels of telephone utilization to handle customer complaints and to provide customer assistance while the high school grouping had low levels of usage on these measures. As far as selling goods and or services was concerned, only two educational levels, some college or associate degree and beyond a bachelors degree categories, had average levels of utilization while the other age groupings had low levels of use. Table 4.22 summarizes the mean score of the telephone utilization measures by education.

Table 4.22

MEAN SCORE OF TELEPHONE UTILIZATION BY EDUCATION

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>High School</th>
<th>Some College Or Associate Degree</th>
<th>Bachelors Degree</th>
<th>Beyond Bachelor’s Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>47.5000</td>
<td>51.667</td>
<td>55.3864</td>
<td>62.8571</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>77.5000</td>
<td>63.3333</td>
<td>81.5385</td>
<td>75.7143</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>50.0000</td>
<td>68.3333</td>
<td>60.0000</td>
<td>54.2857</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>47.5000</td>
<td>70.0000</td>
<td>63.0769</td>
<td>71.4286</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>57.5000</td>
<td>76.6667</td>
<td>69.2308</td>
<td>75.7143</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>42.5000</td>
<td>68.3333</td>
<td>46.1538</td>
<td>61.4268</td>
</tr>
</tbody>
</table>
**Education and Internet Utilization**

The high school and some college or associate degree grouping had extremely low levels of utilization on all the Internet measures—all which had mean scores no larger than 48. The bachelor’s degree grouping only had average levels of use on the e-mail to communicate with customers or other businesses and the Internet research measures. The rest of the utilization measures had low levels of use for this educational category. The beyond a bachelor’s degree grouping had average levels of utilization on four Internet utilization measures—e-mail communication with customers or others businesses, research, online banking, and filing or paying taxes. The rest of the utilization measures for this educational category had very low level of use. Table 4.23 summarizes the mean scores of Internet utilization by education.

Table 4.23

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>High School</th>
<th>Some College Or Associate Degree</th>
<th>Bachelors Degree</th>
<th>Beyond Bachelor’s Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>25.0000</td>
<td>26.1538</td>
<td>26.1538</td>
<td>32.8571</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>47.5000</td>
<td>43.3333</td>
<td>70.7692</td>
<td>72.8571</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>37.5000</td>
<td>28.3333</td>
<td>43.0769</td>
<td>34.2857</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>37.5000</td>
<td>31.6667</td>
<td>44.6154</td>
<td>44.2857</td>
</tr>
<tr>
<td>Functionality</td>
<td>Research</td>
<td>47.5000</td>
<td>40.0000</td>
<td>64.6154</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>E-learning</td>
<td></td>
<td>40.0000</td>
<td>26.6667</td>
<td>43.0769</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td></td>
<td>32.5000</td>
<td>25.0000</td>
<td>36.9231</td>
</tr>
<tr>
<td>Online Banking</td>
<td></td>
<td>32.5000</td>
<td>20.0000</td>
<td>23.0769</td>
</tr>
<tr>
<td>Government (selling goods or services)</td>
<td></td>
<td>47.5000</td>
<td>33.3333</td>
<td>38.4615</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td></td>
<td>37.5000</td>
<td>33.3333</td>
<td>38.4615</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td></td>
<td>30.0000</td>
<td>30.0000</td>
<td>32.3077</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td></td>
<td>30.0000</td>
<td>20.0000</td>
<td>27.6923</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td></td>
<td>32.5000</td>
<td>25.0000</td>
<td>40.0000</td>
</tr>
</tbody>
</table>
Table 4.23 (continued)

<table>
<thead>
<tr>
<th>E-commerce (Business-to-Consumer)</th>
<th>35.0000</th>
<th>31.6667</th>
<th>40.0000</th>
<th>31.4286</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-commerce (Business-to-Business)</td>
<td>45.0000</td>
<td>36.6667</td>
<td>35.3846</td>
<td>42.8571</td>
</tr>
</tbody>
</table>

**Education and Computer Utilization**

Those owners with a high school education had low levels of utilization for all the computer measures except for word processing utilization in which this group yielded an average level of application. Those that had some college or associate agree had average levels of utilization of the computer for storage, word processing, and accounting related activities. However, they had low levels of utilization of the computer for manufacturing and presenting and preparing business-related presentations. For those small business owners with a bachelor’s degree or more, they had excellent or high levels of computer utilization for storage, word processing, and accounting related activities. Both grouping had average levels of computer utilization for manufacturing, production, or service related activities. These educational grouping differed, however, on computer utilization to prepare or present business-related presentations. The bachelor’s degree grouping had a low level of utilization on this measure while those that had education beyond bachelor’s degree had an average level of usage. Table 4.24 summarizes the mean scores of computer utilization by education.
Table 4.24

MEAN SCORE OF COMPUTER UTILIZATION BY EDUCATION

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>High School</th>
<th>Some College Or Associate Degree</th>
<th>Bachelors Degree</th>
<th>Beyond Bachelor's Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>42.5000</td>
<td>61.6667</td>
<td>87.6923</td>
<td>88.5714</td>
</tr>
<tr>
<td>Word Processing</td>
<td>60.0000</td>
<td>61.6667</td>
<td>83.0769</td>
<td>94.2857</td>
</tr>
<tr>
<td>Accounting</td>
<td>42.5000</td>
<td>73.3333</td>
<td>89.2308</td>
<td>94.2857</td>
</tr>
<tr>
<td>Production, Manufacturing, Service</td>
<td>47.5000</td>
<td>46.6667</td>
<td>69.2308</td>
<td>67.1429</td>
</tr>
<tr>
<td>Presentations</td>
<td>42.5000</td>
<td>33.3333</td>
<td>53.8462</td>
<td>67.1429</td>
</tr>
</tbody>
</table>

*Education and Technology Attitudes*

Small business owners of every educational category thought technology played at least an average role in the present and will play an average role in the future success of their businesses. Moreover, the small business owners of every educational grouping thought that they had at least an average level of comfort as it pertained to applying technology to their business environments. As far as confidence in technology’s ability to secure customer information, those owner’s with either had a high school education, some college or associate degree, or beyond a bachelor’s degree had low level of confidence in technology ability secure their customers’ vital information. Those owners with a bachelor degree, however, had an average level of confidence with technology’s
ability to secure their customers’ vital information. Table 4.25 summarizes the mean scores of technology attitude by education.

Table 4.25

MEAN SCORE OF TECHNOLOGY ATTITUDES BY EDUCATION

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>High School</th>
<th>Some College Or Associate Degree</th>
<th>Bachelors Degree</th>
<th>Beyond Bachelor’s Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology (Present Business Success)</td>
<td>66.4151</td>
<td>70.9434</td>
<td>81.5385</td>
<td>78.5714</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
<td>61.9500</td>
<td>72.6000</td>
<td>82.7385</td>
<td>87.1429</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
<td>78.9151</td>
<td>60.0000</td>
<td>76.9231</td>
<td>80.8086</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
<td>52.2115</td>
<td>56.4744</td>
<td>64.6154</td>
<td>59.8352</td>
</tr>
</tbody>
</table>

**Gross Income and Access**

The small business owners that had gross business incomes that were $50,000 or more had levels of access that were higher than the less than $50,000 income grouping. However, this grouping had excellent or high levels of access on only the telephone access variable. It had average levels access on only the Internet access variable. For the rest of the technology access measures this income grouping had low levels of access. The only technology access measure that the less than $50,000 income grouping had average levels of access was the telephone. Despite the low levels of access apparent across both economic levels, the $50,000 and over grouping did outpace its counterpart by 10 mean points on desktop computer access, 14.9 mean points on network access, 18
mean points on Internet access, and 20.35 mean points on telephone access. Table 4.26 summarizes the mean scores of technology access by gross income.

Table 4.26

MEAN SCORE OF TECHNOLOGY ACCESS MEASURES BY GROSS INCOME

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>Less than $50,000</th>
<th>$50,000 and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>40.0000</td>
<td>50.0000</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>43.6364</td>
<td>48.8889</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>25.4545</td>
<td>31.1111</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>21.8182</td>
<td>28.3333</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>23.6364</td>
<td>29.4444</td>
</tr>
<tr>
<td>Network Access</td>
<td>27.2727</td>
<td>42.2222</td>
</tr>
<tr>
<td>Internet Access</td>
<td>43.6364</td>
<td>61.6667</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>69.0909</td>
<td>89.4444</td>
</tr>
</tbody>
</table>

*Gross Income and Telephone Utilization*

The businesses that had incomes that were $50,000 or more had higher levels of telephone utilization than the other income category. However, both income categories had low levels telephone utilization for interoffice communication, marketing goods and or services, and selling goods and or services. Both income categories also had average levels of telephone utilization for handling customer complaints, customer service, and offsite communication. Table 4.27 summarizes the mean scores of telephone utilization by gross income.
Table 4.27

MEAN SCORE OF TELEPHONE UTILIZATION BY GROSS INCOME

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>Less than $50,000</th>
<th>$50,000 and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>56.3636</td>
<td>55.0000</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>69.0909</td>
<td>76.1111</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>56.3636</td>
<td>59.4444</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>60.0000</td>
<td>66.1111</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>70.9091</td>
<td>71.1111</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>43.6364</td>
<td>59.4444</td>
</tr>
</tbody>
</table>

**Gross Income and Internet Utilization**

The small businesses with gross incomes less than $50,000 had extremely low levels of Internet utilization on every Internet related measure. Those small businesses with gross income $50,000 or more had low levels of utilization on all the Internet related measures except two—e-mail communication with customers or businesses and business-related research. On both of these measures, the $50,000 or more income grouping had average levels of utilization. A key point must be made about the Internet utilization scores by gross income—those individuals in the higher income bracket scored 12.42 mean points and 12.72 mean points higher respectively on the utilization of e-mail and the e-learning measures. Table 4.28 summarizes the Internet utilization mean scores by gross income.
### Table 4.28

**MEAN SCORE OF INTERNET UTILIZATION BY GROSS INCOME**

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>Less than $50,000</th>
<th>$50,000 and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>27.2727</td>
<td>26.1111</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>50.9091</td>
<td>63.3333</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>41.8182</td>
<td>33.8889</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>41.8182</td>
<td>39.4444</td>
</tr>
<tr>
<td>Research</td>
<td>54.5455</td>
<td>60.5556</td>
</tr>
<tr>
<td>Functionality (Goods and Services)</td>
<td>40.0000</td>
<td>37.7778</td>
</tr>
<tr>
<td>E-learning</td>
<td>27.2727</td>
<td>40.0000</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>23.6364</td>
<td>31.1111</td>
</tr>
<tr>
<td>Online Banking</td>
<td>49.0909</td>
<td>49.4444</td>
</tr>
<tr>
<td>Government (selling goods and services)</td>
<td>32.7273</td>
<td>29.4444</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td>50.9091</td>
<td>43.8889</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td>36.3636</td>
<td>37.778</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>29.0909</td>
<td>28.3333</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>38.1818</td>
<td>31.6667</td>
</tr>
<tr>
<td>E-commerce (Business-to-Consumer)</td>
<td>34.5455</td>
<td>34.4444</td>
</tr>
<tr>
<td>E-commerce (Business-to-Business)</td>
<td>34.5455</td>
<td>41.1111</td>
</tr>
</tbody>
</table>

**Gross Income and Computer Utilization**

The less than $50,000 income category had consistently low levels computer utilization for storage, word processing, and presentations. How this income grouping had average levels of computer utilization for accounting related tasks and for the manufacturing, production, and service related tasks. In contrast, the $50,000 and more income category had consistently high levels of computer utilization for storage, word
processing, and accounting related activities. In fact, this income category actually outpaced its counterpart in computer use for storage, word processing, and accounting by 27.27, 29.19, and 12.57 mean points respectively. However, this grouping did have low levels of utilization of computers for presentations and for production, manufacturing, and service related activities. Table 4.29 summarizes the mean scores of computer utilization by gross income.

Table 4.29

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>Less than $50,000</th>
<th>$50,000 and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>52.7273</td>
<td>80.0000</td>
</tr>
<tr>
<td>Word Processing</td>
<td>56.3636</td>
<td>85.5556</td>
</tr>
<tr>
<td>Accounting</td>
<td>69.0909</td>
<td>81.6667</td>
</tr>
<tr>
<td>Production, Manufacturing, Service</td>
<td>60.0000</td>
<td>58.8889</td>
</tr>
<tr>
<td>Presentations</td>
<td>45.4545</td>
<td>52.2222</td>
</tr>
</tbody>
</table>

**Gross Income and Technology Attitudes**

The businesses in the less than $50,000 income category had average levels of confidence in the role that technology played in the present success of their businesses and in the future role it will play. These business owners also had average levels of comfort in their understanding of how technology could be applied to their individual business environments. The businesses in the $50,000 and over income grouping also had average levels of confidence in technology’s role in the present success their businesses and in their level of understanding of how technology could be applied to their
individual business environments. However, unlike the businesses in the less than $50,000 grouping, these owners had high levels of confidence in the vital role that technology would play in the future success of their businesses. As far as security is concerned, the businesses in the less than $50,000 category had low levels of confidence in technology’s ability to secure their customers’ vital information while the businesses in the higher income category had average levels of confidence. Table 4.30 summarizes the mean scores of technology attitude by gross income.

Table 4.30

MEAN SCORE OF TECHNOLOGY ATTITUDES BY GROSS INCOME

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>Less than $50,000</th>
<th>$50,000 and Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology (Present Business Success)</td>
<td>71.9383</td>
<td>76.4256</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
<td>70.5091</td>
<td>80.1889</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
<td>77.3928</td>
<td>73.0922</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
<td>50.6993</td>
<td>61.5385</td>
</tr>
</tbody>
</table>

Technology Plan and Access

The no technology plan grouping had consistently low levels of access to all the measures except telephone access—a method of utilization in which this grouping had high or excellent levels of access. The some form of technology plan grouping also had low levels of access on the vast majority of the access measures. In fact, the only two measures in which the some form of technology plan grouping did not have a low level of access was on the Internet access and telephone access variables—measures that this
The grouping that did not have a technology plan had low levels of telephone utilization for interoffice communication and for the selling of goods and or services. This grouping had average levels of telephone utilization on the remaining telephone use measures. The businesses that had some form of technology plan also had low levels of telephone utilization when it came to interoffice communication and marketing goods and or services. For the rest of the measures, this grouping also had average levels of use. Table 4.32 summarizes the mean scores of telephone utilization by technology plan.

**Table 4.32**

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>No Business Technology Plan</th>
<th>Some Form of Business Technology Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>43.3333</td>
<td>55.2941</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>45.3333</td>
<td>51.7647</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>24.0000</td>
<td>40.0000</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>24.6667</td>
<td>30.5882</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>25.3333</td>
<td>32.9412</td>
</tr>
<tr>
<td>Network Access</td>
<td>37.3333</td>
<td>41.1765</td>
</tr>
<tr>
<td>Internet Access</td>
<td>56.0000</td>
<td>60.0000</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>85.3333</td>
<td>83.5294</td>
</tr>
</tbody>
</table>

**Technology Plan and Telephone Utilization**

The grouping that did not have a technology plan had low levels of telephone utilization for interoffice communication and for the selling of goods and or services. This grouping had average levels of telephone utilization on the remaining telephone use measures. The businesses that had some form of technology plan also had low levels of telephone utilization when it came to interoffice communication and marketing goods and or services. For the rest of the measures, this grouping also had average levels of use. Table 4.32 summarizes the mean scores of telephone utilization by technology plan.
Table 4.32

MEAN SCORE OF TELEPHONE UTILIZATION BY TECHNOLOGY PLAN

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>No Business Technology Plan</th>
<th>Some Form of Business Technology Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>56.0000</td>
<td>54.1176</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>76.0000</td>
<td>71.7647</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>60.0000</td>
<td>56.0000</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>60.0000</td>
<td>72.9412</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>71.3333</td>
<td>70.5882</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>51.3333</td>
<td>63.5294</td>
</tr>
</tbody>
</table>

Technology Plan and Internet Utilization

For those small businesses that did not have a technology plan, they had low levels of Internet utilization for all the measures except e-mail communication with customers or other businesses—a measure in which this grouping had an average level of utilization. In contrast, the small businesses that had some form of technology plan had low levels of Internet utilization for all but two measures—e-mail communication with customers or other businesses and research. This grouping had average levels of usage for these Internet applications. A key point must be made about these Internet measures. Those businesses with some form technology plan outpaced its counterpart in e-learning utilization by 21.25 mean points. Table 4.33 summarizes the mean scores of Internet utilization by technology plan.
### Table 4.33

**MEAN SCORE OF INTERNET UTILIZATION BY TECHNOLOGY PLAN**

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>No Business Technology Plan</th>
<th>Some Form of Business Technology Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>26.0000</td>
<td>27.0588</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>60.6667</td>
<td>60.0000</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>32.6667</td>
<td>41.1765</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>38.6667</td>
<td>42.3529</td>
</tr>
<tr>
<td>Research</td>
<td>56.0000</td>
<td>64.7059</td>
</tr>
<tr>
<td>Functionality (Goods and Services)</td>
<td>37.3333</td>
<td>40.0000</td>
</tr>
<tr>
<td>E-learning</td>
<td>29.3333</td>
<td>50.5882</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>24.6667</td>
<td>37.6471</td>
</tr>
<tr>
<td>Online Banking</td>
<td>45.3333</td>
<td>56.4706</td>
</tr>
<tr>
<td>Government (selling goods and services)</td>
<td>34.0000</td>
<td>23.5294</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td>47.3333</td>
<td>42.3529</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td>38.0000</td>
<td>36.4706</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>23.3333</td>
<td>37.6471</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>28.0000</td>
<td>42.3529</td>
</tr>
<tr>
<td>E-commerce (Business-to-Consumer)</td>
<td>28.6667</td>
<td>44.7059</td>
</tr>
<tr>
<td>E-commerce (Business-to-Business)</td>
<td>37.3333</td>
<td>43.5294</td>
</tr>
</tbody>
</table>

**Technology Plan and Computer Utilization**

The businesses that did not have a technology plan had low levels of computer utilization for manufacturing and presentations and average levels of utilization for the rest of the computer measures. Conversely, those businesses that had a technology plan
did not score low on any of the computer utilization measures. In fact, all but two of the computer utilization measures, manufacturing and presentations, ranked as high levels of application. Moreover, the grouping that had some form technology plan outpaced the other grouping in computer utilization for storage, word processing, accounting, and presentations by 13.68, 13.05, 11.21, and 25.72 mean points respectively. Table 4.34 summarizes the mean scores of computer utilization by technology plan.

Table 4.34

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>No Business Technology Plan</th>
<th>Some Form of Business Technology Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>68.6667</td>
<td>82.3529</td>
</tr>
<tr>
<td>Word Processing</td>
<td>74.0000</td>
<td>87.0588</td>
</tr>
<tr>
<td>Accounting</td>
<td>74.6667</td>
<td>85.8824</td>
</tr>
<tr>
<td>Production, Manufacturing, Service</td>
<td>56.6667</td>
<td>63.5294</td>
</tr>
<tr>
<td>Presentations</td>
<td>41.3333</td>
<td>67.0588</td>
</tr>
</tbody>
</table>

Technology Plan and Technology Attitudes

Of the business in both categories of technology plan readiness, the businesses that did not have a technology plan were the only ones that had low levels of confidence as it relates to technology’s ability to secure their customers’ vital information. As far as the other attitude measures are concerned, the businesses that did not have a technology plan viewed technology role in the present success of their businesses as average. This grouping also thought that technology would be averagely vital in the future success of their businesses. All the owners in this grouping also asserted that they had an average
level of understanding of the application of technology to their individual business environments.

As far as the businesses with some form technology plan are concerned, they viewed technology as highly vital to the present and to the future success of their small businesses. Like its counterpart, this grouping of owners thought that they had an average level of understanding about the ways in which technology could be applied to their individual business environments. Moreover, owners in this category had an average level of confidence in technology’s ability to secure the vital information of their customers. Table 4.35 summarizes the mean scores of technology attitudes by technology plan.

Table 4.35
MEAN SCORE OF TECHNOLOGY ATTITUDES BY TECHNOLOGY PLAN

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>No Business Technology Plan</th>
<th>Some Form of Business Technology Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology (Present Business Success)</td>
<td>72.3774</td>
<td>80.6659</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
<td>75.1867</td>
<td>82.7529</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
<td>72.0000</td>
<td>77.8024</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
<td>55.9231</td>
<td>64.4344</td>
</tr>
</tbody>
</table>

**E-commerce Strategy and Access**

Those small businesses that had an e-commerce strategy of some form and those that did not have a strategy had low levels access to technologies such as desktop computers, computer peripheral devices, laptop computers, additional computer related devices, and Local Area Networks. However, those in the e-commerce strategy grouping
had average levels of Internet access while the other category had low levels. Furthermore, both grouping had excellent or high levels of access to telephones. Table 4.36 summarizes the mean scores of technology access by e-commerce strategy.

Table 4.36
MEAN SCORE OF TECHNOLOGY ACCESS MEASURES BY E-COMMERCE STRATEGY

<table>
<thead>
<tr>
<th>Technology Measure</th>
<th>No E-commerce Strategy</th>
<th>E-commerce Strategy of Some Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>44.6154</td>
<td>51.4286</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>40.70692</td>
<td>56.1905</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>24.6154</td>
<td>36.1905</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>23.8462</td>
<td>30.4762</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>23.0769</td>
<td>34.2857</td>
</tr>
<tr>
<td>Network Access</td>
<td>55.3846</td>
<td>55.2831</td>
</tr>
<tr>
<td>Internet Access</td>
<td>50.7692</td>
<td>65.7143</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>82.3077</td>
<td>87.6190</td>
</tr>
</tbody>
</table>

**E-commerce Strategy and Telephone Utilization**

Small businesses that did not have an e-commerce and the ones that had some form e-commerce strategy had low levels of telephone utilization for interoffice communication and the selling goods and or services. Further, both grouping had average levels of telephone utilization for offsite communication, handling customer complaints, and providing customer assistance. However, the small businesses that did not have an e-commerce strategy had an average level of telephone utilization as it
pertained to marketing goods and or services while their correlates had low levels of telephone usage for this purpose—a separation of only 4.57 mean points. Table 4.37 summarizes the mean scores of telephone utilization by e-commerce strategy.

Table 4.37

MEAN SCORE OF TELEPHONE UTILIZATION BY E-COMMERCE STRATEGY

<table>
<thead>
<tr>
<th>Telephone Measure</th>
<th>No E-commerce Strategy</th>
<th>E-commerce Strategy of Some Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoffice Communication</td>
<td>55.3846</td>
<td>55.2381</td>
</tr>
<tr>
<td>Offsite Communication (Cellular Telephone)</td>
<td>72.3077</td>
<td>77.1429</td>
</tr>
<tr>
<td>Marketing Goods and or Services</td>
<td>60.7692</td>
<td>56.1905</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>62.3077</td>
<td>67.6190</td>
</tr>
<tr>
<td>Customer Service (Assistance)</td>
<td>71.5385</td>
<td>70.4762</td>
</tr>
<tr>
<td>Selling Goods and or Services</td>
<td>53.8462</td>
<td>58.0952</td>
</tr>
</tbody>
</table>

**E-commerce Strategy and Internet Utilization**

The small businesses that did not have an e-commerce strategy had low levels of Internet utilization on every usage measure. Despite the fact the e-commerce strategy grouping had low levels of Internet utilization on the vast majority of the measures, it did have average levels of Internet utilization on several measures—e-mail communication between businesses or customers, online banking, and research. Furthermore, the e-commerce strategy grouping did significantly outpace its correlate on 10 of the measures of Internet utilization. The e-commerce strategy grouping outpaced its counterpart in online support staff use, online complaint data base use, web conferencing use, paying or filing taxes use, business-to-consumer e-commerce use, business-to-business e-commerce
use, online banking use, e-learning use, functionality of goods and or services use, and research use by 10.43, 10.58, 15.78, 14.10, 11.72, 17.98, 31.28, 13.999, 11.68, and 23.91 mean points respectively. Table 4.38 summarizes the mean scores of Internet utilization by e-commerce strategy.

Table 4.38

<table>
<thead>
<tr>
<th>Internet Measure</th>
<th>No E-commerce Strategy</th>
<th>E-commerce Strategy of Some Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Employees</td>
<td>25.3846</td>
<td>27.6190</td>
</tr>
<tr>
<td>E-mail (Business Communication)</td>
<td>55.3846</td>
<td>66.6667</td>
</tr>
<tr>
<td>E-mail (Marketing)</td>
<td>33.0769</td>
<td>39.0476</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>37.6923</td>
<td>42.8571</td>
</tr>
<tr>
<td>Research</td>
<td>48.4615</td>
<td>72.3810</td>
</tr>
<tr>
<td>Functionality (Goods and Services)</td>
<td>33.0769</td>
<td>44.7619</td>
</tr>
<tr>
<td>E-learning</td>
<td>30.7692</td>
<td>44.7619</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>22.3077</td>
<td>38.0952</td>
</tr>
<tr>
<td>Online Banking</td>
<td>35.3846</td>
<td>66.6667</td>
</tr>
<tr>
<td>Government (selling goods and services)</td>
<td>29.2308</td>
<td>31.4286</td>
</tr>
<tr>
<td>Pay or File Taxes</td>
<td>39.2308</td>
<td>53.3333</td>
</tr>
<tr>
<td>Obtaining Licenses</td>
<td>33.8462</td>
<td>41.9048</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>23.8462</td>
<td>34.2857</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>28.4615</td>
<td>39.0476</td>
</tr>
</tbody>
</table>
Table 4.38 (continued)

<table>
<thead>
<tr>
<th>E-commerce (Business-to-Consumer)</th>
<th>29.2308</th>
<th>40.9524</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-commerce (Business-to-Business)</td>
<td>31.5385</td>
<td>49.5238</td>
</tr>
</tbody>
</table>

**E-commerce Strategy and Computer Utilization**

The small businesses that did not have an e-commerce strategy had low levels of computer utilization for presentations and for manufacturing, production, and service related activities while those that had some form of e-commerce strategy had average levels of utilization on these measures. As far as computer use for storage, word processing, and accounting related activities, the small businesses that did not have an e-commerce strategy had average levels of utilization of these measures while the other grouping had high levels of usage of these measures. In fact, those that had an e-commerce strategy outpaced the other category in levels of use of these measures by 30.47 mean points on the storage measure, 22.96 mean points on the word processing measure, and 21.24 mean points on the accounting measure. The grouping that had e-commerce strategy also significantly out utilized its counterpart in computer use to do presentations and to do production, manufacturing, and service related activities by 13.59 and 22.08 mean points respectively. Table 4.39 summarizes the mean scores of computer utilization by e-commerce strategy.
Table 4.39

MEAN SCORE OF COMPUTER UTILIZATION BY E-COMMERCE STRATEGY

<table>
<thead>
<tr>
<th>Computer Measure</th>
<th>No E-commerce Strategy</th>
<th>E-commerce Strategy of Some Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>60.0000</td>
<td>90.4762</td>
</tr>
<tr>
<td>Word Processing</td>
<td>68.4615</td>
<td>91.4286</td>
</tr>
<tr>
<td>Accounting</td>
<td>69.2308</td>
<td>90.4762</td>
</tr>
<tr>
<td>Production,</td>
<td>53.0769</td>
<td>66.6667</td>
</tr>
<tr>
<td>Manufacturing,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentations</td>
<td>40.7692</td>
<td>62.8571</td>
</tr>
</tbody>
</table>

**E-commerce Strategy and Technology Attitudes**

The e-commerce strategy grouping of small businesses owners and the grouping that did not have an e-commerce strategy thought that technology had an average level importance to the present success of their small businesses. While the small businesses owner that did not have e-commerce strategy thought that technology would play only an average role in the future success of their businesses, those that had this type of strategy thought it would play a very vital role in the future success of their enterprises. Both groups of owners thought that they had average levels of comfort in their knowledge of how technology could be applied to their individual business environments. However, only the owners that had some form of e-commerce strategy yielded average levels of confidence scores as it relates to technology’s ability to secure the vital information of their customers. In fact, there was a mean difference of 10.01 points between these two groups on this technology attitude measure in favor those owners that had an e-commerce
strategy. Table 4.40 summarizes the mean scores of the technology attitude measures by e-commerce strategy.

Table 4.40

MEAN SCORE OF TECHNOLOGY ATTITUDES BY E-COMMERCE STRATEGY

<table>
<thead>
<tr>
<th>Attitude Measure</th>
<th>No E-commerce Strategy</th>
<th>E-commerce Strategy of Some Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology (Present Business Success)</td>
<td>75.8200</td>
<td>74.8248</td>
</tr>
<tr>
<td>Technology (Future Business Success)</td>
<td>74.2769</td>
<td>82.4381</td>
</tr>
<tr>
<td>Technology (Application to Business)</td>
<td>71.5385</td>
<td>77.2686</td>
</tr>
<tr>
<td>Technology (Secure Information)</td>
<td>54.5266</td>
<td>64.5421</td>
</tr>
</tbody>
</table>

Access and Utilization Hypothesized Interactions

Interactions

There were three hypothesized interactions in this study, education and age, age and gross income, and race and education. The vast majority of the small business scores on the access measures were low on the age/education interaction. Of the eight access measures, two had low levels access across all age/education categories. Three of measures had low levels of access across all the age/education categories except one. Only three of access measures had multiple age/education categories with average or excellent levels of access (see Figures 4.1-4.7 and Figure 4.32).

As far as the utilization measures are concerned on the education and age interaction, the vast majority of the small businesses sampled also had low levels of utilization on the technology use measures. Of the 16 Internet utilization measures, six of them had low levels of utilization on the all the age/education categories. Moreover, six
of them had only one age/education category with average levels of utilization. Only four of the measures had at least two of the age/education categories with at least average levels of use (see Figures 4.13-4.26 and 4.34-4.35). Of the remaining 11 utilization measures, all of them had at least two age/education categories with low levels of use (see Figures 4.8-4.12 and 4.27-4.31).

As for the technology attitude measures, the vast majority of the scores across the age/education categories were consistently high. Only two age/education categories yielded low scores on the technology’s role in the present business success variable (see Figure 4.36). In addition, only two age/education categories yielded low scores on the technology’s role in the future business success variable (see Figure 4.37). There were also only two age/education categories that yielded low scores on the owner’s level of comfort with technology in the business environment variable (see Figure 4.38).

The only attitude variable that had consistently low scores across the age/education variable was the confidence level in technology’s ability to secure the vital information of the customer variable. Only four age/education categories had average levels of confidence in technology’s ability to secure a customer’s vital information such as credit card, social security, and bank account numbers. These levels were as follows: (a) 54 years or less with a high school education, (b) 54 years or less with a bachelor’s degree, (c) 54 years or less and beyond a bachelor’s degree, and (d) 55 to 64 with a bachelor’s degree (see Figures 4.38-4.39).

A significant portion of the eight access measures also had low levels of access across the age/gross income categories. On five of the eight access measures, there was low levels access across all of the age/gross income categories (see Figures 4.40-4.45 and
Figure 4.71). Only one of the access measures, telephone access, had average or excellent levels of access across all age/gross income categories (see Figure 4.45).

As far as the utilization measures are concerned, they too had low levels of utilization across the vast majority of the age/gross income categories. Of the 16 Internet utilization measures, six had low levels of utilization across all age/gross income categories (see Figures 4.58-4.59, 4.61, 4.64, and 4.73-4.74). Moreover, only eight had average levels of Internet utilization across a single age/gross income category (see Figures 4.52, 4.54-4.57, 4.62-4.63, and 4.65). Only two of the Internet utilization measures had average levels of use on two or more age/income categories (see Figures 4.53 and 4.60). Of the five remaining utilization measures (computer measures), four of them had at least one age/income category that had low levels of use (see Figures 4.66-4.70).

On both the technology’s role in business’s present success and the technology’s role in the business’s future success variables, the businesses sampled yielded either average or excellent mean scores across all the age/gross income categories (see Figures 4.75-4.76). However, on the owner’s level of comfort with the application of technology to the business environment variable, only one age/gross income grouping—65 years of age and over with gross incomes of $50,000 or more—had low mean scores on this measure (see Figure 4.77). Like wise, across all the age/gross income categories, only one category yielded average mean scores on the owner’s confidence level in technology’s ability to secure customers’ vital information (see Figure 4.78).

There were also low levels of technology access on the race/education interaction. Six of the eight access measures had low levels access across all the race/education
categories. Only one of the access measures, telephone access, had excellent levels of access across six of the race/education categories (see Figures 4.79-4.85 and 4.110).

As with the other two interactions, the vast majority of the utilization measures across all the race/education categories had low levels of use. Of the 16 Internet utilization measures, 10 had low levels of utilization across all race/education categories (see Figures 4.91, 4.93-4.94, 4.96-4.98, 4.100, 4.103-4.104, and 4.112-4.13). Three Internet utilization measures (pay or file taxes, online banking, and acquiring business-related licenses) had a single mean score classified as high or excellent on the race/education interaction (see Figures 4.99, 4.101-4.102). Furthermore, only two of the Internet utilization measures (business research and e-mail communication) had mean scores across multiple race/education categories that were either average or excellent (see Figures 4.92 and 4.95).

Even the computer and telephone utilization measures—that yielded the highest scores of any of the measures—had low mean scores on several race/education categories. Three of the five computer utilization measures—accounting, production/manufacturing, and preparing presentations—had at least two race/education categories that had extremely low levels of use (see Figures 4.107-4.109). Even the two highest mean scoring computer utilization measures—storage and word processing—had a race/education category that had a mean score of 20, which is the lowest possible mean score that could have been obtained on a measure (see Figures 4.105-4.106). The telephone utilization measures, which produced the highest mean scores across all the race/education categories, had at least one low mean score on a race/education category on five of the six telephone use measures (see Figures 4.86-4.90, and 4.11). The one
exception was cellular telephone use for offsite communication. It had mean scores that were average to excellent across all the race/education categories (see Figure 4.87). As for the technology attitude measures, low scores were not generated on the vast majority of the attitude measures on the race/education interaction. The scores on these measures were average to excellent across the vast majority of the race/education categories. In fact on three of the four measures, only one race/education category yielded a low mean score (see Figures 4.114-4.116). The only technology attitude measure that produced low scores across multiple race/education categories was the owner’s level of confidence in technology’s ability to secure his or her customer’s vital information (see Figure 4.117).

**MANOVA’s Results and Technology Measures**

Based on the mean scores produced by the each technology access and use measures, two things are obvious. The statistically insignificant findings that the MANOVA yielded on the TELEUDBO and the TCOMPU dependent measures and the subsequent rejection of the hypotheses illustrate a true representation of the nature and the character of computer, telephone, and Internet related technology access and use of the small business sampled. They also illustrate that the owners, regardless of the independent variable, had similar, if not identical, attitudes toward technology. Simply, a digital divide did not exist as it relates to the sampled small businesses.

Conversely, the mean scores on each technology access and use measure do not indicate that the small businesses sampled had either average or excellent levels of use and access to the technology measures in this study as the mean scores indicate in the
MANOVA analysis of the TELEUDBO and TCOMPU dependent measures. An examination of the means of each technology measure across all the independent variables indicates that the small business had low levels of access and use on the vast majority of the measures. The one exception was telephone access and utilization. These measures consistently produced average or excellent mean scores.

*Cities Technology Access and Use Schematics*

*Jackson’s Small Business Technology Access Schematic*

These businesses on average had between one and five computers, one to five computer peripheral devices, Internet access via a cable modem or WebTV, and three separate telephone lines. Usually, one of these telephone lines was a cellular telephone. These businesses also had the simplest form of network access—computers linked to a single personal computer that serves as both the common communication line and the central processing unit for all computers. Table 4.41 summarizes the level of technology access of the average small business in Jackson, Mississippi.

Table 4.41

<table>
<thead>
<tr>
<th>Technology</th>
<th>Level of Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>1 to 5 computers (50.8571*)</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>1 to 5 computer peripheral devices (48.5714*)</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>None (37.7143*)</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>None (26.2857*)</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>None (28.5714*)</td>
</tr>
<tr>
<td>Network Access</td>
<td>Computers linked to a single personal computer that serves as both the common communication line and the central processing unit for all computers (41.7143*)</td>
</tr>
</tbody>
</table>
Table 4.41 (continued)

<table>
<thead>
<tr>
<th>Internet Access</th>
<th>Cable Modem or WebTV (61.1429**)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Access</td>
<td>3 separate telephone lines with one that might be a cellular telephone (89.1429***)</td>
</tr>
</tbody>
</table>

Note: The number in the parentheses is the mean scores for the measures. *Represents low levels of access. **Represents average levels of access. ***Represents excellent or high level of access.

**Gulfport’s Small Business Technology Access Schematic**

These businesses on average had one to five desktop computers, one to five computer peripheral devices, Internet access via the telephone, and two separate telephone lines. Usually, one of these telephone lines was a cellular telephone. These businesses on average did not have access to a Local Area Network. Table 4.42 summarizes the level of technology access of the average small business in Gulfport, Mississippi.

Table 4.42

<table>
<thead>
<tr>
<th>Technology</th>
<th>Level of Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computers</td>
<td>1 to 5 computer (42.1053*)</td>
</tr>
<tr>
<td>Computer Peripherals Devices</td>
<td>1 to 5 computer peripheral devices (45.2632*)</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>None (24.2105*)</td>
</tr>
<tr>
<td>Dumb Terminals</td>
<td>None (27.3684*)</td>
</tr>
<tr>
<td>Additional Computer Related Devices</td>
<td>None (27.3684*)</td>
</tr>
<tr>
<td>Network Access</td>
<td>None (34.7368*)</td>
</tr>
<tr>
<td>Internet Access</td>
<td>Via a Telephone Line (50.5263*)</td>
</tr>
<tr>
<td>Telephone Access</td>
<td>2 separate telephone lines with one that might be a cellular telephone (77.8947***)</td>
</tr>
</tbody>
</table>

Note: The number in the parentheses is the mean scores for the measures. *Represents low levels of access. **Represents average levels of access. ***Represents excellent or high level of access.
Jackson’s Small Business Technology Utilization Schematic

The small businesses in Jackson had average levels of use of the telephone on five of the six the telephone utilizations measures. They had average to excellent levels of utilization on four of the five computer utilization measures. However, on all 16 of the Internet utilization measures, these businesses had extremely low levels usage. Over all out 27 technology utilization measures, 17 or 62.96% of the technology measures yielded low levels of utilization, eight or 29.62% yielded average levels of utilization, and only one or 3.70% had levels of utilization that were high or excellent. Table 4.43 summarizes the utilization levels and mean scores on the technology measures.

Table 4.43

TECHNOLOGY UTILIZATION SCHEMATIC OF JACKSON’S SMALL BUSINESSES

<table>
<thead>
<tr>
<th>Technology</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone (Interoffice Communication)</td>
<td>(65.1613**)</td>
</tr>
<tr>
<td>Cellular Telephone (Offsite Communication)</td>
<td>(78.0645**)</td>
</tr>
<tr>
<td>Telephone (Marketing Goods and Services)</td>
<td>(60.6452**)</td>
</tr>
<tr>
<td>Telephone (Customer Complaints)</td>
<td>(68.3871**)</td>
</tr>
<tr>
<td>Telephone (Customer Assistance)</td>
<td>(70.3226**)</td>
</tr>
<tr>
<td>Telephone (Selling Goods and or Services)</td>
<td>(56.1290*)</td>
</tr>
<tr>
<td>Internet (Recruit)</td>
<td>(28.3871*)</td>
</tr>
<tr>
<td>Email (Communication Customers or Businesses)</td>
<td>(63.870**)</td>
</tr>
<tr>
<td>Email (Marketing Goods and Services)</td>
<td>(38.7097*)</td>
</tr>
<tr>
<td>Service</td>
<td>Score</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>(43.2258*)</td>
</tr>
<tr>
<td>Internet (Research)</td>
<td>(58.7097*)</td>
</tr>
<tr>
<td>Internet (Functionality)</td>
<td>(39.3548*)</td>
</tr>
<tr>
<td>E-learning</td>
<td>(41.2903*)</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>(32.9032*)</td>
</tr>
<tr>
<td>Online Banking</td>
<td>(49.6774*)</td>
</tr>
<tr>
<td>Internet (Government Agencies)</td>
<td>(32.2581*)</td>
</tr>
<tr>
<td>Internet (Pay or File Taxes)</td>
<td>(46.4516*)</td>
</tr>
<tr>
<td>Internet (Obtain Business-related Licenses)</td>
<td>(39.3548*)</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>(29.6774*)</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>(34.1935*)</td>
</tr>
<tr>
<td>Business-to-Consumer E-commerce</td>
<td>(37.4194*)</td>
</tr>
<tr>
<td>Business-to-Business E-commerce</td>
<td>(40.6452*)</td>
</tr>
<tr>
<td>Computer (Storage)</td>
<td>(76.7742**)</td>
</tr>
<tr>
<td>Computer (Word Processing)</td>
<td>(78.7097**)</td>
</tr>
<tr>
<td>Computer (Accounting)</td>
<td>(81.2903***)</td>
</tr>
<tr>
<td>Computer (Production, Manufacturing, or Service)</td>
<td>(62.5806**)</td>
</tr>
<tr>
<td>Computer (Presentation)</td>
<td>(56.7742*)</td>
</tr>
</tbody>
</table>

Note: The number in the parentheses is the mean scores for the measures. *Represents low levels of use. **Represents average levels of use. ***Represents excellent or high level of access.
Gulfport’s Small Business Technology Utilization Schematic

Gulfport small businesses only had average utilization for six or 22.22% of the technology measures investigated. Those measures were as follows: cellular telephone for offsite communication, telephone utilization to handle customer complaints and assistance, business-related research over the Internet, and computer utilization for storage, word processing, and accounting. Gulfport small businesses had low levels of usage for the rest of the technology measures. Table 4.44 summarizes the utilization levels and mean scores on the technology measures.

Table 4.44

TECHNOLOGY UTILIZATION SCHEMATIC OF GULFPORT’S SMALL BUSINESSES

<table>
<thead>
<tr>
<th>Technology</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone (Interoffice Communication)</td>
<td>(41.1111*)</td>
</tr>
<tr>
<td>Cellular Telephone (Offsite Communication)</td>
<td>(64.4444**)</td>
</tr>
<tr>
<td>Telephone (Marketing Goods and Services)</td>
<td>(51.1111*)</td>
</tr>
<tr>
<td>Telephone (Customer Complaints)</td>
<td>(54.4444*)</td>
</tr>
<tr>
<td>Telephone (Customer Assistance)</td>
<td>(66.6667**)</td>
</tr>
<tr>
<td>Telephone (Selling Goods and or Services)</td>
<td>(51.1111*)</td>
</tr>
<tr>
<td>Internet (Recruit)</td>
<td>(22.2222*)</td>
</tr>
<tr>
<td>Email (Communication Customers or Businesses)</td>
<td>(54.4444*)</td>
</tr>
<tr>
<td>Email (Marketing Goods and Services)</td>
<td>(28.8889*)</td>
</tr>
<tr>
<td>Website (Advertisement)</td>
<td>(32.2222*)</td>
</tr>
<tr>
<td>Service</td>
<td>Mean Score</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Internet(Research)</td>
<td>(60.0000**)</td>
</tr>
<tr>
<td>Internet(Functionality)</td>
<td>(36.6667*)</td>
</tr>
<tr>
<td>E-learning</td>
<td>(27.7778*)</td>
</tr>
<tr>
<td>Web Conferencing</td>
<td>(23.3333*)</td>
</tr>
<tr>
<td>Online Banking</td>
<td>(45.5556*)</td>
</tr>
<tr>
<td>Internet(Government Agencies)</td>
<td>(25.5556*)</td>
</tr>
<tr>
<td>Internet(Pay or File Taxes)</td>
<td>(42.2222*)</td>
</tr>
<tr>
<td>Internet(Obtain Business-related Licenses)</td>
<td>(32.2222*)</td>
</tr>
<tr>
<td>Online Support Staff</td>
<td>(25.5556*)</td>
</tr>
<tr>
<td>Online Complaint Database</td>
<td>(30.0000*)</td>
</tr>
<tr>
<td>Business-to-Consumer E-commerce</td>
<td>(27.7778*)</td>
</tr>
<tr>
<td>Business-to-Business E-commerce</td>
<td>(35.5556*)</td>
</tr>
<tr>
<td>Computer(Storage)</td>
<td>(66.6667**)</td>
</tr>
<tr>
<td>Computer(Word Processing)</td>
<td>(76.6667**)</td>
</tr>
<tr>
<td>Computer(Accounting)</td>
<td>(72.2222**)</td>
</tr>
<tr>
<td>Computer(Production, Manufacturing, or Service)</td>
<td>(53.3333*)</td>
</tr>
<tr>
<td>Computer(Presentation)</td>
<td>(41.1111*)</td>
</tr>
</tbody>
</table>

Note: The number in the parentheses is the mean scores for the measures. *Represents low levels of use. **Represents average levels of use. ***Represents excellent or high level of use.
As it relates to this study, the computation of the dependent variables did not include webpage access due to the complexity of trying to quantify this measure. However, upon examination of the descriptive statistical information of both cities, it is apparent that the vast majority of the small business sample did not have access to a webpage (Level 1 Webpage). In fact, 54% of the businesses sampled did not have access to a webpage at the time this study was conducted. Only 24.1% of the businesses polled had a simple webpage (Level 2 Webpage)—one consisting of only a brief description of the services and or products that the businesses’ offers and the businesses’ contact information. An even lesser percentage of the businesses sampled, 9.3%, had business webpages consisting of the above information along with advertisements detailing special time-limited offers and or future products and services that will be offered (Level 3 Webpage). Moreover, only 9.3% of the businesses polled had extensive webpage environments (Level 4 Webpage) containing all the above information and modes to purchase goods online.

Of the businesses sampled from Jackson, 16 (45.71%) did not have a webpage (Level 1 Webpage) compared to 15 (78.94%) of the businesses sampled from Gulfport. Approximately 12 (34.28%) of the small businesses sampled form Jackson had Level 2 Webpage access compared to only two (5.26%) from Gulfport. In Jackson, three (8.57%) of the businesses sampled had Level 3 Webpage access compared to two (10.52%) of the small businesses sampled from Gulfport. Four of the businesses (11.42%) sampled from Jackson had Level 4 Webpage access but only one (5.26%) of the small businesses sampled from Gulfport had this level of webpage access.
Interaction Access and Utilization Figures

The following figures are the bar graphs of all the access and utilization measures as they relate to the hypothesized interactions.

Figure 4.1. Mean score of desktop computer access by age and education.
Figure 4.2. Mean score of computer access (peripheral devices) by age and education.
Figure 4.3. Mean score of laptop computer access by age and education.
Figure 4.4. Mean score of dumb terminal access by age and education.
Figure 4.5. Mean score of computer related devices access by age and education.
Figure 4.6. Mean score of telephone access by age and education.
Figure 4.7. Mean score of type of Internet access by age and education.
Figure 4.8. Mean score of telephone use (interoffice) by age and education.
Figure 4.9. Mean score of cellular telephone use (offsite) by age and education.
Figure 4.10. Mean score of telephone use (market) by age and education.
Figure 4.11. Mean score of telephone use (complaints) by age and education.
Figure 4.12. Mean score of telephone use (assistance) by age and education.
Figure 4.13. Mean score of Internet use to recruit employees by age and education.
Figure 4.14. Mean score of e-mail use (communication) by age and education.
Figure 4.15. Mean score of e-mail use (market) by age and education.
Figure 4.16. Mean score of website use (advertise) by age and education.
Figure 4.17. Mean score of Internet use (business research) by age and education.
Figure 4.18. Mean score of Internet use (product functionality) by age and education.
Figure 4.19. Mean score of e-learning use to train employees by age and education.
Figure 4.20. Mean score of web conferencing use by age and education.
Figure 4.21. Mean score of online banking use by age and education.
Figure 4.22. Mean score of Internet use (sell to government) by age and education.
Figure 4.23. Mean score of Internet use to pay or to file taxes by age and education.
Figure 4.24. Mean score of internet use (business licenses) by age and education.
Figure 4.25. Mean score of online support staff use by age and education.
Figure 4.26. Mean score of online complaint database use by age and education.
Figure 4.27. Mean score of computer use (storage) by age and education.
Figure 4.28. Mean score of computer use (word processing) by age and education.
Figure 4.29. Mean score of computer use (accounting activities) by age and education.
Figure 4.30. Mean score of computer use (production/etc.) by age and education.
Figure 4.31. Mean score of computer use (presentations) by age and education.
Figure 4.32. Mean score of network access by age and education.
Figure 4.33. Mean score of telephone use (sell goods/services) by age and education.
Figure 4.34. Mean score of e-commerce (b-to-c) utilization by age and education.
Figure 4.35. Mean score of e-commerce (b-to-b) utilization by age and education.
Figure 4.36. Mean score of technology’s role (present success) by age and education.
Figure 4.37. Mean score of technology's role (future success) by age and education.
Figure 4.38. Mean score of level of comfort (technology) by age and education.
Figure 4.39. Mean score of confidence level (security) by age and education.
Figure 4.40. Mean score of desktop computer access by age and income.
Figure 4.41. Mean score of computer access (peripheral devices) by age and income.
Figure 4.42. Mean score of laptop computer access by age and income.
Figure 4.43. Mean score of dumb terminal access by age and income.
Figure 4.44. Mean score of computer related devices access by age and income.
Figure 4.45. Mean score of telephone access by age and income.
Figure 4.46. Mean score of type of Internet access by age and income.
Figure 4.47. Mean score of telephone use (interoffice) by age and income.
Figure 4.48. Mean score of cellular telephone use (offsite) by age and income.
Figure 4.49. Mean score of telephone use (market) by age and income.
Figure 4.50. Mean score of telephone use (complaints) by age and income.
Figure 4.51. Mean score of telephone use (assistance) by age and income.
Figure 4.52. Mean score of Internet use to recruit employees by age and income.
Figure 4.53. Mean score of e-mail use (communication) by age and income.
Figure 4.54. Mean score of e-mail use (market) by age and income.
Figure 4.55. Mean score of website use (advertise) by age and income.
Figure 4.56. Mean score of Internet use (business research) by age and income.
Figure 4.57. Mean score of Internet use (product functionality) by age and income.
Figure 4.58. Mean score of e-learning use to train employees by age and income.
Figure 4.59. Mean score of web conferencing use by age and income.
Figure 4.60. Mean score of online banking use by age and income.
Figure 4.61. Mean score of Internet use (sell to government) by age and income.
Figure 4.62. Mean score of Internet use to pay or to file taxes by age and income.
Figure 4.63. Mean score of Internet use (business licenses) by age and income.
Figure 4.64. Mean score of online support staff use by age and income.
Figure 4.65. Mean score of online complaint database use by age and income.
Figure 4.66. Mean score of computer use (storage) by age and income.
Figure 4.67. Mean score of computer use (word processing) by age and income.
Figure 4.68. Mean score of computer use (accounting activities) by age and income.
Figure 4.69. Mean score of computer use (production/etc.) by age and income.
Figure 4.70. Mean score of computer use (presentations) by age and income.
Figure 4.71. Mean score of network access by age and income.
Figure 4.72. Mean score of telephone use (sell goods/services) by age and income.
Figure 4.73. Mean score of e-commerce (b-to-c) utilization by age and income.
Figure 4.74. Mean score of e-commerce (b-to-b) utilization by age and income.
Figure 4.75. Mean score of technology's role (present success) by age and income.
Figure 4.76. Mean score of technology's role (future success) by age and income.
Figure 4.77. Mean score of level of comfort (technology) by age and income.
Figure 4.78. Mean score of confidence level (security) by age and income.
Figure 4.79. Mean score of desktop computer access by race and education.
Figure 4.80. Mean score of computer access (peripheral devices) by race and education.
Figure 4.81. Mean score of laptop computer access by race and education.
Figure 4.82. Mean score of dumb terminal access by race and education.
Figure 4.83. Mean score of computer related devices access by race and education.
Figure 4.84. Mean score of telephone access by race and education.
Figure 4.85. Mean score of type of Internet access by race and education.
Figure 4.86. Mean score of telephone use (interoffice) by race and education.
Figure 4.87. Mean score of cellular telephone use (offsite) by race and education.
Figure 4.88. Mean score of telephone use (market) by race and education.
Figure 4.89. Mean score of telephone use (complaints) by race and education.
Figure 4.90. Mean score of telephone use (assistance) by race and education.
Figure 4.91. Mean score of Internet use to recruit employees by race and education.
Figure 4.92. Mean score of e-mail use (communication) by race and education.
Figure 4.93. Mean score of e-mail use (market) by race and education.
Figure 4.94. Mean score of website use (advertise) by race and education.
Figure 4.95. Mean score of Internet use (business research) by race and education.
Figure 4.96. Mean score of Internet use (product functionality) by race and education.
Figure 4.97. Mean score of e-learning use to train employees by race and education.
Figure 4.98. Mean score of web conferencing use by race and education.
Figure 4.99. Mean score of online banking use by race and education.
Figure 4.100. Mean score of Internet use (sell to government) by race and education.
Figure 4.101. Mean score of Internet use to pay or to file taxes by race and education.
Figure 4.102. Mean score of Internet use (business licenses) by race and education.
Figure 4.103. Mean score of online support staff use by race and education.
Figure 4.104. Mean score of online complaint database use by race and education.
Figure 4.105. Mean score of computer use (storage) by race and education.
Figure 4.106. Mean score of computer use (word processing) by race and education.
Figure 4.107. Mean score of computer use (accounting activities) by race and education.
Figure 4.108. Mean score of computer use (production/etc.) by race and education.
Figure 4.109. Mean score of computer use (presentations) by race and education.
Figure 4.110. Mean score of network access by race and education.
Figure 4.111. Mean score of telephone use (sell goods/services) by race and education.
Figure 4.112. Mean score of e-commerce (b-to-c) utilization by race and education.
Figure 4.113. Mean score of e-commerce (b-to-b) utilization by race and education.
Figure 4.114. Mean score of technology's role (present success) by race and education.
Figure 4.115. Mean score of technology's role (future success) by race and education.
Figure 4.116. Mean score of level of comfort (technology) by race and education.
Figure 4.117. Mean score of confidence level (security) by race and education.
CHAPTER V

CONCLUSION

Summary

This chapter discusses how the results of this study indicate that a Digital Divide did not exist between small businesses owned by African and European Americans in Jackson and Gulfport Mississippi. It also discusses the technology limitations of the small businesses sampled from these cities, and the possible corrective measures for these restrictions. The chapter, moreover, lists several areas of future research that investigators should pursue.

Introduction

More Americans than ever are connected to the Internet. It is the fastest-growing method of human communication in all of history by far. But...there is a growing digital divide between those who have access to the digital economy and the Internet and those who don’t, and that divide exists along the lines of education, income, region and race.... The very information technology driving this new economy gives us the tools to ensure that no one gets left behind....Now, just imagine if not simply a fraction, but all of our young people entered the work force, had access to the Internet always, and had mastered the skills of the new information economy. So if we want to unlock the potential of our workers, we have to close that gap. (Clinton, 1999)
As former President Clinton asserted in the late 1990s, any gap in access and efficient use of the tools of the information age across demographic categories such as race, income, education, or region is a threat to the economic vitality of the citizens of the United States. As the 21st Century continues, the skills needed by the employer marketplace will be technology dominated. This statement is also true for the small business community in this country (Bangs, 1998; Lucas, 2001; Pinson, 2005; Rapp, 2002). If it hopes to survive, to be competitive, and to be economically solvent in the e-commerce/technology driven consumer marketplace of the twenty-first century, there has to be equal access and efficient use of all the tools of the information age across all small business demographic categories (Brynjolfsson and Urban 2001; Maddox, 1998; Rosen, 2000; United States Department of Commerce, 2000a; United States Small Business Administration, 2000b; Ward, 2003).

The vast majority of the studies analyzing the technology (computer and Internet related technologies) access and use of small business in the United States, most of which focused on northern cities, mirrored the results of studies that analyzed these variables in the everyday lives of people in this country. Simply, those small businesses owned by certain ethnic groups such as African Americans, Hispanic Americans, and Native Americans seriously lagged behind European Americans across most of the computer and Internet related access and use categories (Center for Women Business Research, 2002; Minority Business Development Agency, 2001b; United States Small Business Administration, 2003a). These studies also revealed that a significant portion of the above minority small businesses owners had negative attitudes toward technology. They also had little familiarity with the many ways in which technology could be used to maximize
their businesses’ economic potential. These outcomes reinforced many business researchers’ belief that a “Digital Divide” or “Technological Segregation,” to quote one social science researcher, also existed in the small business community in the United States—particularly when comparing African and European American-owned small businesses (Samaras and Welter, 1997, p. 5).

*Digital Divide*

From the results of previous studies on the small business Digital Divide, a researcher might assume that any study on the subject of small business technology access and use would yield similar findings regardless of the region of the country, its economic characteristics, or its ethnic composition (Gallop-Goodman, 2000; Hocker, 2001; McCoy-Pinderhughes, 2000; Schneider, 2001; Searle, 2001; Sherman, 2003). This assumption would be invalid. A Multivariate Analysis of Variance on the technology data collected from the small businesses in the two southern cities investigated in this study—Jackson and Gulfport Mississippi—did not yield statistically significant outcomes. A Digital Divide in access and application of technology did not exist between these two groups. The “haves and have nots” that were present in other small business studies of technology access and use did not characterize the small business environments in these urban areas (National Telecommunication and Information Administration, 1995).

Initially, the study’s design called for six dependent variables. However, a Pearson correlation analysis revealed that a statistically significant amount of the variation that existed in those variables were contained in two of the initial six dependent
variables—Total Computer Utilization (TCOMPU) and Telephone Utilization for
Daily Operational Tasks (TELEUDBO). An examination of the means of these variables
as they relate to the six independent measures and their hypothesized interactions indicate
that 47.56% of the mean scores produced on these measures were classified as average,
35.36% were classified as excellent and only 17.07% were classified as low (see Tables
4.2-4.10).

From the mean scores on these two dependent measures, it seems that the small
businesses in Jackson and Gulfport had average or excellent levels of access and
utilization on the vast majority the tools of the information age. This assumption would
be faulty. The two composite variables do share a statistically significant portion the
same variation with all the access and use dependent measures analyzed in the study;
however, interpretation of them alone can not reveal a clear generalizable picture of the
nature of the technology access and use measured in this study. It is also prudent to
illustrate the relative high or low scores on each of the individual 39 measures that the
two composite variables represented thus considering all the variation—not just shared
variation. This facilitates an unambiguous understanding of the nature of telephone,
computer, and Internet related technology access and use in the small business
communities analyzed from Jackson and Gulfport.

This analysis confirmed that across all the measures a Digital Divide did not exist.
Instead of average levels of access and utilization across the vast majority of the
measures, however, the individual mean scores indicated that the businesses in Jackson
and Gulfport had relative low levels of access and utilization. The results also indicated
that the vast majority of the small business owners believed that technology would play
an average role in the present success and in the future success of their businesses. These owners also had low levels of confidence in technology’s ability to secure their customers’ vital information (see Table 4.1-4.10).

A significant point should be made about the technology attitude scores. The small business owners in this study did not have the negative attitudes toward technology that the vast majority of the studies indicated that the small business owners they sampled did (IBM and the United States Chamber of Commerce, 1998). In fact, the only attitude characteristic in this study that was similar to the literature was the existence of the abovementioned lack of confidence in technology’s ability to secure the vital information of customers (Department of Information Technology of the city of Seattle, 2003). However, this fear did not prevent the vast majority of the owners from agreeing that technology access and use played and will play role in success of their businesses—a scenario that was not prevalent in the research literature on this subject.

Technology Readiness

It is obvious from the telephone, computer, and Internet related technology access and usage levels that both of these cities’ small businesses had glaring technology deficits that will prevent them from being ready to take advantage of the technologically driven economic market place of the twenty-first century. The first area of concern is the limitations in technology access. The majority of these businesses did not have access to laptop computers. These devices can allow mobility in the work environment because they permit the worker to accomplish certain work related tasks, be it training, research, or e-mail communication, any where in the workplace without loosing processing speed
or access to needed software or hardware (Jones, 1998; Kooser, 2004; Ray, 2005). In addition, the workers can use these devices outside of the work environment, thus, allowing them to either work at home or at another offsite location (Muhammad, 1998). Considering these positives, many business experts stress that this type of mobile computer access can have positive results in the area worker productivity—, which is one of major keys to the success or the failure of small businesses in the United States (Donaldson, 2004).

These small businesses, moreover, did not have access to an abundance of computer relate devices. They did not use computer devices such as barcode scanners, identification card scanners, and numerous other time saving, product tracking, employee monitoring, and inventory compiling technologies. Such technologies have shown to allow businesses to cut cost in areas such as lost products, employee fraud, and daily business operational expenses (Townes, 2005).

Dumb terminal and Local Area Network access were also major technology access limitations. As far as dumb terminals are concerned, the small businesses in both cities did not utilize this technology. Industry experts stress that the dumb terminal is a data input tool that can be an inexpensive way to input customer information, account information, or order information into an allocated data base from multiple location within a business without purchasing the more expensive desktop computer system (Rohan, 2003).

Only the lowest level of network access was prevalent in the small businesses sampled from Jackson and none was prevalent in the small businesses sampled from Gulfport. Network technology ,especially more advance levels of Local Area
Networking, allows simultaneous access to a variety of software applications and the Internet from any desktop computer, laptop computer, or personal digital assistant within the premises of the business. The more advance networking systems have encrypted security protocols that can block or allow access to specified databases and even monitor online activities of the computers on system. These security features affords the business owner a high level of confidence that employees are using these tools for business-related functions, not other unsanctioned activities. Local Area Networks, in addition, allow the business processes to flow from input to output in a speedy, cost efficient, and effective manner.

The final area of concern is Internet related access—in particular Internet access and webpage access. The small businesses sampled from Jackson did have Internet access beyond an analogue telephone line; they on average had access through a cable modem or WebTV. Considering that the costs of faster modes of access such Direct Subscriber Lines (DSL) and T-1 lines have decreased around 20% percent over the last ten years, these faster modes of access should be adopted by small businesses in Jackson—in particular the T-1 line(Roya, 2005). Unquestionably, the T-1 line is more costly than the DSL, at minimum $289 per month, but it has the needed mission critical Internet connectivity, the data integrity, and the data security protocols necessary for fast and reliable e-commerce activities (Broadband.com, 2005; Infobahn.com, 2005). Gulfport on average had Internet access via an analog telephone line, which is a very slow mode access when compared to WebTV, DSL, a cable modem, and a T-1 line. As the small businesses sampled from Jackson, these businesses should also invest in the faster, more secure, and e-commerce friendly T-1 line. However, if the T-1 is found to be
to big of a cost burden for an individual small business, the small business DSL lines offered by Bell South and AT&T are adequate for e-commerce activities.

As far as webpage access is concerned, the vast majority of the businesses sampled from both cities did not have access to this tool. Considering the huge economic values that companies in the Untied States have generated from their web environments, it is obvious that small businesses in both of these cities have to make a concerted effort to open their businesses to the e-market place by developing and maintaining a web environment. These environments should be fully integrated online market venues allowing the consumer to obtain product, company, and purchasing information readily.

The technology access deficits in the small businesses sampled are disturbing; however, equally disturbing are the low levels technology utilization of the small businesses under investigation. Even the most rudimentary type of utilization, telephone related, had low levels of usage on several measures. The small businesses sampled from both Jackson and Gulfport had low levels telephone usage for the selling of goods and or service. The small businesses from Gulfport also had low levels of telephone utilization to handle customer complaints. Businesses have used these two modes of telephone usage in the United States since the early 1950s with positive results from an economic perspective and from both a customer service and business communication infrastructure perspective. For small businesses in today’s society not to garner the benefits from using telephones to sell goods and or services, to handle customer complaints, and for internal communication might imply that the owners of these enterprises did not understand the extent in which these types of telephone usage could aid their businesses.
Certain types of computer utilization are also areas of concern. The particular computer usage methods that were lacking were as follows: (a) manufacturing, production, and service activities for goods and or services, and (b) computer use to prepare and present business-related presentations. The deficit in computer usage from a manufacturing, production, or service perspective resides in the small businesses that were sample from Gulfport, Mississippi. These businesses had low levels of computer utilization for these types of tasks. Studies since the late 1980s have shown that computer aided design, manufacturing, and production can drastically reduce the cost of designing and beginning the production phase of a new product or service. The lack of utilization of computers to do such tasks, therefore, limits these small businesses’ ability to produce innovative new products and services at a low cost (Asanuma, 1988; Hayes, Wheelwright, & Clark, 1998; Walter III, 1988; Wright and Bourne, 1998). This in turn curtails these businesses’ ability to garner their full economic potential in a globalized economy that has an infinite number of consumer needs that the market has to satisfy. The small businesses sampled from Jackson, on the other hand, had average levels of computer utilization to accomplish manufacturing, production, or service tasks. They too, however, could utilize computers to do these tasks more frequently—an assertion that the Directory of the Minority & Small Business Development Division of the Mississippi Development Authority has stressed on numerous occasions (Richard Speights, personal communication, March 9, 2005).

Both the businesses from Jackson and Gulfport had extremely low levels of computers use to prepare or to present business-related presentations. Computer presentations developed with such software as Microsoft Office Powerpoint and Corel
Presentation can allow a developer to present every aspect of the pros and cons of a specified product and or service to a small business owner. Moreover, it can be used in the design phase of product development. It can allow the designer to depict visually every action and reaction that goes into a specified function of a product and or a service. Since the mid 1990s, companies have also used computer related presentations to present the value or the potential value of a product and or service to potential investors.

The area of most concern as it pertains to small business technology utilization, however, is Internet utilization. The samples taken from both Jackson and Gulfport had extremely low levels of Internet utilization for 13 of the 16 quantified Internet usage measures that this study analyzed. All these measures of Internet use had mean scores that were less than 50 and as low as 22.22. The following Internet utilization methods were classified into this lack of usage grouping: (a) employee recruitment, (b) e-mail to market goods and or services, (c) helping with the functionality of a good or service purchased by the small business, (d) e-learning to train employees, (e) web conferencing, (f) online banking (g) selling goods and services to government agencies, (h) paying or filing taxes, (i) obtaining business-related licenses, (j) online support staff, (k) online complaint database, (l) business-to-consumer e-commerce, and (m) business-to-business e-commerce.

A significant portion of the business technology articles, books, and research studies over the last ten years have shown how each one of the above measures can streamline all the operational processes that a business goes through whether they are managerial, marketing, production, manufacturing, or product development (Lucas, 2001; Powell & Dent-Micallef, 1997; Rapp, 2002). If utilized properly, they can aid a business
in its overall economic maturity; thus, insuring its survival in the information age (Brynjolfsson and Urban, 2001; Maddox, 1998; Riemenschneider and Mukytyn, 2000). Brynjolfsson and Hitt (2000) asserted that these modes of utilization were so beneficial to a business that they could transform an economically lackluster organization into a high performing, organizationally sound economic dynamo.

Of all these measures, however, the one deficiency that most experts would agree is one of, if not the greatest, determinant of the failure or the success of small businesses in the twenty-first century is the level of participation in e-commerce (Kooser, 2004; Lucas, 2001). Considering that just online retail consumer sales (business-to-consumer e-commerce) from the major retailers in the United States is expected to be $80 billion by the end of 2006 and that by end of 2010, business-to- business e-commerce is forecasted to yield $3.2 trillion, the importance of this means of consumer purchasing for small businesses in the United States is without question (Kooser, 2004; Lohrke and Franklin, 2002; Tiessen, 2005; United States Department of Commerce, 2000). If the sampled small businesses from Jackson and Gulfport hope to continue to thrive in the twenty-first century, they have to be ready to utilize e-commerce on a broad scale.

Action needs to be taken to correct the technology limitations that were prevalent in the businesses sampled from Jackson and Gulfport. If left uncorrected, these businesses and those like them in the both cities are destined to fail. With that failure, the positive aspects of economic uplift that small businesses have historically given to their economically depressed communities would be lost. With this loss, poverty, crime, and the moral decay it brings will continue to grip certain sections of Mississippi’s two
largest metropolitan areas (Gulfport, Mississippi Area Connect, 2004; Jackson, Mississippi Area Connect, 2004).

**Correcting Technology Limitations**

Most textbooks and articles on the subject of business technology stress that most limitations in telephone, computer, and Internet related technology access and utilization in businesses can be addressed by developing a technology plan and an e-commerce strategy. From examining the effect sizes of these variables in this study, this assertion might be true. Both of these independent variables had Cohen’s F effect sizes that exceeded .40—which Cohen’s Guidelines to Effect Size Estimates classify as large effects. Moreover, lines graphs of the mean scores on all the access and utilization measures across these variables indicate that in almost every instance, those small businesses that had some form of technology plan and e-commerce strategy had higher levels of access and use of the above technologies than those that did not. With that said, the formation of such plans should be undertaken by the small businesses sampled from both Jackson and Gulfport.

**Technology Plan**

A technology plan is a living document. It constantly repositions a business to meet the demands of a globally competitive and technically savvy market place. It accomplishes this task by systematically planning out the current and future uses of technology (Abrams, 2000; Fryer, 1998).

A technology plan is developed in three stages. Initially, a business’s goals are examined. Based on these goals, the business operations that can best help accomplish
these outcomes are examined to determine which of them could benefit from technology use (Fryer, 1998). The most common business functions that utilize technology are the following: (a) accounting, (b) taxes, (c) finances, (d) order taking and tracking, (e) order fulfillment and shipping, (f) inventory management, (g) database management, (h) mailing lists, (i) communication with customers, (j) internal communication, (k) presentations, (l) desktop publishing, (m) personnel/human resource management, (n) production, (o) Internet marketing, and (p) Internet sales (Abrams, 2000).

Once this list is compiled, choosing the best technology to accomplish each of the functions is undertaken. When choosing the technology, six issues should be considered (Abrams, 2000). The first of which are the functions of the technology. Ease of use of the technology is also an essential consideration. The ability to upgrade and or to expand the technology is also an important issue. The intended technology’s ability to integrate with existing data, technology, systems, and etcetera is also important. The final two considerations are security and cost.

Once these issues are addressed and the technology to be purchased has been determined, the final stage of the technology planning process is initiated. Two functions occur during this stage, the determination of stages of implementation of the technology plan and the life cycle of the technology plan (Luftman, Lewis, & Oldach, 1993). Experts recommend that small businesses implement their technology plans in stages. Initially, it is advised to adopt the technology that best addresses the business goal that is considered to be most vital and then gradually over a period of time each of the other technologies should be implemented (Reich, 1998). According to Fryer (1998), gradual
implementation of a technology plan lessens the financial burden on a business while at the same time allowing an evaluation of how a single technological adoption is aiding in overall business productivity.

As far as the life cycle of the technology plan, it all depends on the nature of the business that is implementing the plan (Cassidy, 1998). Technology plans that are three or five years are fine “if you are dealing with a fixed product and you already have certain known quantities in place” (Fryer, 1998, p.5). However, if the types of products or services that a company sells fluctuate frequently then technology plans with such a huge life cycle would not be prudent. Most experts recommend that technology plans for small businesses have a life cycle of one or two years (Fryer, 1998). This allows a small business time enough to evaluate the effectiveness of the adopted technology; thus, permitting it to “map vision to reality, theories to processes, and goals to techniques” (Fryer, 1998). It is also suggested that a technology plan should be evaluated frequently, every six months, to make adjustments to it in case certain characteristics of the businesses change; thus, making it a living document that evolves.

**E-commerce Strategy**

An e-commerce strategy is also technology plan. However, instead of focusing on all technology integration, its primary emphasizes is on the development and utilization of web environments to sell goods and or services to consumers. The process of creating an e-commerce strategy involves several stages. The initial stage is to create clearly defined e-commerce goals based on the company’s goals. These e-commerce goals should establish the expectations of a business as it relates to its participating in e-
commerce (Rosen, 2000). Rosen (2000) states that bad e-commerce goals would be such things as the following: (a) developing a presence on the Internet, (b) elevating awareness, (c) improving sales, (d) reducing costs, (e) increasing the number hits (on the website), (f) getting more repeat visitors, and (g) increasing the amount of time that users are navigating the website. However, good e-commerce goals are more specific and can be precisely measured. Examples of these types of goals, according to Rosen (2000) are as follows:

1. Reducing support center costs by 30 percent over the next twenty-four months.
2. Receiving 25 percent of corporate revenue through e-commerce within the next four years.
3. Decreasing sales and support costs by 25 percent over the next four years by moving to online applications.
4. Increasing awareness of your products among employees by 25 percent by the end of the third quarter.
5. Extending the organization online to increase sales and customer retention by 25 percent.
6. Reducing cost of customer support by 15% by leveraging online communication technologies and maintaining excellent service.

Goals, like the aforementioned, allow a business to have a reasonable criteria to determine whether its e-commerce activities are effective in giving the company positive economic results (Rosen, 2000).
Another important aspect of e-commerce strategy development is the creation of a return of investment statement or ROI. There are three basic ROIs for web based services—cost chain, value chain, and transaction chain. Cost chain simply explains how specified web services save the company financially. A cost chain replaces a current manual process with an automated process; thus, incurring monetary saving such as replacing the cost of printing and mailing company brochures by housing them on the company’s website. Value chain ROIs are designed to increase current services to increase sales or to provide additional value. This type of ROI is hard to develop because it requires “giving a dollar amount value to the cost of acquiring and retaining a new customer, or up selling or cross selling an existing customer” (Rosen, 2000, p.105). A transaction chain reduces a process to cause business saving. This type of chain is made up a collection of cost chains. For example, if a company’s normal ordering process for a particular good and service takes three days to complete manually and uses a huge number of employee man hours, online ordering might only take five minutes and use no employees; thus, saving the company money and giving the customer a speedy purchase.

Of these three ROIs, most small business experts recommend that small or midsize businesses use the cost chain ROI initially because of its simplicity and its narrow focus. Once a small or midsize business has used a single ROI and saw some benefits, then, according to these experts, a business should utilize transaction chain ROIs. As the e-commerce environment becomes more established and sophisticated, then value chain ROIs should be adopted (Jolfsson and Urban, 2001; Maddox, 1998; Rosen, 2000).
The final step in the development of an e-commerce strategy is the design of the business or e-commerce website. The initial step in this process is to determine which market segment the site will try to target. Once it is identified, online services are developed to support that site based on the needs or perceived needs of the target market. It is recommended that businesses, especially small businesses, not try to obtain numerous target markets. It is suggested that when this happens services are created that are “probably not focused on any one market” (Rosen, 2000, p.106). This outcome, in most situations, causes the targeted goals for the e-commerce strategy not to be achieved. For this reason, it is suggested that only one market be targeted at one time. Once the targeted market for the site had been determined, the content of the e-commerce environment is developed. The content will be determined by the e-commerce goals that were initially developed (Lee, 2003; McKay, 2004; Shah & Dawson, 2005; VeriSign, 2005).

Once the e-commerce strategy is developed, implementation of the strategy is undertaken. The implementation process consists of several things (Shah & Dawson, 2005). Initially, training on the business and technical issues of creating an e-commerce system occurs. In the case of a small business, this entails training a person already in the company that has computer skills to maintain the hardware, the software, the network, and the online environment of the business. Due to the fact, that most Internet Service Providers and computer technology companies do the vast majority of the above tasks for small businesses as part of the purchasing costs, the training needed is usually not extensive. Once the training is completed, e-commerce strategy initiation begins.
After implementation of the strategy, strategy assessment occurs every fiscal year for a small business. According to Shah and Dawson (2005), the objectives of the strategic assessment of the e-commerce strategy are as follows:

1. To find out if the e-commerce system is delivering what it was suppose to deliver. (A lack of profit in the beginning need not be a problem if it is apart of the over all strategy.)

2. To learn from both success and failures of the system reviewed. Whether the system is living up to expectations, if not it should be possible to learn from mistakes and improve future planning. E-commerce is a continually changing environment so initiatives that work in the first instance may cease to be cost effective at a later stage.

3. To identify failings projects as soon as possible and determine the reasons for failures. There may be functional flaws in the original assumptions or outside changes may have completely altered the online market. There is no point in continuing with an online project if it can not be saved. It is better to learn from the mistakes to avoid the same problems on subsequent systems. (p.30)

Other Corrective Measures

Development of both technology plans and e-commerce strategies are not the only mode to help elevate the small businesses in Jackson and Gulfport out of the technological dark ages. A further examination of the effect sizes of several of the independent variables in this study revealed that both the education variable and the age
variable had large effect sizes—Cohen’s F that far exceeded .50. Individual line graphs of the mean scores on each of the access and utilization measures across the education and the age variables indicated that a strong relationship existed. As far age is concerned, in almost every instance, those individual small businesses owned persons 65 years of age or older had lower levels of access and use of the technology measures than the younger owners did. For the business owners that had a bachelor’s degree or beyond, their small businesses had, on average, higher levels of access and use of the technology measures than the business owned by owners that were less educated.

The best ways to address the technology deficiencies of these two groups are through technology training and educational programs. Both the Small Business Division of the Mississippi Development Authority and the local branches of the United States Small Administrations in Jackson and Gulfport can initiate technology programs targeting small business owners. These programs should consist of basic computer and Internet literacy training. They should also include detail explanations on the roles that technology access and use will play in the further advancement of a small business in the information age. Explanations of the security protocols that computer and Internet related technologies have built in to secure customer and business information should also be presented. This would ideally give the business owners more confidence in technology’s safety as it relates protecting vital business and customer information. Most importantly, successful small business owners that utilize these technologies on a daily basis in their businesses should explain the value of these tools to these owners. Studies have shown that a significant portion of small business owners in the United States adopt a piece of technology only after someone that they know has used it and has achieved

Besides these educational and training programs, the above organizations can also form partnerships with companies like Dell Computers, Gateway Computers, and the Microsoft Corporation. These partnerships should be designed to provide low cost computers and Internet related technologies to the small businesses in Jackson and Gulfport. These associations should also provide low cost technology assistance to small businesses in these two cities. These corporate giants over the last ten years have initiated numerous programs to aid small businesses in their technological readiness; therefore, an association with Mississippi Development Authority and the local branches of the United States Small Business Administrations in Mississippi is something that is in the realm possibility.

Probably, the most important action that must be taken, however, is that the small business owners themselves must make a conscious effort to increase their technology expenditures. The businesses sampled did have technology expenditures and they did plan to spend money on technology in the future. The majority of the small businesses sampled, 57.4%, reported that their technology expenditures for the past fiscal year was $2,000 or more. Approximately 16.7% of the businesses reported that their technology expenditure the past fiscal year was between $1,500 and $1,900. Moreover, 13% of the businesses reported their technology expenditures for the past fiscal year were between $1,000 and $1,499. Only 9.3% of the businesses reported that their technology expenditures the past fiscal year was between $500 and $999. An even lesser percentage
of the businesses, 3.7%, reported that their technology expenditures the past fiscal year were less than $500.

A majority of the small businesses sampled also reported that they would continue to spend company funds on technology in the future. Around 48.1% of the businesses analyzed stated that they would spend $2,000 or more in the upcoming fiscal year on technology and 22.2% stated they would spend between $1,500 and $1,999. Exactly, 16.7% of the business sampled asserted that they would spend between $1,000 and $1,499 on technology in the next fiscal year. Around 5.6% of the small businesses sampled stated that they would spend $500 to $999 on technology the upcoming fiscal year. A slightly larger percentage, 7.4%, stated that they would spend less than $500.

The above technology expenditures and future expenditures on the surface seem to be significant; however, when compared with technology expenditures from small businesses from other states they are miniscule. Pociask (2004) found that the 458 small businesses he sampled from the District of Columbia and several other states spent an average of $543.17 a month just on telecommunication services. Therefore, the small businesses sampled from Jackson and Gulfport must increase their expenditures on technology purchases in order to keep up with other small businesses throughout the United States. Like their counterparts, they must consistently infuse technology into every aspect of their businesses’ operations if they hope to thrive in the future.

The creation of technology plans and e-commerce strategies along with the aforementioned efforts by the Mississippi Development Authority and the local branches of the United States Small Business Administration in both cities should slowly raise the technological level of the small businesses in Jackson and Gulfport. With this elevation,
positive economic changes should occur in these cities due to emergence of technologically urbane small businesses—small businesses that will be competitive in e-commerce, have a technologically sophisticate workforce, and be economically robust. These positives can only have the effect elevating Mississippi and its populace out of the economic bottoms of American society, which it currently resides.

These types of positive outcomes might be in the near future for both cities because of the destruction that Hurricane Katrina caused in both Jackson and Gulfport. On August the 29, 2005 a Category 4 hurricane named Katrina hit the gulf coast of Mississippi and Louisiana. For two days, this storm ravaged Gulfport, Mississippi, Biloxi, Mississippi, and parts of Jackson, Mississippi. In its aftermath, an estimated 55% to 60% of the small businesses of Gulfport and Biloxi were either destroyed or crippled critically (Associated Press, 2005a; Wikipedia, 2005). In Jackson, an estimated 65% of the small businesses had to suspend operations for over a week and a half due to power outages (Keller, 2005; Dash, 2005; Associated Press, 2005b). The Mississippi Development Authority estimated that 15% to 20% of the small businesses in Jackson were damage to such an extent that it would take them an extended period before they could resume operations (Keller, 2005; Pender, 2005).

With this level of destruction and elimination of business operations—in particular in areas like Gulfport and Biloxi—, it provides an opportunity for the local branches of the United States Small Business Administration and the Small Business Division of the Mississippi Development Authority to create a positive out of this truly horrific event. These organizations can start from the ground up and accomplish two goals that are critical to the future success Mississippi’s small businesses. They can help
to develop a technologically well-informed owner who is not fearful of integrating or trying new technology in his or her business. Most importantly, by encouraging the development and utilization of sound technology plans and ecommerce strategies, these organizations can aid the small business owner in creating an enterprise that is managerially, economically, and technologically ready to participate actively in the e-commerce economy of the twenty-first century.

**Small Business Defined**

Examining the business demographics of the sample revealed that 68.5% of the sampled business from both cities had less than 10 employees. Only 18.5% of the sampled businesses had 10 to 19 workers. Approximately, 13% of the sampled small businesses had 20 or more employees. Therefore, as it relates to this sample and the cities in which the samples were taken, a small business should be defined as a business with less than 10 employees.

**Future Research**

From examining the results of this study and the lack of investigation of this topic in the available literature, it is obvious that in the future researchers should continue to analyze the level of access and use of computer, telephone, and Internet related technologies of the small businesses in the major cities in Mississippi. These research endeavors should use statistical analysis procedures such as Multiple Linear Regression (MLR) and Logistic Regression (LR). These procedures can help determine the nature and the level of technology access and use in the large urban areas of this state.
MLR will allow for the development of regression equations that will explain which variables or combinations of quantified variables predict levels of access and use of telephone, computer, and Internet related measures. These regression equations can tell precisely what variable or variables should be manipulated to produce a desired level of technology access and use. As far as LR is concerned, this can be used to determine what factor or linear combination of factors predict the level of access and use of technology measures that can not be easily quantified such as webpage access, Internet access, and access to some form of local area network.

Future research that utilizes the above statistical procedures should also do a preliminary power analysis in the study design phase. This will allow the determination of the sample size needed to produce the required statistical power necessary to detect possible statistical significant differences. Based on the post hoc power analyses done in this study, it is obvious that for a multivariate procedure like the MANOVA, the sample size should exceed a 1000 or more if the number of dependent variables exceed two.

Besides using the above statistical procedures to analyze the technology data, studies should only focus on one or two aspects of technology access and use. This type of specialization would allow a more comprehensive understanding of the factors that might contribute to the levels of access and use of specified technology measures such as business-to-consumer or business-to-business e-commerce. This type of attention might have the positive outcome of creating specialize programs to facilitate a high level of access and use of a specified technology.

Future studies should also focus on how specified types of businesses access and use technology. Logically, certain types of enterprises are entrenched in technology
access and they use it more readily than other types. If a sample of small businesses is comprised of carpenters and graphic design enterprises, it would stand to reason that the enterprises that were graphic design specific would have higher levels of technology use and access than the carpenters in the sample. Specification of this nature would facilitate a more meticulous investigation of the extent in which a particular business type uses and accesses technology; thus, better enabling a researcher to make specific technology suggestions based on the nature of the enterprise.

This research specification should also occur along racial lines. Future studies should focus on the nature of technology access and use of small businesses owned by a specific ethnic group. This type of investigation provides a more exhaustive analysis of technology issues that might be racial specific.

Studies in the future should also analyze the effect that having a clearly defined business plan has on a small business’s level of technological sophistication. Business experts have stressed over the last two decades that a well-designed and defined business plan can drastically decrease the chances of a small business’s failure (Bangs, 1998; Cahoone, 2002; Pinson 2005). Considering these opinions, it might also be a great predictor of whether a small business has an e-commerce strategy and a business technology plan. It might also be a determining factor of whether a small business accesses and uses technology at a high level (see Appendix D.1).

Lastly, future studies should adopt an experimental research design to test which specific technology plans and ecommerce strategies work best for a specified businesses type in Mississippi. Ideally, a researcher would complete a series of case studies on a specific business type. These case studies would examine several business aspects. They
would be the following: (a) the nature of the product or services produced by a specific type of business, (b) primary and secondary functions that are most important to a specific business type, (c) the technology already used to accomplish primary and secondary business functions, (d) the efficiency level of the utilized technology to accomplish primary and secondary business functions, and (e) the additional technology needed to make the business type more operationally sound. From these results, the researcher would develop a business technology plan and an e-commerce strategy for the specific business type. These plans would then be tested in an experimental manner with a control group and an experimental group. The control group would not receive the treatment, which is the adoption of the technology plan and the ecommerce strategy, and the experimental would receive the treatment. This would provide a way to test whether a specified type of e-commerce strategy and technology plan improves the productivity of a specific type of business. A series of outcome variables such as the level of product sales, the operational cost, the production cost, the business gross income, the size of the consumer base, and the level business expansion can be used to measure the productivity of the businesses being investigated. Such an investigation can lead to the development of base technology plans and e-commerce strategies that specific types of startup businesses can initially adopt to increase their chances of economic success.

Business research in Mississippi that addresses the above issues will provide key insight into the nature and the character of small business technology access and use from a variety of different perspectives. This insight might lead to positive changes in the technology status of small businesses in the state. These changes might cause the
development of economically robust small businesses and the economic uplift in
which they initiate in the communities in which they operate.
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APPENDIX A.1

COVER LETTER
Dear Sir or Madam:

My name is Dwyane Jones and I am working on my PhD in Technology at Mississippi State University. As part of the requirements for this degree, I am conducting a study examining the level of technology use and access of small businesses (businesses with less than 500 workers) in the four largest cities in Mississippi—Jackson, Gulfport, Biloxi, and Hattiesburg. Because the economic marketplace is becoming increasingly technologically driven as it pertains to the manufacturing, the advertising, and the buying and selling of products and services, a possible technology inertness by certain segments of the small business community in these metropolitan areas would unquestionably assure the failure of these ventures. Since studies have shown a link between technologically urbane small businesses and economically robust communities, this possible divide may also be one of the causes of the extreme poverty levels that grip certain areas of these cities. The enclosed questionnaire is designed to measure your business’s level of technology access and use. If you choose to complete this survey, the name of your company and its information will be held in the strictest confidence. Furthermore, I will also provide you with a summary of the final results of this study.

Place your business’s name on the enclosed self-addressed stamped post card and place a check in one of the two blanks—place a check in the first blank if you agree to participate in the study or place a check in the second blank if you do not want to participate. Once it is completed, place it in the mail. This will alert me that you have received the survey and its documentation and to whether or not you want to participate in this study; thus, I will not have to bother you with any additional follow-up letters. If you choose to participate, I will greatly appreciate it if you would return this questionnaire by October 15, 2005. I have placed a stamped self-addressed envelope in the survey packet so that you can return the questionnaire once it is completed. I realize that as a small business owner you have a hectic schedule and that your time is very valuable. However, I believe that the ten minutes that it takes you to complete the questionnaire might reveal possible technological limitation that are prevalent in the small business community in your city and in the other cities under investigation.

Thank you in advance for your participation. If you have any questions, if you would like me to come to your business to conduct the survey onsite, or if you want to complete the survey over the telephone, you can contact me by telephone at (662)325-5032, by e-mail at dkj3@msstate.edu, or by visiting my website at http://www2.msstate.edu/~dkj3. If you would like additional information regarding the approval process that this study went through, you can contact my major advisor Dr. James Adams by telephone at (662)325-2281 or by e-mail atjadams@colled.msstate.edu. For information regarding your rights as a research subject, please contact the Office of Regulatory Compliance at 662-325-5220.

Sincerely,

Dwyane Jones

Dwyane Jones
Graduate Student Mississippi State University
Department of Instructional Systems and Workforce Development
Enclosure (3)
In regards to: Participation in a Mississippi Small Business Technology Study

Dear Sir or Madam:

Several weeks ago, I mailed a survey packet to you requesting that you consider participating in a survey analyzing the level technology access and use of small businesses in the four largest metropolitan areas in Mississippi. Among other things, this packet contained a self-addressed and stamped postcard. The instruction on this postcard advised you to place a check in the circular box if you agreed to participate in the study or leave it blank if you do not want to participate in this endeavor. At this point, the instruction then advised you to place the postcard in the mail as soon as possible. I have not received this postcard at this point in time and I just wanted to remind you to place it mail if you have not did it already. If you have misplaced the postcard, there is another one enclosed in this letter. Moreover, this postcard has an additional circular box in which you can place an additional check mark if you want me to send you another survey because you have misplaced the initial one.

Thanks you for your time and your patience. If you have any questions or if you would like me to come to your business to conduct the survey onsite, if you want to complete the survey over the telephone, or if you want to complete the survey over the Internet, you can contact me by telephone at (662)325-5032, by e-mail at dkj3@ra.msstate.edu, or by visiting my website at http://www2.msstate.edu/~dkj3. If you would like additional information regarding the approval process that this study went through, you can contact my major advisor Dr. James Adams by telephone at (662)325-2281 or by e-mail at jadams@colled.msstate.edu. For information regarding your rights as a research subject, please contact the Office of Regulatory Compliance at 662-325-5220.

Respectfully,

Dwyane Jones

Dwyane Jones
Graduate Student Mississippi State University
Department of Instructional Systems and Workforce Development
Enclosure (1)
APPENDIX A.3

SURVEY DEADLINE REMINDER LETTER
In regards to: Participation in a Mississippi Small Business Technology Study

Dear Mr. Avers:

This is just a reminder that the due date for the survey is on April 20, 200_. Thanks again for your participation in this research endeavor. If you have any questions about the survey or the survey process or if unforeseen problems arise, you can contact me by telephone at (662)325-5032, by e-mail at dkj3@ra.msstate.edu, or by visiting my website at http://www2.msstate.edu/~dkj3. If you would like additional information regarding the approval process that this study went through, you can contact my major advisor Dr. James Adams by telephone at (662)325-2281 or by e-mail at jadams@colled.msstate.edu. For information regarding your rights as a research subject, please contact the Office of Regulatory Compliance at 662-325-5220.

Respectfully,

Dwyane Jones

Dwyane Jones
Graduate Student Mississippi State University
Department of Instructional Systems and Workforce Development
APPENDIX A.4

POSTCARD
Dwyane Jones
P.O. Box 709
Mississippi State University,
Ms State 39762
APPENDIX A.5

REMINDER POSTCARD
Business Name: _____________

Please Place Stamp Here

__I will Participate
__I will not Participate

Dwyane Jones
P.O. Box 709
Mississippi State University,
Ms State 39762

__I would like a new survey mailed.
APPENDIX A.6

STAMPED RETURNED ENVELOPE
APPENDIX B.1

SURVEY INSTRUMENT
Mississippi Small Business Technology Assessment Instrument

Instructions
For this survey instrument, a small business is defined as any business in Mississippi that has less than 500 workers.

Business's Name: ________________________
This survey can not be used without the permission of the creator.

Owner's Information and Business's Demographical Data

Follow the directions given in each question. For questions 1-9, if no person owns at least 51% of the business use the demographic and attitude characteristics of the person holding the greatest percentage of the company's stock. If the small business is comprised of equal owners, use the above characteristics for the owner considered to be the Chief Executive Officer or Chairman of the Board of Directors of the business—the person responsible for the daily operations of the enterprise. The respondent can leave any question blank, if he or she feels uncomfortable in answering it. For questions 1-7 and 10-21, please select only one answer. Questions 8 and 9 require multiple answers.

1. Race of Owner
(Select only one.)
- African American (native born or foreign born person living in the United States of African decent)
- European American (native born person living in the United States of European origin—Caucasian)
- Other (Hispanic American, Native American, Asian American, etc.)

2. Gender of Owner
(Select only one.)
- Male
- Female

3. Age of Owner
(Select only one.)
- Under 25
- 25 to 34
- 35 to 44
- 45 to 54
4. Educational Attainment of Owner
(Select only one.)
☐ Less than high school
☐ High school
☐ Some college or Associate degree
☐ Bachelor's degree
☐ Hours beyond bachelor's degree
☐ Master's Degree
☐ Hours beyond master's degree
☐ Doctorate degree

5. Marital Status of Owner
(Select only one.)
☐ Single
☐ Married
☐ Separated
☐ Divorced
☐ Widowed

6. Number of Children in Owner's Household
(Select only one.)
☐ None
☐ 1
☐ 2 or more

7. On a scale of 1 to 5 with 1 being the worst or the least and 5 being the best or the most, how does the primary owner of this business rank the quality of the technology infrastructure (Internet Service Providers, Telephone Service providers, Cable Television Providers, Television Stations, Satellite Service Providers, and Electrical Power companies) in the community in which the primary outlet of his or her business is located?
(Select only one.)
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
8. On a scale of 1 to 5 with 1 being not vital or the least vital and 5 being the most vital, what role does the primary owner of this business envision that technology access and use will play in the following areas? Place the ranking in the square box provide before each option. (Select three.)

- The economic future of Mississippi.
- The present success of this business.
- The future success of this business.

9. On a scale of 1 to 5 with 1 being uncomfortable, the least comfortable, not confident, or the least confident and 5 being the most comfortable or the most confident, how would the owner of this company rank the following? Place the ranking in the square box before each option. (Select two.)

- Owner's level of comfort with technology (telephone, computer, and the Internet) as it pertains to its application to the business environment in which he or she is apart.
- Owner's level of confidence in technology's (telephone, computer, and the Internet) ability to secure the vital information of his or her customers such as their credit cards, social security, and bank account numbers.

10. In which of the following Mississippi cities is the primary outlet or home base for this business located? (Select only one.)

- Jackson
- Gulf Port
- Biloxi
- Hattiesburg

11. Which of the following choices best describe the category in which this business belongs? (Select only one.)

- Health Care and Social Assistance
- Real Estate, Rental, and Leasing
- Accommodations and Food Services
- Management of Companies and Enterprises
- Arts, Entertainment, and Recreation
- Educational Services
- Finance and Insurance
- Mining
- Utilities
- Construction
Manufacturing
Wholesale Trade
Retail Trade
Information
Other Services

12. Which of the following time intervals best represents the number of years in which this business has been in operation?

(Select only one.)
☐ Less than 5 years
☐ 5 to 9 years
☐ 10 or more years

13. How many workers (include the primary owner of the business) does this business employ?

(Select only one.)
☐ Fewer than 10
☐ 10 to 19
☐ 20 or more

14. What percentage of your workforce is part-time (less than 40 hours a week)?

(Select only one.)
☐ Less than 20%
☐ 20% to 39%
☐ 40% or over

15. Which ethnic group comprises the largest percentage of this businesses' workforce?

(Select only one.)
☐ African American
☐ European American
☐ Other (Hispanic American, Native American, Asian American, etc.)

16. Which ethnic group comprises the largest percentage of this businesses' consumer base?

(Select only one.)
☐ African American
☐ European American
☐ Other (Hispanic American, Native American, Asian American, etc.)
17. What was the gross income of this business in the past fiscal year (The financial or accounting year for an organization, which may or may not coincide with the calendar year)?

(Select only one.)
- Less than $20,000
- $20,000 to $29,999
- $30,000 to $39,999
- $40,000 to $49,999
- $50,000 to $59,999
- $60,000 to $69,999
- $70,000 to $79,999
- $80,000 or over

18. What is the estimated amount of money that this business spent on technology (computer, Internet, and telephone related technologies) in the past fiscal year?

(Select only one.)
- Less than $500
- $500 to $999
- $1000 to $1,499
- $1,500 to $1,999
- $2000 or more

19. What is the projected amount of money that this business will spend on technology (computer, Internet, and telephone related technologies) in the upcoming fiscal year?

(Select only one.)
- Less than $500
- $500 to $999
- $1000 to $1,499
- $1,500 to $1,999
- $2000 or more

20. Which of the following statements best describes this business's ecommerce strategy (a business plan that details how the business can best utilize its technology, especially as it pertains to its development and utilization of websites to sell goods and services)?

(Select only one.)
- No e-commerce strategy as of yet.
- Unwritten e-commerce strategy
- A written e-commerce strategy, but it is not followed precisely
- E-commerce strategy that is extensive, well documented, followed

carefully, and reviewed and updated after a certain interval of time has passed.

21. Which of the following statements best describes this business's technology plan (this is a living document that constantly repositions your business to meet the demands of a globally competitive and technically savvy marketplace by systematically planning out the current and future uses of technology in the business)?

(Select only one.)
- No business technology plan exists.
- An unwritten business technology plan exists.
- A written business technology plan exists, but it is followed arbitrarily.
- An extensive and well documented business technology plan that is followed carefully and updated after a specified time period has elapsed exists.

Business Technology Access and Use

Follow the directions given in each question. For questions 22 -30, please select only one answer. For questions 31-36, there are multiple answers. The respondent can leave any question blank, if he or she feels uncomfortable in answering it.

22. Does this business have some form of Local Area Network (a group of computers that share a common communication line and central process unit within a small geographical location like an office building) located on its premises?

(Select only one.)
- No Local Area Network on this business's premises.
- The computers located on this business's premises are linked to a single personal computer that serves as both the common communication line and the central processing unit for all these computers.
- There are individual Local Area Networks for each section of the business.
- The computers located on this business's premises are linked to a main server which serves as the common communication line and as the central processing unit for all the computers.
- The computers located on this business's premises are linked with a Wireless Local Area Network (the same as Local Area Networks but they have a wireless interface).

23. Does this business have any form of Internet access on its premises?

(Select only one.)
- No Internet access at the present time.
- Internet access via the telephone line.
Internet access via a Cable Modem or WebTV.
- Internet access via a Direct Subscriber Line (DSL).
- Internet access via a T1 line or higher.

24. Which of the following statements best describes this company's web-page?

(Select only one.)
- No web-page at the present time.
- Web-page with brief descriptions of the services and or products that the business offers and the business' contact information.
- Web-page containing the all the information in the previous option in addition to a series of advertisements detailing special time-limited and or future products and services that will be offered.
- Extensive web-page environment containing all the information in the previous two options in addition to methods to purchase goods online such as sections that allow the input of credit card or bank account numbers and much more.

25. How many separate telephone lines does this business have on its premises (in this total also include cellular telephones)?

(Select only one.)
- None
- 1
- 2
- 3
- 4 or more

26. How many desktop computers (monitor, Central Processing Unit, Keyboard, Modem, and Mouse) does the business own or rent?

(Select only one.)
- None
- 1 to 5
- 6 to 10
- 11 to 15
- 16 or More

27. How many computer peripheral devices (printers, scanners, external drives, web cameras, microphones, speakers, and etc.) does the business own or rent?

(Select only one.)
- None
- 1 to 5
- 6 to 10
28. How many laptop computers does this business own or rent?
(Select only one.)
- None
- 1 to 5
- 6 to 10
- 11 to 15
- 16 or More

29. How many "Dumb Terminals (keyboard and monitor linked to a local data base design to input customer data, produce receipts, update customer accounts, and list product inventory) does the business own or rent?"
(Select only one.)
- None
- 1 to 5
- 6 to 10
- 11 to 15
- 16 or More

30. Besides the desktop computers and or "Dumb Terminals," peripheral devices, and laptops, how many additional computer related technologies (identification card readers, diagnostic instruments, and etc.) does this business own or rent?
(Select only one.)
- None
- 1 to 5
- 6 to 10
- 11 to 15
- 16 or More

31. On a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this business use the telephone or it related technologies for the following tasks? Place the ranking in the square box provided before each option.
(Select six.)
- The telephone for interoffice communication.
- Cellular telephones to communicate with employees or the employer whom are away from the business's premises.
- Telephone to market goods and or services that this company produces

(ex: calling present customers to let them know about goods and or services that the business is offering or will offer in the future).

- Telephone to sell goods and or services to customers (ex: taking credit card or bank account information over the telephone to purchase a good or a service).
- Telephone to handle customer complaints.
- Telephone to provide customer assistance to solve possible functionality problems that might arise from a particular good or service.

32. On a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this business use the Internet to do the following tasks? Place the rankings in the square box provided before each option.

(Select six.)

- Internet to recruit employees (ex: using online resume databases to find employees, being listed on job related Internet search engines, or having and option on the company website that allows potential employees to submit resumes online).
- Internet to communicate with customers or other businesses with the aid of e-mail.
- E-mail to market goods and or services to customers (ex: e-mailing product advertisements to past customers).
- Internet to advertise goods and or services with the aid of a company website.
- Internet to do business related research.
- To find out how to make a particular good or service it has purchased accomplish a desired function.

33. On a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this business use the following Internet based technologies to accomplish the following tasks? Place the ranking in the square box provided before each option.

(Select two.)

- Internet-based e-learning programs to train its workers to do desired job related tasks.
- Web conferencing programs (video and audio feeds over the Internet) to communicate or to have meetings with customers, other businesses, or with their employees that might be in distant locations?

34. On a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this
business use the Internet to do the following economic related activities? Place the ranking in the square box provided before each option.

(Select six.)

- Online Banking as a means to manages business bank accounts.
- Business-to-Consumer E-commerce (sell products and or services to customers over the Internet ex: allowing customers to purchase products by submitting their credit cards or bank account information online)
- Business-to-Consumer E-commerce (to purchase goods and or services from other businesses or to sell goods and services to other business over the Internet)
- Selling goods and services to governmental agencies (local, state, federal)
- To pay or to file business related taxes (state, federal, or both)
- Obtain business related licenses from the local, the state, or the federal government.

35. On a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this business use the Internet to provide the following customer related services? Place the ranking in the square box provided before each option.

(Select two.)

- Provide online support staff so that a customer can obtain help for problems that might arise with a product and or service that he or she had purchased.
- Online complaint database (this type of database is just an e-mail address that customers send their complaints too).

36. One a scale of 1 to 5 with 1 representing the lowest level of use or no use and 5 representing the highest level of use, how often does this business use a computer and related software to accomplish the following tasks? Place the ranking in the square box provided before each option.

(Select five.)

- Store customer and business related information.
- Perform word processing tasks (ex: typing memos, reports, and other correspondence)
- Complete accounting relating activities.
- To accomplish production, manufacturing, or service related activities for the goods and or services sold to customers.
☐ Prepare and or present business related presentations (ex: using software like Power Point, Corel Presentation, Microsoft Publisher, and etc.)
APPENDIX B.2

RELIABILITY ESTIMATES FOR THE ACCESS AND UTILIZATION QUESTIONS
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<th>Reliability Percentage</th>
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36(e) 100
APPENDIX C.1

PEARSON CORRELATION OF INITIAL

SET OF DEPENDENT VARIABLES
The highlighted measures indicated the chosen dependent variables. TELE=Total Business Telephone Access, BINT=Small Business Internet Access, TOCA=Total Business Computer Access, TELU=Telephone Utilization For Daily Business Operational Tasks, TOCU=Total Business Computer Utilization, INTU=Internet Utilization for Daily Business Operational Tasks, TECO=Total E-commerce, TTA=Total Technology Attitude.

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<th>BINT</th>
<th>TCOA</th>
<th>TELU</th>
<th>TCOU</th>
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<td>.291*</td>
<td>.349**</td>
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<td>.170</td>
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<td>.519**</td>
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<td>.571**</td>
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<td>1</td>
<td>.211</td>
<td>.511**</td>
<td>.610**</td>
<td>.260</td>
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</table>

**Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).
APPENDIX C.2

SHAPIRO-WILK NORMALITY TEST RACE
<table>
<thead>
<tr>
<th>Variable</th>
<th>Race</th>
<th>Shapiro-Wilk Statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELEUDBO</td>
<td>European American</td>
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<td>.754</td>
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<tr>
<td></td>
<td>African American</td>
<td>.871</td>
<td>.044</td>
</tr>
<tr>
<td>TCOMPU</td>
<td>European American</td>
<td>.907</td>
<td>.004</td>
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<td></td>
<td>African American</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.3

SHAPIRO-WILK NORMALITY TEST AGE
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<thead>
<tr>
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<th>Age</th>
<th>Shapiro-Wilk Statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELEUDBO</td>
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<td>.035</td>
</tr>
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<td></td>
<td>55 to 64</td>
<td>.960</td>
<td>.755</td>
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<td>65 or More</td>
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<td>.410</td>
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<td>TOCMPU</td>
<td>54 or Less</td>
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<td>.006</td>
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<td></td>
<td>55 to 64</td>
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<td>65 or More</td>
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<td>.036</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.4

SHAPIRO-WILK NORMALITY TEST EDUCATION
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<td>Some College or Associate Degree</td>
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<td>.538</td>
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<td>Bachelor’s Degree</td>
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<td>Beyond Bachelor’s</td>
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<td>.686</td>
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<td>High School</td>
<td>.892</td>
<td>.211</td>
</tr>
<tr>
<td></td>
<td>Some College or Associate Degree</td>
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<td>.124</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
<td>.914</td>
<td>.208</td>
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<tr>
<td></td>
<td>Beyond Bachelor’s</td>
<td>.912</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.5

SHAPIRO-WILK NORMALITY TEST GROSS INCOME
<table>
<thead>
<tr>
<th>Variable</th>
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<th>Shapiro-Wilk Statistic</th>
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<td>Less Than $50,00</td>
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<td>.069</td>
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<tr>
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<td>$50,00 or Over</td>
<td>.928</td>
<td>.013</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.6

SHAPIRO-WILK NORMALITY TEST E-COMMERCE STRATEGY
<table>
<thead>
<tr>
<th>Variable</th>
<th>E-commerce Strategy</th>
<th>Shapiro-Wilk Statistic</th>
<th>Sig. Shapiro-Wilk Statistic</th>
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</thead>
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<td>.044</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.7

SHAPIRO-WILK NORMALITY TEST TECHNOLOGY PLAN
<table>
<thead>
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<th>Variable</th>
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<th>Shapiro-Wilk Statistic</th>
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</tr>
</thead>
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<td>TELEUDBO</td>
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</tr>
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<td>Some Form of Business Technology Plan</td>
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<td>.537</td>
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<tr>
<td>TCOMPU</td>
<td>No Business Technology Plan</td>
<td>.928</td>
<td>.028</td>
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*None shaded portions indicate that the normality assumption was violated, p<.01.*
APPENDIX C.8

SHAPIRO-WILK NORMALITY TEST RACE (TRANSFORMED TCOMPU)
<table>
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<td>European American</td>
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<td>African American</td>
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*Indicates that the normality assumption has not been violated, $p > .01$. 
APPENDIX C.9

SHAPIRO-WILK NORMALITY TEST AGE (TRANSFORMED TCOMPU)
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<td>.939</td>
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<tr>
<td></td>
<td>55 to 64</td>
<td>.908</td>
<td>.174*</td>
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<td>65 or More</td>
<td>.849</td>
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*Indicates that the normality assumption has not been violated, p>.01.
APPENDIX C.10

SHAPIRO-WILK NORMALITY TEST EDUCATION (TRANSFORMED TCOMPU)
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</tr>
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<td>Bachelor’s Degree</td>
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*Indicates that the normality assumption has not been violated, p>.01.
APPENDIX C.11

SHAPIRO-WILK NORMALITY TEST GROSS INCOME

(TRANSFORMED TCOMPU)
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<th>Variable</th>
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<th>Shapiro-Wilk Statistic</th>
<th>Sig.</th>
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*Indicates that the normality assumption has not been violated, $p>.01$. 
APPENDIX C.12

SHAPIRO-WILK NORMALITY TEST E-COMMERCE STRATEGY

(TRANSFORMED TCOMPU)
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<th>Shapiro-Wilk Statistic</th>
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<tbody>
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*Indicates that the normality assumption has not been violated, p>.01.
APPENDIX C.13

SHAPIRO-WILK NORMALITY TEST TECHNOLOGY PLAN

(TRANSFORMED TCOMPU)
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<thead>
<tr>
<th>Variable</th>
<th>Technology Plan</th>
<th>Shapiro-Wilk Statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCOMPU</td>
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<td>.202*</td>
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<tr>
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<td>Some Form of Business Technology Plan</td>
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*Indicates that the normality assumption has not been violated, p>.01.
APPENDIX C.14
MULTIVARIATE TESTS
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Computed using an Alpha level of .001. The asterisk Sig. values indicated statistically insignificant differences.
APPENDIX D.1

WRITING A BUSINESS PLAN
TABLE OF CONTENTS
INTRODUCTION 1
COVER SHEET 1
STATEMENT OF PURPOSE (MISSION STATEMENT) 2
THE BUSINESS
Legal Structure 2
Description of the Business 2
Products or Services 3
Location 3
Management 3
Personnel 3
Methods of Record Keeping 3
Insurance 4
Security 4
Summary 5
MARKETING
Target Market 5
Competition 5
Methods of Distribution 5
Advertising 7
Pricing 7
Product Design 7
Timing of Market Entry 7
Location 8
Industry Trends 8
FINANCIAL DOCUMENTS
Summary of Financial Needs 8
Sources and Uses of Funds Statement 9
Cash Flow Statement (Budget) 9
INTRODUCTION
There are two main purposes for writing a business plan. The first, and most important, is to serve as a guide during the life of your business. It is the blueprint of your business and will serve to keep you on the right track. To be of value, your plan must be kept current. If you spend the time to plan ahead, many pitfalls will be avoided and needless frustrations will be eliminated. Second, the business plan is a requirement if you are planning to seek loan funds. It will provide potential lenders with detailed information on all aspects of the company's past and current operations and provide future projections. The text of a business plan must be concise and yet must contain as much information as possible. This sounds like a contradiction, but you can solve this dilemma by using the Key Word approach. Write the following key words on a card and keep it in front of you while writing:

**Who What Where  When Why  How  How Much**

Answer all of the questions asked by the key words in one paragraph at the beginning of each section of the business plan. Then expand on that statement by telling more about each item in the text that follows. There is no set length to a business plan. The average length seems to be 30 to 40 pages, including the supporting documents section. Break the plan down into sections. Set up blocks of time for work with target dates for completion. You may find it effective to spend two evenings per week at the library where the reference materials needed will be close at hand. It takes discipline, time and privacy to write an effective business plan. You will save time by compiling your list of supporting
documents while writing the text. For example, while writing about the legal structure of your business, you will realize the need to include a copy of your partnership agreement. Write partnership agreement on your list of supporting documents. When compiling that section of your plan, you will already have a list of necessary documents. As you go along, request any information that you do not have, such as credit reports. With the previous considerations in mind, you are ready to begin formulating your plan. Read through this entire publication to get an overall view of the business planning process.

**COVER SHEET**
The first page of your business plan will be the cover sheet. It serves as the title page of your plan. It should contain the following information:

- Name of the company
- Company address
- Company phone number (include area code)
- Logo (if you have one)
- Names, titles, addresses, phone numbers (include area code) of owners
- Month and year in which the plan is issued
- Name of preparer

The following example will serve as a guide.

**ABC CORPORATION**
372 East Main Street
Burke, BY 10071
(207) 526-4319
John Smith, President (207) 814-0221
724 South Street
Jamestown, NY 10081
Mary Blake, Vice President (207) 764-1213
86 West Avenue
Burke, NY 10071
James Lysander, Secretary (207)842-1648
423 Potrero Avenue
Jessup, NY 10602
Tandi Higgins, Treasurer (207) 816-0201
321 Nason Street
Adams, NY 10604
Plan prepared September 1992
by Corporate Officers

**STATEMENT OF PURPOSE (MISSION STATEMENT)**
The statement of purpose is also called the mission statement or executive summary. If your lender were to read only this information, he or she would know the name and nature of your business, its legal structure, the amount and purpose of your loan request
and your plan for repayment. Use the key word approach mentioned earlier. Be concise and clear. The statement of purpose is contained on one page. Although it is positioned after the cover sheet, it is most effectively written after the plan has been completed. At that time, all the information and financial data needed are available. If you are writing your plan for a lender, be specific about the use of funds. Support the amount requested with information such as purchase orders, estimates from suppliers, rate sheets and marketing results. Include this information in the supporting documents section. Address the question of loan repayment. You want to show the lender your company's ability to meet payments of interest as well as principal. Some investors like to see two ways out, i.e., two different sources of repayment. When you have answered the key word questions, you are ready to present that information in one or two concise paragraphs. A sample statement of purpose follows.

STATEMENT OF PURPOSE

ABC CORPORATION, an S-Corporation established in 1985, is a tool and die company that manufactures specialized parts for the aerospace industry and is located at 372 East Main Street, Burke, N.Y. The company is seeking growth capital in the amount of $50,000 for the purpose of purchasing new and more modern equipment and for training existing personnel in the use of that new equipment. Funding is needed in time for the equipment to be delivered and in place by 11 January 1993. There is a two-month period between order placement and delivery date. The modernized equipment will result in a 35 percent increase in production and a 25 percent decrease in the unit cost. Repayment of the loan and interest can begin promptly within 30 days of receipt and can be further secured by real estate, which is owned by the company and which has a 1990 assessed valuation of $185,000.

THE BUSINESS

The first major section of your plan covers the details of your business. Begin this section with a one-page summary addressing the key elements of your business. The following text will expand on each area presented in the summary. Use the key word system to help you write concisely. Address all of the topics as they relate to your business in an order that seems logical to you. Include information about your industry in general, and your business in particular. Be prepared to back up statements and justify projections with data in the supporting documents section.

Legal Structure

State the reasons for your choice of legal structure. If you are a sole proprietor, you may include a copy of your business license. If you have formed a partnership, include a copy of your partnership agreement in the supporting documents section. Your agreement should include provisions for partners to exit and for the dissolution of the company. It must spell out the distribution of the profits and the financial responsibility for any losses. Explain the reasoning behind the terms of the agreement. If you have formed a corporation, explain why this legal form was chosen and how the company will operate within the corporate structure, and include a copy of the charter and articles in the supporting document section. If you plan to change your legal structure in the future,
make projections regarding why you would change, when the change would take place, who would be involved and how the change would benefit the company.

**Description of the Business**
This is the section of the plan in which you go into greater detail about your business. Answer the key word questions regarding the business's history and present status, and your future projections for research and development. Outline your current business assets and report your inventory in terms of size, value, rate of turnover and marketability. Include industry trends. Stress the uniqueness of your product or service and state how you can benefit the customer. Project a sense of what you expect to accomplish three to five years into the future.

**Products or Services**
Give a detailed description of your product from raw materials to finished item. What raw materials are used, how much do they cost, who are your suppliers, where are they located and why did you choose them? Include cost breakdowns and rate sheets to back up your statements. Although you may order from one main supplier, include information on alternate suppliers. Address how you could handle a sudden increase of orders or a loss of a major supplier. You may hear a lender refer to the worst case scenario. This means that the lender wants you to be able to anticipate and solve potential problems. It is also to your advantage to think in terms of alternatives and to prepare for the unexpected so that your business can continue to run smoothly. Some businesses fail because they become too successful too soon. Therefore, it is also good to plan for the best case scenario. If you are inundated with orders, your business plan should contain information needed to hire staff and contact additional suppliers. If you are providing a service, tell what your service is, why you are able to provide it, how it is provided, who will be doing the work and where the service will be performed. Tell why your business is unique and what you have that is special to offer to your customers. If you have both a product and a service that work together to benefit your customer (such as warranty service for the products you sell) be sure to mention this in your plan. Again the key words come into use.
List future services you plan to add to your business. Also, anticipate any potential problem areas and work out a plan for action. You should state any proprietary rights, such as copyrights, patents or trademarks, in this section.

**Location**
If location is important to your marketing plan, you may focus on it in the marketing section. For example, if you are opening a retail shop, your choice of location will be determined by your target market. If you are a manufacturer and ship by common carrier, your location is not directly tied to your target market so you can discuss location in the business section. You may begin this topic with a sentence such as "ABC Corporation is housed in 25,000 square feet of warehouse space located at 372 East Main Street, Burke, NY. This site was chosen because of accessibility to shipping facilities, good security provisions, low square footage costs and proximity to sources of supplies." Now expand on each reason for choosing that location and back up your statements with a physical
description of the site and a copy of the lease agreement. Give background information on your site choice and list other possible locations. You may want to include copies of pictures, layouts or drawings of the location in the supporting document section. Use the worksheet on page 4 as a guideline for writing a location (site) analysis. Cover only those topics that are relevant to your business. If you need assistance, contact the SBA resource center nearest you (see Information Resources).

LOCATION ANALYSIS WORKSHEET
1. Address:
2. Name of realtor/contact person:
3. Square footage/cost:
4. History of location:
5. Location in relation to target market:
6. Traffic patterns for customers:
7. Traffic patterns for suppliers:
8. Availability of parking: (include diagram)
9. Crime rate for area:
10. Quality of public services (e.g. police, fire protection)
11. Notes on walking tour of area:
12. Neighboring shops and local business climate:
13. Zoning regulations:
14. Adequacy of utilities (get information from utility company representatives):
15. Availability of raw materials/supplies:
16. Availability of labor force;
17. Labor rate of pay for the area:
18. Housing availability for employees:
19. Tax rates (state, county, income, payroll, special assessments):
20. Evaluation of site in relation to competition:

Management
This section describes who is behind the business. If you are a sole proprietor, tell about your abilities and include your resume. Be honest about areas in which you will need help and state how you will get that help. Will you take a marketing seminar, work with an accountant or seek the advice of someone in advertising? If you have formed a partnership, explain why the partners were chosen, what they bring to the company and how their abilities complement each others. Experience, background and qualifications will be covered in their resumes in the supporting documents section. If your business is incorporated, give detailed information on the corporate structure and officers. Include a resume for each officer and describe each one by answering the following questions: Who are they? What are their skills? Why were they chosen? What will they bring to the organization?

Personnel
Who will be doing the work? Why are they qualified? How will they be hired? What is their wage? What will they be doing? Outline the duties and job descriptions for all personnel. Explain any employee benefits. If you are inundated with orders for your product or items to be serviced, do you have a plan for increasing personnel?

**Methods of Record Keeping**
Tell what accounting system will be used and why the system was chosen. What portion of your record keeping will be done internally? Who will be responsible for keeping those records? Will you be using an outside accountant to maximize your profits? If so, who within your company will be skilled at reading and analyzing financial statements provided by the accountant? It is important not only to show that your accounting will be taken care of, but that you will have some means of using your financial statements to implement changes to make your company more profitable. After reading this section, the lender should have confidence in your company's ability to keep and interpret a complete set of financial records.

**Insurance**
Insurance is an important consideration for every business. Product liability is a major consideration, especially in certain industries. Service businesses are concerned with personal liability, insuring customers' goods while on the premises or during the transporting of those goods. If a vehicle is used for business purposes, your insurance must reflect that use. If you own your business location, you will need property insurance. Some types of businesses require bonding. Partners may want life insurance naming each other as the beneficiary. Consider the types of coverage appropriate to your business. Tell what coverage you have, why you chose it, what time period it covers and who the carrier is. Keep your insurance information current.

**Security**
According to the U.S. Chamber of Commerce, more than 30 percent of business failures result from employee dishonesty. This concerns not only theft of merchandise, but also theft of information. Address the issue of security as it relates to your business. For example, if you are disposing of computer printout data, a small paper shredder may be cost-effective. Anticipate problem areas in your business, identify security measures you will put into practice, tell why you chose them and what you project they will accomplish. Discuss this area with your insurance agent. By installing security devices you may be able to lower certain insurance costs along with protecting your business.

**Summary**
You have now covered all the areas which should be addressed in the business section. Use the key words, be thorough, anticipate any problem areas and be prepared with solutions, and analyze industry trends and be ready to project your business into the future. When you have completed the business section, you are ready to begin developing the marketing section.
MARKETING
The second major section of your business plan covers the details of your marketing plan. A good marketing plan is essential to your business development and success. Include information about the total market with emphasis on your target market. You must take the time to identify your customers and find the means to make your product or service available to them. The key here is time. It takes time to research and develop a marketing plan, but it is time well spent. Most of the information you need will be found in your public library and in the publications of the U.S. Department of Commerce, the U.S. Small Business Administration (SBA) and the U.S. Census Bureau. Remember that you need a clear understanding of who will purchase your product, who will make use of your service, why they will choose your company and how they will find out about it.

Begin this section with a one-page summary covering the key elements of your marketing plan. The following text will expand on each area presented in the summary. Back up statements and justify projections with data in the supporting documents section. Again, the key word approach will help you to thoroughly cover each area. The topics may be covered in any order that seems logical to you.

Target Market
The target market has been defined as that group of customers with a set of common characteristics that distinguish them from other customers. You want to identify that set of common characteristics that will make those customers yours. Tell how you did your market research. What were your resources and your results? What are the demographics of your target market? Where do your customers live, work and shop? Do they shop where they live or where they work? If you are in the business of video cassette recorder (VCR) repair, how many VCRs are owned within a certain radius of your shop? Would in-home service be cost-effective and a benefit to your customers? Back up your findings with U.S. Census Bureau reports, questionnaires and test marketing results. State how you feel you can serve this market in terms of your resources, strengths and weaknesses. Focus on reasonable, believable and obtainable projections regarding the size of your potential market. (See Information Resources.)

Competition
Direct competition is a business offering the same product or service to the same market. Indirect competition is a company with the same product or service but with a different target market. Evaluate both types of competitors. You want to determine the competitors' images. To what part of the market are they trying to appeal? Can you appeal to the same market in a better way? Or can you find an untapped market? Use the worksheet to compile, organize and evaluate information on your competition. Your analysis of this information will help you plan your market entry. What is the competition's current market share (what percent of the total customer base is theirs)? Can you tap into this share or will you need to carve out your own market niche?

COMPETITOR PROFILE WORKSHEET
Competitors
Item 1 2 3
After completing this section you or your lender will know who your competitors are, where they are located, what products or services they offer, how you plan to compete, how your customers can access your business and why you can provide a unique and beneficial service or product.

**Methods of Distribution**

Distribution is the manner in which products are physically transported to the consumer or the way services are made available to the customer. Distribution is closely related to your target market. Establish the purchasing patterns of your customers. If you are selling a product, do your customers purchase by direct mail, buy through catalogues or make in-store purchases? Will you sell directly or through a manufacturer's representative? If you are shipping the product, who will absorb the shipping costs and what carrier will be used? Use the key words to answer questions regarding your distribution plan. Back up your decisions with statistical reports, rate sheets from shippers, contracts with manufacturer's representatives or any other supporting documents. If you are involved in a service business, will you provide in-shop service? Will you make service calls, and, if so, how will mileage costs be handled? What is your planned response time to fill your customers' needs? List the pros and cons of the various methods of distribution and give reasons for your choices. Keep in mind the worst case scenarios mentioned above. Present alternatives. For example, if United Parcel Service, your major shipper, were to go on strike, how would you distribute your products? If your mobile service van were to...
break down, do you have a vehicle which could be used as backup? Provide for a smooth business flow.

**Advertising**
Advertising presents the message to your customer that your product or service is good and desirable. Tailor your advertising to your target market. Your marketing research will have spelled out which television and radio stations and which publications are of interest to your target market. Those are the ones you will use. Analyze your competitors' advertising in these publications. Be ready to back up your decisions. Include copies of your promotional materials, such as brochures, direct mail advertisements and flyers. Tell the lender where you will put your advertising dollars, why you chose those methods, how your message will reach your target market, when your advertising campaign will begin, how much your plan will cost and what format your advertising will take.

**Pricing**
Your pricing structure is critical to the success of your business and is determined through market research and analysis of financial considerations. Basic marketing strategy is to price within the range between the price ceiling and the price floor. The price ceiling is determined by the market; it is the highest cost a consumer will pay for a product or service and is based on perceived value. What is the competition charging? What is the quality of the product or service you are offering? What is the nature of the demand and what is the image you are projecting? The price floor is the lowest amount at which you can offer a product or service, meet all your costs and still make your desired profit. Consider all costs -- raw materials, office overhead, shipping, vehicle expense, taxes, loan and interest payments and owner draws are a few. The profitable business operates between the price ceiling and the price floor. The difference allows for discounts, bad debt and returns. Be specific about how you arrived at your pricing structure and leave room for some flexibility. Positioning -- predetermining the perceived value in the eyes of the consumer -- can be accomplished through promotional activities. To be successful, you must decide what your product or service offers that your competitor's does not and promote it as the unique benefit. Very few items on the market have universal appeal your product or service cannot be all things to all people. However, if you position your product or service properly, prospective purchasers or users will immediately recognize its benefits to them.

**Product Design**
Packaging and product design can play a major role in the success of your business. It's what first catches the customer's eye. Consider the tastes of your target market in the ultimate design of your product and your package design. Decide what will be most appealing in terms of size, shape, color, material and wording. Packaging attracts a great deal of public attention. Be advised of the Fair Packaging and Labeling Act, which established mandatory labeling requirements. The U.S. Food and Drug Administration (FDA) has strict procedures for the labeling of items falling within its jurisdiction. The packaging guidelines can be obtained from the FDA or found in the library.
Use key words to answer questions regarding your product design and packaging. Include sketches or photographs. Also include information on any proprietary rights, such as copyrights, trademarks or patents.

**Timing of Market Entry**
The timing of your entry into the marketplace is critical and takes careful planning and research. Having your products and services available at the right time and the right place depends more on understanding consumer readiness than on your organizational schedule. The manner in which a new product is received by the consumer can be affected by the season, the weather and holidays. Early January and September are the best times to mail flyers and catalogs, as consumers seem to be more receptive to mail order purchasing in those months. The major gift shows are held in the summer months (June, July, August) and again in January and February. Most wholesale buying takes place at these shows. November and December are not good months for introducing new service businesses unless they relate in some way to the holiday season. Spring is a better time to introduce a service. Trade journals and trade associations in your field can provide the information you need on the timing patterns of your industry. Tell the lender when you plan to enter the market and how you arrived at your decision.

**Location**
If your choice of location is related to your target market, cover it in this section of your business plan. List the reasons for your choice. What is the character of the neighborhood? Does the site project your business image? Where is the competition in the area? What is the traffic pattern? What are the terms of the lease? What services, if any, does the landlord provide? What is the occupancy history of your location? Did any companies in the area go out of business within the past few months? If so, try to find out if it was related to location. Is the area in which you plan to locate supported by a strong economic base? What alternate sites were considered? These are some of the questions to be considered. Refer to Location in the business section for additional information.

**Industry Trends**
Be alert for changes in your industry. New technology may bring new products into the marketplace that will generate new service businesses. Read trade journals and industry reports in your field. Project how your market may change and what you plan to do to keep up.

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**FINANCIAL DOCUMENTS**
You are now ready to develop the third area of your plan. Financial records are used to show past, current and projected finances. In this section we will cover the major documents you will want to include in your business plan. They will consist of both pro forma (projected) and actual financial statements. Your work will be easier if these are done in the order presented.

Summary of Financial Needs
Application of Loan Funds
If you are applying for a loan, your lenders and investors will analyze the needs of your business. They will distinguish among the three types of capital to be used as follows:

- **Working capital** -- Used to meet fluctuating needs that are to be repaid through cash during the business's next full operating cycle, generally one year.

- **Growth capital** -- Used to meet needs that are to be repaid with profits over a period of a few years. If you seek growth capital, you will be expected to show how the capital will be used to increase your profits enough to be able to repay the loan within several years (usually not more than seven).

- **Equity capital** -- Used to meet permanent needs. If you seek equity capital, it must be raised from investors who will take the risk in return for some combination of dividend returns, capital gains or a specific share of the business.

Keeping the above in mind, you must now prepare a summary of financial needs. This document is an outline telling why you are applying for a loan and how much you need.

**SUMMARY OF FINANCIAL NEEDS**

I. ABC Corporation is seeking a loan to increase its growth capital in the following areas of production:
   - A. Equipment (new and more modern)
   - B. Training of personnel in operation of above.

II. Funds needed to accomplish above goal will be $50,000.
   - A. See "Use of Funds" for distribution of funds and backup statement.

**Uses of Funds Statement**

The potential lender will require a statement of how the money you intend to borrow will be used. It will be necessary for you to tell how you intend to disperse the loan funds. Back up your statement with supporting data. You must be sure that your supporting data can be easily found by the loan officer who is examining your application. If you do not have your information well organized and retrievable, your application may be refused for the simple reason that the material cannot be found. It will be necessary to have a well written table of contents.
USES OF FUNDS
1. DISPERSAL OF LOAN FUNDS
ABC Corporation will use anticipated loan funds in the amount of $50,000 to modernize its production equipment. This will necessitate the purchase of two new pieces of equipment and the training of present personnel in the operation of this equipment.

2. BACKUP STATEMENT
   a. The equipment needed is as follows:
      (1) High-speed F-34 Atlas Press (purchase price -- $32,900)
      (2) S71 Jaworski Ebber (purchase price -- $2,800)
   b. The training is available from the manufacturer as a three-week intensive program (cost: 10 employees $1,200 = $12,000).
   c. The remaining $2,300 will be used for the first monthly installment on loan repayment – a period of low production due to employee training.
   d. The equipment will result in a 35 percent increase in production, a 25 percent decrease in unit cost, and a net profit increase sufficient to repay the loan and interest within three years with a profit margin of 15 percent.

   Note: Refer to page 17* of the production plan of ABC Corporation. See pages 27 and 28* of the marketing section for market research and projected trends in the industry.

   When writing your business plan be sure that your production plan includes a description of the equipment, how the work will be done, by whom and at what cost. The market research will show projected needs for your product, and thus show how increased production will result in increased sales and ultimately in the capability to enable you to repay the loan.
   (*The page numbers are hypothetical and do not refer to page numbers in this book.)

Cash Flow Statement (Budget)

Cash flow statements are the documents that project what your business plan means in terms of dollars. They show cash inflow and outflow over a period of time and are used for internal planning. If you have been in business for some time, worksheets can be put together from the actual figures of income and expenses of previous years combined with projected changes for the next period. If you are starting a new business, you will have to project your financial needs and disbursements. Your profit at the end of the year will depend on the proper balance between cash inflow and outflow. The cash flow statement identifies
   ! When cash is expected to be received.
   ! How much cash will be received.
   ! When cash must be spent to pay bills and debts.
   ! How much cash will be needed to pay expenses.
It also allows the manager to identify the source of necessary cash, i.e., will it come from sales and services rendered or must it be borrowed? Be sure that your projections take into account receivables and how long it will take your customer to pay. The cash flow statement deals only with actual cash transactions and not with depreciation and amortization of goodwill or other non-cash expense items.

A cash flow statement can be prepared for any period of time. It is recommended that you match the fiscal year of your business. It should be prepared on a monthly basis for the next year and revised not less than quarterly to reflect actual performance in the preceding three months of operations.

In preparing your cash flow statement, it might be useful to compile several individual budgets. They could be as follows:
1. Cost of sales budget.
2. Fixed expenses budget.
3. Variable expenses budget.

Two worksheets can be used in developing a cash flow statement:

- Sources of cash worksheet -- Contains all the financing sources for the business.
- Cash to be paid out worksheet -- Identifies how much cash is expected to be spent to pay expenses and obligations.

Note: Projections in the two worksheets must be made for the same time period (monthly, quarterly or annually).

Once you have completed the two worksheets, you are ready to transfer the information into your cash flow statement. You will need to think your way through each month, projecting what amount from each category of the worksheets will be appropriate to what month. For example, if your total sales amount to $100,000, you will have to project the individual amounts that will probably occur in each month.

**SOURCES OF CASH WORKSHEET**

(Cash Flowing Into Your Business)
Cash on Hand $ __________
Sales-Revenues
Sales __________
Service Income __________
Deposits on sales or services __________
Collections on accounts receivable __________
Miscellaneous income
Interest income __________
Sale of long-term assets __________
Liabilities
Loans (banks, finance companies, SBA, etc) __________
Equity
Owner investments (sole proprietor or partnership) __________
Contributed capital (corporation) ___________
Venture capital ___________
Total Cash Available ___________

---

**CASH TO BE PAID OUT WORKSHEET**  
(Cash Flowing Out of Your Business)

Start-up costs
Business license (annual expense) ___________
DBA filing fee (one time cost) ___________
Other start-up costs
___________________ ___________
___________________ ___________
___________________ ___________

Inventory purchases
Cash out for items for resale or services ___________

Variable expenses (controllable)
Advertising ___________
Freight ___________
Packaging costs ___________
Parts and supplies ___________
Sales salaries ___________
Misc. direct expenses ___________
Total direct expenses ___________

Fixed expenses (overhead)
Insurance ___________
Licenses & permits ___________
Office salaries ___________
Rent expense ___________
Utilities ___________
Misc. indirect expenses ___________
Total indirect expenses ___________

Assets (long-term purchases)
Cash to be paid in current period ___________
Owner equity
Cash to be withdrawn by owner ___________
Total cash to be paid out $___________

---

**Completing Your Cash Flow Statement**

The vertical columns of a cash flow statement represent the twelve months, preceded by a total column. Horizontal rows on the statement contain figures for the sources of cash and cash to be paid out copied from the two previous worksheets and from individual budgets. The figures are projected for each month, reflecting the flow of cash in and out
of your business for a one-year period. Begin with the first month of the business cycle and proceed as follows:
1. Project the beginning cash balance. Enter under the first month of the business cycle.
2. Project the cash receipts for the first month.
3. Add beginning cash balance and cash receipts to determine total cash available.
4. Project the direct, indirect and interest expenses for the first month.
5. Project monies due on taxes, long-term assets and loan repayments. Also project any amounts to be drawn by owners.
6. Total all expenses and draws. This is total cash paid out.
7. Subtract total cash paid out from total cash available. Enter the result under cash balance/deficiency. If the result is negative, be sure to bracket this figure.
8. Project loans to be received and equity deposits to be made. Add to cash balance/ deficiency to get ending cash balance.
9. Carry forward the ending cash balance for January as February's beginning cash balance.
10. Repeat the process through the last month of the business cycle.

To complete the total column, proceed as follows:
1. Enter the beginning cash balance for the first month in the first space of the total column.
2. Add the monthly figures for each category horizontally and enter the result in the corresponding total category.
3. Compute the total column in the same manner as each of the individual months. If you have been accurate in your computations, the December ending cash balance will be exactly the same as the total ending cash balance.

Note: If your business is new, you will have to base your projections solely on market research and industry trends. If you have an established business, you will also use your financial statements from the previous tax years.

A quarterly budget analysis should be used as a record to compare your cash flow statement (or budget) with your business's actual performance. Its purpose is to let you know whether or not you are operating within your projections and to help you maintain control of all phases of your business operations. If your analysis shows that you have gone over budget in some areas you will have to compensate by adjusting your cash flow statement with future cuts in those or other areas. If properly used, a cash flow statement can prove to be an invaluable tool to help you reach your financial goals. Your cash flow statement can be compiled on a month-by-month basis and then compared with actual monthly performance. The SBA's Form 1100 (4-82) is very useful in this regard; for a free copy, contact your local SBA office. Prepared in this manner, your statement can provide an annual projection for your next fiscal year.

Three-year Income Projection
The three-year income projection is a pro forma income statement (profit and loss statement for more information, see Income Statement, page 18). The difference is that the three-year projection only includes income and deductible expenses while the cash flow statement includes all sources of cash and cash to be paid out. There are various opinions as to what period of time should be covered in estimating income and expenses, i.e., whether it should be on an annual or monthly basis. If this income projection is for the purpose of obtaining a loan, talk to the lender about his or her specific requirements. If the projections are for your own use, a three-year projection is suggested with annual rather than monthly projections.

Sources of Information

Information for a three-year income projection can be found in your cash flow statement, sales forecast and individual budgets, and your business and marketing analyses if you are new in business. Again, if you are an established business, you will also be able to use past financial statements to help determine future projections for your business. Be sure to take into account fluctuations anticipated in costs, efficiency of operation, changes in the market and any other factors. Increases and decreases in income and expenses are only realistic. These changes should be reflected in any projections. Remember, too, that industry trends can cause decreases in both income and expenses. An example of this might be the computer industry, where competition has increased greatly and standardization of components has caused a decrease in both the cost and the sales price of certain items.

Break-even Analysis

The break-even point is the point at which a company’s expenses exactly match its sales or service volume. It is the point at which the business will neither make a profit nor incur a loss. The break-even point can be calculated in either mathematical or graph form. It can be expressed in total dollars or revenue exactly offset by total expenses or in total units of production (cost of which equals exactly the income derived by sales).

To apply a break-even analysis to a business operation, two types of expenses must first be projected: fixed costs and variable costs. Fixed costs do not vary with sales or output. Variable costs vary in direct proportion to the output. The greater the volume of sales, the higher the cost. For purposes of the break-even analysis, make sure to include cost of sales in your variable costs figure.

Sources of Information for a Break-even Analysis

All of your figures can be derived from your three-year projection. In fact, by now you should be able to see that each financial document in your business plan builds on the ones done previously. It should be a simple matter to retrieve the figures to plug into the following formula.

Mathematically
An example of calculating the break-even point using a mathematical formula is shown below.

Formula:
B-E point sales (at break-even point) = fixed costs + \(1 - \text{variable costs expressed as } \% \text{ of total sales}\)

Terms used:
B-E point sales = volume of sales at break-even point
Fixed costs = fixed expenses, depreciation, interest
Variable costs = cost of sales and variable expenses
Sales revenues = income from sales of goods/services over a specified period

Values used:
B-E point sales (S) = ?
Fixed costs = $25,000
Variable costs = $45,000
Sales revenues = $90,000

Computation:

\[
\text{S (at break-even point)} = 1 - \left(\frac{\text{Variable costs}}{\text{Sales revenues}}\right) \times \text{Fixed costs}
\]

\[
S = 25,000 \times (1 - 0.50)
\]

\[
S = 25,000 \times 0.50
\]

\[
.50S = 25,000
\]

\[
S = 50,000 \quad \text{ (break-even point in terms of revenue exactly offset by total expenses)}
\]

Graphically

A firm's sales at break-even point can be plotted as in the following break-even analysis graph. Using the same figures as in the above formula, draw three lines in the graph: horizontal line at point representing fixed costs (25); total expenses (\(TC = FC + VC\)) line from left end of fixed cost line sloping upward to point where total (fixed plus variable) costs on vertical scale (7) meet total sales revenues on the horizontal scale (9); total revenues (sales) line from zero through a point describing total revenues (sales) on both scales (9). The point on the graph where the total expenses line intersects the total sales revenues line is the break-even point. This business estimates that it will break even when sales volume reaches $50,000. The triangular area below that point represents company losses. The triangular area above and to the right of the point represents potential profit.

**Actual Performance Statements**

Actual performance statements are those financial statements reflecting the activity of your business in the past. If you are a new business owner, you have no business history. Your financial section will end with the projected statements and a personal financial
history. If you are an established business, you will include the following actual performance statements:
Balance sheet
Profit and loss (income) statement
Business financial history or loan application
Balance Sheet

The balance sheet is a financial statement, usually prepared at the close of an accounting period, that shows the financial position of the business as of a fixed date. It is a picture of your firm's financial condition at a particular moment. By regularly preparing this statement, you will be able to identify and analyze trends in the financial strength of your business and thus implement timely modifications.

Categories

All balance sheets must contain three categories -- assets, liabilities and net worth -- that have been established by a system known as generally accepted accounting principles. The three are related in that at any given time a business's assets equal the total contributions by its creditors and owners.

\[ \text{Assets} = \text{Liabilities} + \text{Net Worth} \]

Examined as such, it becomes apparent that if a business possesses more assets than it owes to creditors, its net worth will be a positive value. Conversely, if a business owes more money to creditors than it possesses in assets, the net worth will be a negative value.

Format

The balance sheet also must follow an accepted format. By so doing, anyone reading the balance sheet can readily interpret it.

All assets are divided under three headings:

Current assets -- Assets that can be converted into cash within one year of the date on the balance sheet.
Long-term investments -- Stocks, bonds and special savings accounts to be kept for at least one year.
Fixed assets -- The resources a business owns and does not intend for resale (land, buildings, equipment, automobiles, etc.).
Liabilities are divided into current and long-term liabilities:

*Current liabilities* -- Those obligations payable within one operating cycle.
*Long-term liabilities* -- Outstanding balance less current portion due (e.g., mortgage, vehicle).

Net worth is documented according to the legal structure of the business:

*Proprietorship or partnership* -- Each owner's original investment plus earnings after withdrawals.

*Corporation* -- The sum of contributions by owners or stockholders plus earnings retained after paying dividends.

**BALANCE SHEET**

<table>
<thead>
<tr>
<th>COMPANY NAME</th>
<th>19_____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>Liabilities</td>
</tr>
<tr>
<td>Current assets</td>
<td>Current Liabilities</td>
</tr>
<tr>
<td>Cash</td>
<td>Accounts Payable</td>
</tr>
<tr>
<td>Petty Cash</td>
<td>Notes Payable</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>Interest Payable</td>
</tr>
<tr>
<td>Inventory</td>
<td>Taxes Payable</td>
</tr>
<tr>
<td>Fed. income tax</td>
<td></td>
</tr>
<tr>
<td>Short-term Investments</td>
<td>State income tax</td>
</tr>
<tr>
<td>Sales tax (SBE)</td>
<td>Self-employment</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>Property tax</td>
</tr>
<tr>
<td>Long-term Investments</td>
<td>Payroll accrual</td>
</tr>
<tr>
<td>Long-term liabilities</td>
<td>Property tax</td>
</tr>
<tr>
<td>Fixed assets</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>Notes payable</td>
</tr>
<tr>
<td>Furniture</td>
<td>Total liabilities</td>
</tr>
<tr>
<td>Improvements</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>Net worth (owner equity)</td>
</tr>
<tr>
<td>Furniture</td>
<td>Proprietorship</td>
</tr>
<tr>
<td>or Partnership</td>
<td></td>
</tr>
<tr>
<td>Automobiles/ (name's) equity</td>
<td></td>
</tr>
<tr>
<td>vehicles</td>
<td>(name's) equity</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>Other assets</td>
<td>Corporation</td>
</tr>
<tr>
<td>Capital stock</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Surplus paid in</td>
</tr>
<tr>
<td>Retained earnings</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Total net worth</td>
</tr>
</tbody>
</table>
Total liabilities
Total assets ____________ and net worth ____________
(Total assets will always equal total liabilities and total net worth)

Income Statement

The income (profit and loss) statement shows your business financial activity over a period of time, usually your tax year. In contrast to the balance sheet, which shows a picture of your business at a given moment, this statement can be likened to a moving picture, which shows what has happened in your business over a period of time. The income statement is an excellent tool for assessing your business. You will be able to pick out weaknesses in your operation and plan ways to run your business more effectively and thereby increase your profits. For example, you may find that some heavy advertising you did in March did not effectively increase your sales. In following years, you may decide to use your advertising funds more effectively by using them at a time of increased customer spending. Along the same vein, you might examine your income statement to see what months have the heaviest sales volume and plan your inventory accordingly. Comparison of the income statements from several years will give you an even better picture of the trends in your business. Do not underestimate the value of this particular tool when planning your tactics.

Development

The income statement shows where your money has come from and where it was spent over a specific period of time. It should be prepared not only at the end of the fiscal year, but at the close of each business month. It is one of the two principal financial statements prepared from the ledgers and records of a business. All profit and loss statements contain income and expense account balances. The remaining asset, liability and capital information provides the figures for the balance sheet. At the end of each month, the accounts in the general ledger are balanced and closed. Balances from the revenue accounts and the expense accounts must be transferred to your profit and loss statement.

Format

A profit and loss statement must also follow an accepted format and contain the following categories:

Income
Net sales (gross sales returns and allowances).
Cost of goods sold (see IRS Form 1040, Schedule C for computation).
Gross profit (net sales cost of goods sold).

Expenses
Selling expenses (direct, controllable, variable).
Administrative expenses (indirect, fixed, office overhead).
Total expenses
Income from operations (gross profit total expenses)
Other income (interest income)
Other expenses (interest expense)
Net profit (loss) before income taxes
Income taxes (federal, state, self-employment)
Net profit (loss) after income taxes

Two sample income statements are shown for your use. The first is divided into 12 months. Fill it in monthly after balancing your ledgers. At the end of the year, this form will provide an accurate picture of your financial activity. The second form can be used for your monthly and annual profit and loss statements.

---

### INCOME STATEMENT

(Also known as Profit and Loss Statement)

For the year ___ J F M A M J J A S O N D

#### INCOME

1. Net Sales __________________
2. Cost of Sales __________________
3. Gross profit (1 minus 2) __________________

#### EXPENSES

1. Variable exp. (controllable)
   a. Advertising __________________
   b. Freight __________________
   c. Packaging costs __________________
   d. Parts & supplies __________________
   e. Sales salaries __________________
   f. Misc. direct expenses __________________
   g. Legal fees __________________
2. Fixed expenses (overhead)
   a. Insurance __________________
   b. Licenses & permits __________________
   c. Office salaries __________________
   d. Rent __________________
   e. Utilities __________________
   f. Misc. indirect expenses __________________
   g. __________________

TOTAL EXPENSES __________________

#### INCOME FROM OPERATIONS

(gross sales minus expenses) __________________

#### OTHER INCOMES (interest) __________________

#### OTHER EXPENSES (interest) __________________

#### INCOME BEFORE TAXES __________________

#### INCOME TAXES __________________

#### NET INCOME __________________
INCOME STATEMENT

For the period beginning _________ and ending _________

Income
1. Net sales (gross--returns allowance) __________
2. Cost of Sales
   a. Inventory (Jan. 1) __________
   b. Purchases __________
   c. Cost of goods available
      for sale [(a)+(b)] __________
   d. Deduct inventory (Dec.31) __________
3. Gross profit on sales __________

Expenses
1. Variable expenses (controllable)
   (selling)
   a. Advertising __________
   b. Freight __________
   c. Packaging costs __________
   d. Parts & supplies __________
   e. Sales salaries __________
   f. Misc. direct expenses __________
2. Fixed expenses (overhead)
   (administrative)
   a. Insurance __________
   b. Licenses & permits __________
   c. Office salaries __________
   d. Rent expense __________
   e. Utilities __________
   f. Misc. indirect expenses __________

Total expenses __________

Income from operations (gross profit less expenses) __________

Other income __________
1. Interest income __________

Other expenses __________
1. Interest expenses __________

Net profit (loss) before taxes __________

Income taxes __________

Net profit (loss) after income taxes __________

______________________________

Business Financial History

The financial history is the last of the financial statements required in your business plan. It is a summary of financial information about your company from its start to the present.
If you are a new business, you will have only projections for your business. If you are applying for a loan, the lender will require a personal balance sheet. This will be of benefit in that it will show the lender the manner in which you have conducted your personal business and be an indication as to the probability of succeeding in your new business. If you are using your business plan to apply for a loan, your business financial history and the loan application are the same. This document should be completed last, but placed first in the financial section of your plan. When you indicate that you are interested in obtaining a business loan, the institution considering the loan will supply you with an application. The format may vary slightly. When you receive your loan application, be sure to review it and think about how you are going to answer each item. Answer all questions and, by all means, be certain that your information is accurate and that it can be verified if the need should arise.

Information Needed and Sources

As you complete your business financial history or loan application, it should become immediately evident why this is the last financial document to be completed. All of the information needed will have been compiled in earlier parts of your plan and in the completed financials. To help you with your financial history, the following is a list of information usually included and the source you will refer to for that information:

- **Assets, liabilities and net worth** -- You should be able to recognize these three as balance sheet terms. Go back to your balance sheet and bring these figures forward.
- **Contingent liabilities** -- These are debts you may come to owe in the future (e.g., default on cosigned note or settlement of a pending lawsuit).
- **Inventory details** -- Information about inventory is derived from your inventory record.

Also, the business section should have a summary of your current policies and methods of evaluation.

- **Income statement** -- This is revenue and expense information. Depending on the period of time to be covered, you will transfer the information from your most recent annual profit and loss statement or from a compilation of several if required by the lender.

- **Real estate holdings, stocks and bonds** -- Refer back to the business portion of your plan. You may also have to go through your investment records for more comprehensive information.

- **Sole proprietorship, partnership or corporation information** -- There are generally three separate schedules on the financial history one for each form of legal structure. You will be required to fill out the one that is appropriate to yours. In the business section, you will have covered two areas that will serve as the source of this information -- legal structure and management. Your supporting documents may also contain some of the information that you will need.
Audit information -- Refer back to your business section under record keeping. You may also be asked questions about other prospective lenders, whether you are seeking credit, who audits your books and when they were last audited.

Insurance coverage -- You will be asked to provide detailed information on the amounts of different types of coverage (i.e., merchandise, equipment, public liability, earthquake, automobile, etc.). Your business section contains coverage information that can be brought forth to the financial history.

Summary

The financial documents covered in this section will probably be sufficient for both your own use and that of potential lenders. Some lenders may not require all documents and other lenders may require additional documents. The important thing to note in compiling any financial statements is that the information must be correct and that you must have records to support your figures. Remember, you can use the information in your business plan not only to aid you in dealing with a lender, but also to assist you on an on-going basis. If you have done your homework, the financial documents you have prepared will be invaluable to you in the assessment of your operation and may very well be the determining factor in whether or not you succeed in your business!

SUPPORTING DOCUMENTS

Now that you have completed the main body of your business plan, you will need to include a separate section for any additional records that should be included to support your plan. Supporting documents are the records that back up the statements and decisions made in the three main parts of your plan. As you are compiling the first three sections, it is a good idea to keep a separate list of the supporting documents that you mention or that come to mind. For instance, discussion of your business location might indicate a need for demographic studies, location maps, area studies, leases, etc. If you are considering applying for a loan to purchase equipment, your supporting documents might be existing equipment purchase agreements or lease contracts. By listing these items as you think of them, you will have a fairly complete list of all of your supporting documents by the time you reach this part of your task. You will be ready to sort them into a logical sequence and add any new ones that come to mind. The following are several documents that you will want to include.

Personal Resumes

If you are a sole proprietor, include your own resume. If your business is a partnership, there should be a resume for each partner. If you are a corporation, include resumes for all officers of the corporation. A resume need not and should not be a lengthy document. Preferably, it should be contained on one page for easy reading. Include the following categories and information:
Work history -- Name of employers or businesses with dates of employment. Begin with most recent. Include duties and responsibilities.

Educational background -- Names of schools and dates you attended them, degrees earned, fields of concentration.

Professional affiliations and honors
Special skills -- e.g., relate well to others, able to organize, willing to take risks, etc.

Personal Financial Statement

The owner(s) should include a statement of personal assets and liabilities. This information can be compiled in the same manner as a balance sheet. Use the same format and list all assets and liabilities to determine net worth. If you are a new business owner, your personal financial statement will be a part of the financial document and may be a standard form supplied by the potential lender.

Credit Reports

Credit ratings are of two types, business and personal. You can ask your suppliers or wholesalers to supply you with letters of credit. Personal credit ratings can be obtained through credit bureaus, banks and companies with whom you have dealt on a basis other than cash.

Copies of Leases

Include all lease agreements currently in force between your company and a leasing agency. Some examples are the lease agreement for your business premises, equipment, automobiles, etc.

Letters of Reference

These are letters recommending you as a reputable and reliable business person worthy of being considered a good risk. There are two types of letters of reference: business references, or those written by business associates, suppliers and customers; and personal references, or those written by none business associates who can assess your business skills (not friends or relatives).

Contracts

Include all business contracts, both completed and currently in force. Some examples are current loan contracts, papers on prior business loans, purchase agreements on large equipment, vehicle purchase contracts, service contracts and maintenance agreements.

Legal Documents
Include all legal documents pertaining to your business. Some of these are articles of incorporation, partnership agreements, copyrights, trademark registrations, patents, insurance policies, property and vehicle titles, etc.

**Miscellaneous Documents**

These are all the documents (other than the above) that are referred to, but not included, in then business and marketing sections of your business plan. A good example would be those records related to selecting your location that may have been finalized as the result of developing a location plan. A potential lender who may be particularly interested in your location information will be able to find the location plan in your supporting documents and examine your demographic studies, maps, area studies on crime rate, income, etc.

*Please note:* All supporting documents need not be included in every copy of your business plan. You need to include only that information you think will be needed by the potential lender. The rest of the information should be kept with your copy of the plan and be easily accessible should it be requested by the lender.

**PUTTING YOUR BUSINESS PLAN TOGETHER**

Your plan should be put together in a professional manner. To create a favorable impression, it should be as follows:

*Appearance* -- Use a plastic spiral binding or covers purchased from your local stationery store. Use blue, brown or black covers. Bankers are usually conservative.

*Length* -- Be concise! Usually, you should have no more than 30 to 40 pages, including your supporting documents. When you are writing each section, think of it as being a summary. Include as much information as you can in a brief statement. A potential lender does not want to have to wade through volumes of words to get the information needed.

*Presentation* -- Do your best to make your plan look presentable. However, do not go to the unnecessary expense of paying for typesetting and high-powered computer graphics. These might be considered frivolous by some lenders a first impression that might indicate you would not use their loan wisely.

*Table of contents* -- Be sure to include a table of contents in your business plan. It will follow the statement of purpose. Make it detailed enough so the lender can locate any of the areas addressed in the plan. It must also list the supporting documents.

*Number of copies* -- Make copies for yourself and each lender you wish to approach. Keep track of each copy. Do not try to work with too many potential lenders at one time. If your loan is refused, be sure to retrieve your business plan. When you are finished, your business plan should look professional, but the lender should know that it was done
by you. It will be the best indication a lender will have to judge your potential for success. Be sure that your business plan represents your best efforts.

**KEEPING YOUR BUSINESS PLAN CURRENT**

**Making Revisions**

If your business plan is going to be effective either to the business or to a potential lender, it will be necessary for you to update it on a regular basis. Changes necessitating revisions can be attributed to three sources: changes within the company, changes originating with the customer and technological changes. Neglecting to allow for these changes will doom your operation to decreased profits and probable failure.

**Implementing Changes**

As the owner, you must be aware of changes in your industry, market and community. First you must determine what revisions are needed. You will have to compare your plan with the changes discussed above. You can use your employees to help keep track of business trends applicable to their expertise. However, the final judgment as to revisions will rest with you, the owner. You may make errors, but with experience, your percentage of correct decisions will increase and your reward will be higher profits.

**Anticipating Problems**

Try to see ahead and determine what possible problems may plague you. For example, you may have to deal with costs that exceed your projections. At the same time, you may experience a sharp decline in sales. These two factors occurring simultaneously can portend disaster if you are not ready for them. Also, be cautious when things are too good. The increased profits may only be temporary. A product or service that is in demand this year may not be popular next year. You might think about developing an alternate budget based on possible problems. Awareness of changes in your industry and revision according to those changes will benefit you greatly.
APPENDIX D.2

OPENING DAY BALANCE SHEET
(Company Name)

**Assets**

<table>
<thead>
<tr>
<th>Current Assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash in Bank</td>
<td>$_______________</td>
</tr>
<tr>
<td>Inventory</td>
<td>$_______________</td>
</tr>
<tr>
<td>Prepaid Expenses</td>
<td>$_______________</td>
</tr>
<tr>
<td>Other</td>
<td>$_______________</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>$_______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed Assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery &amp; Equipment</td>
<td>$_______________</td>
</tr>
<tr>
<td>Furniture &amp; Fixtures</td>
<td>$_______________</td>
</tr>
<tr>
<td>Leasehold Improvements</td>
<td>$_______________</td>
</tr>
<tr>
<td>Real Estate / Buildings</td>
<td>$_______________</td>
</tr>
<tr>
<td>Other</td>
<td>$_______________</td>
</tr>
<tr>
<td><strong>Total Fixed Assets</strong></td>
<td>$_______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Assets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(specify)</td>
<td>$_______________</td>
</tr>
<tr>
<td>(specify)</td>
<td>$_______________</td>
</tr>
<tr>
<td><strong>Total Other Assets</strong></td>
<td>$_______________</td>
</tr>
</tbody>
</table>

**Liabilities & Net Worth**

<table>
<thead>
<tr>
<th>Current Liabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts Payable</td>
<td>$_______________</td>
</tr>
<tr>
<td>Taxes Payable</td>
<td>$_______________</td>
</tr>
<tr>
<td>Notes payable (due within 12 months)</td>
<td>$_______________</td>
</tr>
<tr>
<td>Current Portion Long Term-Debt</td>
<td>$_______________</td>
</tr>
<tr>
<td>Other Current Liabilities (specify)</td>
<td>$_______________</td>
</tr>
<tr>
<td><strong>Total Current Liabilities</strong></td>
<td>$_______________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Long-Term Liabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Loans Payable (greater than 12 months)</td>
<td>$_______________</td>
</tr>
<tr>
<td>Less: Short-term Portion</td>
<td>$_______________</td>
</tr>
<tr>
<td>Notes Payable to Stockholders</td>
<td>$_______________</td>
</tr>
<tr>
<td>Other long-term liabilities (specify)</td>
<td>$_______________</td>
</tr>
<tr>
<td><strong>Total Long-term Liabilities</strong></td>
<td>$_______________</td>
</tr>
</tbody>
</table>

| Total Liabilities       | $_______________ |
| Owner’s equity (Net Worth) | $_______________ |
| **Total Liabilities & Net Worth** | $_______________ |
APPENDIX D.3

OWNER’S PERSONAL FINANCIAL STATEMENT
__________ (Owner’s Name)
As of: 
__________ (Date)

<table>
<thead>
<tr>
<th><strong>Assets</strong></th>
<th><strong>Amount in Dollars</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash-checking accounts</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Cash-saving accounts</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Certificates of Deposits</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Securities</td>
<td></td>
</tr>
<tr>
<td>Stocks</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Bonds</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Mutual Funds</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Notes and Contracts Receivable</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Life Insurance (cash surrender value)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Personal Property (autos, jewelry, etc.)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Retirement Funds (eg. IRAs, 401k)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Real Estate (market value)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Other Assets (specify)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Other Assets (specify)</td>
<td>$ ____________</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>$ ____________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Liabilities</strong></th>
<th><strong>Amount in Dollars</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Debt (credit cards, accounts)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Notes Payable (describe below)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Taxes Payable</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Real Estate Mortgages (describe below)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Other Liabilities (specify)</td>
<td>$ ____________</td>
</tr>
<tr>
<td>Other Liabilities (specify)</td>
<td>$ ____________</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>$ ____________</td>
</tr>
</tbody>
</table>

**Net Worth**

$ ____________

Signature: ___________________________  Date: ______________
APPENDIX E.1

IRB APPLICATION
BEFORE SUBMITTING YOUR PROTOCOL FOR IRB REVIEW, MAKE SURE YOU HAVE INCLUDED THE FOLLOWING (IF APPLICABLE):

X Survey, Questionnaire or Interview Questions

X Consent and Assent forms

____ Recruiting materials

____ Permission letters from participating institutions

____ Signed Investigator Assurance form

X Clear, concise description of procedures to be used (Feel free to also attach any proposals that may further explain your project.)

Additionally, these assurances must be made:

X All personnel listed must have completed IRB/Human Subjects Training. If not, your application cannot be approved until the training has been completed. See our website for training dates and times.
http://www.msstate.edu/dept/compliance/irb/irbregistration.htm

X If applicable, the advisor has thoroughly reviewed this application to ensure readability and accuracy.

PLEASE NOTE:

• THE DETERMINATION OF THE IRB WILL BE COMMUNICATED TO YOU IN WRITING. SUBMISSION OF AN APPLICATION TO THE IRB DOES NOT EQUAL IRB APPROVAL. YOU MAY NOT BEGIN THIS RESEARCH UNTIL YOU HAVE IRB APPROVAL.

• IF YOUR RESEARCH HAS NOT YET RECEIVED FUNDING NEEDED TO CREATE INSTRUMENTS AND OTHER ASSOCIATED MATERIALS, PROVIDE A TIMELINE OF WHEN THOSE ITEMS WILL BE DEVELOPED. YOUR APPLICATION WILL BE REVIEWED FOR “118 DESIGNATION”(SEE http://www.msstate.edu/dept/compliance/irb/irbawardchanges.htm FOR MORE DETAILS).

If you have any questions, please feel free to contact our office at 325-5220 or by email at jmiller@research.msstate.edu or tarwood@research.msstate.edu.

Send to:
IRB
INVESTIGATOR'S ASSURANCE
Mississippi State University
Institutional Review Board

Project Title:

As Primary Investigator, I have ultimate responsibility for the performance of this study, the protection of the rights and welfare of the human subjects, and strict adherence by all co-investigators and research personnel to all Institutional Review Board (IRB) requirements, federal regulations, and state statutes for human subjects research. I hereby assure the following:

The information provided in this application is accurate to the best of my knowledge.

All named individuals on this project have been given a copy of the protocol and have acknowledged an understanding of the procedures outlined in the application.

All experiments and procedures involving human subjects will be performed under my supervision or that of another qualified professional listed on this protocol.

I understand that, should I use the project described in this application as a basis for a proposal for funding (either intramural or extramural), it is my responsibility to ensure that the description of human subjects use in the funding proposal(s) is identical in principle to that contained in this application. I will submit modifications and/or changes to the IRB as necessary to ensure these are identical.

I and all the co-investigators and research personnel in this study agree to comply with all applicable requirements for the protection of human subjects in research including, but not limited to, the following:

• Obtaining the legally effective informed consent of all human subjects or their legally authorized representatives, and using only the currently approved, consent form (if applicable); and
• Making no changes to the approved protocol or consent form without first having submitted those changes for review and approval by the Institutional Review Board; and
• Reporting serious and unexpected adverse effects to IRB Administration verbally within 48 hours and in writing within 10 days of occurrence, and all other unexpected adverse events in writing within 10 days of occurrence; and
• Promptly providing the IRB with any information requested relative to the project; and
• Promptly and completely complying with an IRB decision to suspend or withdraw its approval for the project; and
• Obtaining continuing review prior to the date approval for this study expires. I understand if I fail to apply for continuing review, approval for the study will automatically expire, and study activity must cease until IRB current approval is obtained.
• Your study and any associated records may be audited by the IRB to ensure compliance with the approved protocol.

Name of Primary Investigator / Researcher: Dwyane Jones

Signature:
Dwyane Jones

I assume responsibility for ensuring the competence, integrity and ethical conduct of the investigator(s) for this research project. The investigator(s) is/are fully competent to accomplish the goals and techniques stated in the attached proposal. Further, I certify that I have thoroughly reviewed this application for readability and accuracy and the study is clearly described herein.

Name of Advisor: Dr. James Adams

Signature:
Dr. James Adams

THE MISSISSIPPI STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD
FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH

Protocol Submission Form

PRINCIPAL INVESTIGATOR / RESEARCHER INFORMATION
Name: Dwyane Jones
Daytime Phone Number: 662-325-5032
Mailing Address: P.O. Box 709
If on-campus, provide Mailstop

City/State/Zip: Mississippi State University, MS State, 39762
E-Mail Address: dkj3@ra.msstate.edu
Department: Instructional Systems and Workforce Development
IRB and Human Subjects Protections Education completed on 06/06/2002

FACULTY ADVISOR (Faculty member supervising the student for this project)
If you are a student, you must have an advisor for this project.
Advisor: Dr. James Adams
Daytime Phone Number: 662-325-2281
Advisor=s E-Mail Address: jadams@colled.msstate.edu
Department: Instructional Systems and Workforce Development
Campus Mail Stop: P.O. Box 9730
IRB and Human Subjects Protections Education completed on October 22, 2003

ADDITIONAL INVESTIGATORS / RESEARCHERS
Will additional researchers be involved with this project? If so, list them along with their phone number, address, and email address. Indicate the date in which they completed IRB and Human Subjects Education.

TITLE of project:
In Search of Digital Equality in Mississippi’s Two Largest Cities:
An Examination of the Digital Divide That Exists Between African and European American Owned Small Businesses in Jackson and Gulfport

Is this an original submission or a revision? If this is a revised application, please list the docket number assigned to the first submission of the study.
PROJECT PERIOD: from Upon IRB approval to May 15, 2006
Includes both data collection and data analysis

*NOTE: Beginning date cannot predate IRB approval date. If you intend to begin immediately upon IRB approval, list beginning date as “upon IRB approval”.

STUDY FUNDING
Provide information about how the study costs will be supported

___ Department funds  ___ X Personal Funds  ___ No cost study
___ Other, specify:
___ External Funding
Agency:
SPA Proposal or Fund/Account Number:
PI of Award (if different than Principal Investigator/Researcher listed above):

ADDRESS EACH OF THE FOLLOWING ITEMS IN YOUR WRITTEN PROTOCOL.

I. Personnel & Qualifications

NOTE:
- As principal investigator, it is your responsibility to ensure that all individuals conducting procedures described in this application are adequately trained prior to involving human participants.
- All personnel listed on this application are required to successfully complete the MSU IRB & Human Subjects training course or an MSU IRB approved alternative. APPROVAL WILL NOT BE GRANTED UNTIL ALL INDIVIDUALS HAVE COMPLETED THIS TRAINING.
- As personnel change, you must submit a modification request to the IRB for approval before they can work with human subjects or identifiable or confidential information.

A. Including yourself, provide the name of each individual who will be responsible for the design or conduct of the study, have access to human participants, or have access to identifying or confidential information.

Dwyane Jones
Dr. James Adams

B. For each person identified above, identify his/her role in the project and clearly state the procedures or techniques he/she will be performing.

Dwyane Jones is the primary researcher in this study. He will be responsible for the design of the study and the of the survey instrument that will be used to collect the data. Moreover, he will be solely responsible for the gathering of the data, its security, and its analysis.
Dr. James Adams, as the chair of this dissertation project, will be responsible for insuring the validity of the research design that will be used in this study. Moreover, he will aid in the design of the survey instrument.

C. For each person identified above, describe his/her level of experience with the procedures or techniques he/she will be performing.

Dwyane Jones, as a graduate student, has taken numerous research design, statistic, and business technology courses. All these classes, which included Educational Research Design, Applied Research Seminar, Stats 1-3, Applied Business Technology, Special Topics in Business Technology, have provided a very solid foundation that will allow this researcher to complete a project analyzing small business technology.

Dr. James Adams, who has Ed.D from Oklahoma State, has been a part of numerous research projects over his academic career that required him to both design a study and to design instruments to measure the phenomenon under investigation. This experience will undoubtedly aid in the development of this purposed study and its over completion.

D. Indicate where did each of the personnel listed receive training to perform the identified procedures and who supervised or provided the training.

Dwyane Jones received his training from the Department of Instructional Systems and Workforce Development at Mississippi State University and from the Department of History at Mississippi State University.

Dr. James Adams receives his training from the Department of Education at Oklahoma State.

E. Explain how these skills/abilities will be periodically reviewed.

As far as Dr. Adams is concerned his skills are periodically reviewed by the academic departments at Mississippi State University for which he serves as a professor. This is done as a mode to determine both tenure and other professional upgrades that these departments offer to their faculty.

As far as Dwyane Jones is concerned, his skills will be periodically reviewed by his graduate committee.

II. Research Protocol
1. **SITE OF WORK:**

List each site where the research procedures will be performed. If any of the sites are off-site (i.e. not at MSU or MSU remote or branch sites), please provide information about that site (address, type of business/institution, etc.). If a cooperating institution (school, hospital, prison, etc.) is involved, append letters that have been prepared on the official letterhead of the cooperating institution and signed by an authorized representative.

The pilot study for my study will be conducted at Millsaps College Wilson Library located on the Campus of Millsaps College (1701 North State Street, Jackson, Mississippi 39210-0001). As an Alumnus of this college, I am not required to obtain written permission to use the library facilities. All that this researcher has to do is schedule it with the library staff, and room will be supplied without any written paperwork.
2. **Brief description of the GENERAL PURPOSE of the project:**
   In your view, what **BENEFITS** may result from the study that would justify asking the subjects to participate?

   The general purpose of this project is to determine whether there is a “Digital Divide,” unequal access to and utilization of telephone, computer, and internet related technologies across certain demographic factors, between African and European American owned small businesses in the Mississippi. There are several benefits of this project. The first of which is that it will establish whether or not a digital disparity exists between these two groups—something that has been asserted but has never been proven through empirical investigation. Moreover, if one is present, it might be a powerful indicator of why certain segments of the small business community in this state have been economically stagnant for the last decade. Lastly, these results might reveal crucial technology deficiencies in the small business communities in these cities—deficiencies that prevent the small businesses in these municipalities from garnering the full benefits from an economy that many experts stress will be e-commerce dominated by the end of this decade.

3. **Give details of the PROCEDURES that relate to the subjects' participation, include at a minimum the following information (append additional page(s) if necessary):**
   
   **a) List ALL vulnerable subject populations to be included and additional precautions being taken to ensure their protection.**

   Examples include: Minors (under age 18), College students, Prisoners, Employees, Pregnant women/Fetuses, Adults with Cognitive Impairments, Substance abusers and Non-English Speaking people.

   There will be no vulnerable subjects analyzed in this study.

   **b) How will the subjects be selected and recruited?** The subjects that will participate in this study will be randomly selected from the computer databases of the United Small Business Associations in each city, the branches of the Mississippi Development Organization in each city, the local Chamber of Commerce in each city, and the local business yellow pages in each city. Once the sample members are selected, a survey packet will be mailed to them.

   **c) What inducement will be offered?**

   There will be no inducement offered to the participants.

   **d) How many subjects will be used? List any salient characteristics of subjects, i.e., age range, sex, institutional affiliation, other pertinent characterizations.**

   A sample of 960 African and European American owned small businesses will be drawn from the small business populations form the four largest metropolitan areas in Mississippi. Each city will contribute 120 African American and 120 European American owned small businesses to this sample.

   **e) Number of times researchers will interact with each subject?** The researcher will have no direct interaction with the subjects in most instances—everything will be done by survey or postcard. However, if the respondent does not respond to the initial survey as outlined in his or her initial respondent packet or as outlined in the reminder letter, a call will be placed to the none-responding sample member or
members. However, the respondents have an option that will allow them to complete the survey online, over the telephone, or with an onsite meeting with the primary researcher. Therefore, there will be one indirect interaction in the form of the initial survey packet, a possibility of a second indirect interaction with the reminder letter, a possibility of a third indirect interaction online, and the possibility of three direct interaction—two telephone calls and an onsite visit by the primary researcher.

f) **What will the subjects do, or what will be done to them, in the study?**

*APPEND COPY OF QUESTIONNAIRES OR TEST INSTRUMENTS, DESCRIPTION OF PROCEDURE TO BE CONDUCTED ON THE SUBJECT. IF the procedures involve observation, please include the type of behavior or action you expect to observe and record. IF the procedures involve an interview, attach a sample of questions you plan to ask.*

The subjects will only be asked to fill out a questionnaire. A copy of the questionnaire and the procedures are attached to this document.

4. **How do you intend to obtain the subjects' INFORMED CONSENT?**

*N/A is not an acceptable answer to this question.*

If in writing, attach a copy of the consent form. If not in writing, include a written transcript of what is to be said to the subject(s), and justify the reason that oral, rather than written, consent is being used. Each subject should be fully informed by written or oral statement that indicates at a minimum: the purpose of the project, the benefits to be derived, a full description of the procedures to be carried out in which the subjects are involved, the amount of time that is required of subjects and who to contact with questions.

A copy of both the cover letter and the consent postcard that will be sent to the potential participant are attached to this document. The cover letter among other things explains the study to the potential participants, its benefits, the procedures that will be carried out, what will be required of them, and the contact information of the primary researcher in case they have any questions as it pertains to the survey. The consent postcard is a method to gather written consent that the participant will or will not participate in the study.

- Is it clear to the subject that their participation is fully voluntary? Yes
- Is it clear to the subjects that they may withdraw at any time? Yes
- Is it clear to the subjects that they may refuse to answer any specific question that may be asked of them? Yes
- Is it clear to the subjects who to contact in case of research-related questions? Yes

If the subjects are minors, you must obtain minor assent in addition to parental consent. Please attach assent form/procedure. None of the subjects are minors.
5. **Assessment of RISK**

Do you see any chance that subjects might be harmed in any way? No, the subjects will not be harmed in any way.

Do you deceive them in any way? The subjects will not be deceived.

Are there any physical risks? There are not physical risks to the subjects that will participate in this study.

Psychological? (Might a subject feel demeaned or embarrassed or worried or upset?) There are no psychological risks for the subjects in this study.

Social? (Possible loss of status, privacy, reputation?) There are no social risks for the subjects that will participate in this study.

6. **How do you ensure CONFIDENTIALITY of information collected?**

At a minimum, provide the following information:

Who will have access to the data? The only person that will have access to the data is the primary researcher, Dwyane Jones.

Where will data be stored? The data will be stored in a database on a standalone computer that requires password identification on boot in order to access the files contained on the computer. Moreover the specified database will also be password protected to further insure the safety of the data.

Where will signed consent forms be stored (be specific regarding location)? The signed consent form or in the case of this study postcard will be stored in Apartment 72 Arbor Acres in a locked safe.

What identifiers (direct or indirect) will be collected? The direct identifier that will be collected in this study is the name of the small business sampled.

What purpose do the identifiers serve? The identifiers will allow the researcher to know which of the sampled small businesses have returned the survey instrument; thus preventing any additional survey packets from sent out to individuals that have already responded to the initial mailing.

When will identifiers be removed or “de-linked” from the data? (Identifiers include a code number, which may be linked to another document containing names or other identifying information.) As far as the imputed data in the database is concerned, no identifiers will be placed in the database; however, the raw data, the actual surveys, will contain the one identifier for approximately seven months after all the data has been collected—a method adopted insure that if the database created becomes corrupted the information can be inputted once again.

Will the data be retained or destroyed? If the data will be destroyed, how and at what point in time? The data will not be destroyed.
7. Are approvals needed from another MSU regulatory committee (i.e. IACUC for animals or IBC for infectious agents or recombinant DNA)? Approval is not needed from IACUC or IBC. If so, please attach approval letter(s) from appropriate committee(s). If approval has not yet been obtained, where are you at in the approval process?
APPENDIX E.2

IRB APPROVAL E-MAIL
Dwyane,
Your study has been approved and you may proceed. You will receive an approval letter at the address listed on your application. Please let me know if you have any questions.

Thanks,
Jonathan

Jonathan E. Miller
IRB Coordinator
Office for Regulatory Compliance
8A Morgan Street
P.O. Box 6223
Mississippi State, MS 39762
662-325-5220
jmiller@research.msstate.edu
http://www.msstate.edu/dept/compliance

Date: Fri, 28 Jan 2005 13:43:51 -0600
From: "Jonathan E. Miller" <jmiller@research.msstate.edu>
Subject: Re: IRB Study #04-331
To: dkj3@msstate.edu
Cc: "James Adams" <JAdams@Colled.msstate.edu>
APPENDIX F

COHEN’S GUIDELINES FOR INTERPRETING EFFECT SIZE ESTIMATES
<table>
<thead>
<tr>
<th>Interpretation</th>
<th>Based on Eta-Squared</th>
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