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We investigate the financial sources of small firms through a survey of sample firms from West Texas. Evidence shows that the two most common start-up financing alternatives are personal savings and commercial bank loans. Commercial banks remain the most popular source of financing for present and future needs, followed by leasing companies and credit unions. Informal types of financing such as business credit cards, and trade credit are used in addition to lines of credit for transaction and working capital purposes. Firms typically review their financial performance monthly and use common cash balances as the primary financial tool.

Introduction

Small businesses play a critical role in the U.S. economy. About 98% of all employers have less than 110 employees. Nearly one-fourth of all businesses are dissolved within two years of beginning their operations and over one-half cease operations within four years (Leach and Melicher (2005). The success of a small business is closely tied to the planning and management process. Sound financial planning and management increase the odds of survival for a small business and lead to future growth. While the Federal Reserve Banks have

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conducted a few small business surveys to provide research data at the national level, there are few comprehensive studies on small business financing at the regional level.

In this paper, we investigate financial aspects of small business in West Texas, a region with tremendous growth in small business. We survey 1,050 small businesses to explore why entrepreneurs start their businesses, the availability of various sources of financing, and the use of financial planning and management techniques. Specifically, we collect data on the motives for starting a small business in West Texas, sources of start-up financing, types of financial services used, frequency of financial planning and evaluation, and the sensitivity of financial decisions by characteristics of small businesses and business owners.

This study is important because it fills a gap in previous research by performing an in-depth analysis of the financial decisions of 310 small businesses in West Texas, a region best known for its rich oil reserves. With the increasing demand for energy worldwide, the thriving small business growth in West Texas is foreseeable in the near future. Unlike some other studies that examine small business financing at a macro or national level, we examine this topic at a micro or regional level. Although we revisit some small business topics investigated by others (Buttner and Rosen (1989); Cole and Wolken (1995); Berger and Udell (1998)), we update and expand their research. In conducting empirical research, Bruner (2002) notes, "The task must be to look for patterns of confirmation across approaches and studies much like one sees an image in a mosaic of stones."

In addition, we use primary data to examine three major aspects of financial decisions and various hypotheses that are not fully explained by existing literature. The results elaborate the financing pattern of small business in West Texas and can help business owners be aware of industry conditions and improve their financing strategy. The study should be of interest to those academicians, managers, and policy makers concerned with small business. For example, policy makers may use information obtained in this study to help them develop more effective strategies to support regional small business growth.

Evidence shows that the dominant motive for starting a small business is to achieve financial reward. The two most common start-up financing options are personal savings and commercial bank loans. Female and older entrepreneurs prefer to use personal savings whereas male entrepreneurs prefer commercial bank loans. Small businesses rely heavily on lines of credit, business credit cards, and trade credit for transaction and working capital purposes. Commercial banks remain the most popular source of financing for both present and future needs, followed by leasing companies and credit unions. Venture capital firms are receiving growing interests as the fourth most important financing source for future funding. The failure rate of loan applications appears low in West Texas. Despite the fact that minorities applied much more frequently for business loans than did those belonging to the "white" category in ethnicity there is little evidence of discrimination because none in the minority group reports being denied a loan.

Regarding financial planning, the majority of firms review their financial performance once a month and use common cash balance as the primary financial tool. As expected, the small businesses with frequent cash flow difficulties do not evaluate their performance as frequently as their counterparts and are more likely to have loan applications denied. In contrast, the small businesses with more assets and those owned by highly educated entrepreneurs tend to use complicated financial tools to review their financial performance more frequently and engage in more advanced planning, though the majority plans for only the next one to two years. Finally, the majority of small businesses in West Texas prefer outright sales to harvest.

The structure of the paper is as follows. Section I reviews the literature on various issues investigated in the paper. Section II describes the sample and methodology. Section III reports and analyzes the survey results. Finally, Section IV concludes.

I. Literature Review

Capital is one of the key ingredients facilitating the growth of small businesses. Unlike large corporations, small businesses usually do not have easy access to public capital and may rely on private capital, limiting the types of financing available to them. Numerous studies have documented inadequate financial resources as a primary cause of small business failure (Wucinich (1979); Welsch and White (1981); Gaskill, Van Auken, and Manning (1993); Van Auken and Neeley (1996); Coleman (2000)). The uniqueness of small businesses as compared to larger enterprises has caused researchers to investigate specific characteristics of small firms that may contribute to their financing decisions.

The lack of quality financial information about small business increases the risk of investing in such a venture. At the start-up stage, lenders commonly base their decision on the creditworthiness of the entrepreneur, rather than the business. Even after the business exists for a period of time, the business may still remain opaque relative to large business because of the unavailability of public information. As a result, lenders tend to charge higher rates to compensate for their additional risk or decline to lend. Small firms are forced to rely heavily on trade credit and other informal sources of financing such as personal savings, personal credit cards, home equity loans, and loans from friends and family (Ang (1992); Peterson and Rajan (1994); Ang, Lin, and Tyler (1995); Berger and Udell (1995); Binks and Ennew (1996); Cole and Wolken (1996); Berger and Udell (1998)). Danielson and Scott (2004) attribute small businesses' reliance on potentially expensive sources of funds such as trade credit and credit cards to the unavailability of bank loans, as evidence of small business using a pecking order of debt financing, as reported by Chittenden, Hall, and Hutchinson (1996) and Romano, Tanewski, and Smyrnios (2001).

Another firm characteristic that may affect financing decisions of a small business is the business cycle. Berger and Udell (1998) propose a financial growth cycle for small business where small businesses at different business cycles apply different forms of financing. They contend that changes in optimal capital structure are a function of the firm size, age, and information availability. The three largest sources of funding are the principal owner, commercial banks, and trade creditors. Surprisingly, credit card debt appears unimportant but debt from financial institutions seems to be an important source of funding to very young firms. This finding is contrary to the conventional view that such funding would be available to businesses that have acquired substantial tangible assets. According to Berger and Udell, debt provided by financial institutions is often based on resources against the personal wealth of the entrepreneur through guarantees or pledges of personal collateral rather than that of the business.

In addition to firm characteristics, the demographic origins of small business owners may also affect financing decisions. Cooper, Gimeno-Gascon, and Woo (1994) argue that general human capital represented by the entrepreneur's education, gender, and race might reflect the extent to which the entrepreneur has had the opportunity to develop relevant skills and contacts. In general, the lending decision of a creditor is based on the borrower's creditability and expected cash flow of the project. However, many studies document significantly higher loan denial rates among black and Hispanic entrepreneurs than among whites with the same observable characteristics (Duca and Rosenthal, (1993); Munnell, Tootell, Browne, and McEneaney, (1996); Dymski, (2001); Cavalluzzo, Cavalluzzo, and Wolken,

(2002)). Coleman (2004) suggests there may be cultural biases in the lending process against black firm owners. While education does help to reduce the relative disadvantages in borrowing for women and many minorities, black males continue to be less willing and less able to secure external loans.

Gender of the entrepreneur may be part of the lending decision-making process. Gender bias might help to explain why financing is a more acute problem for women entrepreneurs than the rest of the population. Some contend the presence of adverse discrimination in the lending process that places women at a disadvantage (Neider (1987); Brophy (1989); Riding and Swift (1990); Brush (1992); Scherr, Sugrue, and Ward (1993)). While Buttner and Rosen (1989, 1992), Riding and Swift (1990), and Fabowale, Orser, and Riding (1995) do not find strong evidence of discrimination in the lending process, Fabowale et al. indicate that women were less satisfied than men with their banking relationships. Riding and Swift show that women were given higher collateral requirements for lines of credit. Marlow (1997) also shows that more female firm owners felt discrimination pressures in obtaining bank loans than males. Furthermore, Cole and Wolken (1995) and Coleman and Carsky (1996a, 1996b) report that female-owned businesses were less likely to use external debt capital, such as bank loans, as a source of capital than male-owned businesses.

Numerous potential differences between male and female business owners might explain why female-owned businesses seek different sources of financing from male-owned businesses. First, female owners may have less access to capital due to a lower level of education or experience than male owners (Brush and Hisrich (1991); Cooper et al. (1994)). Second, female owners may be more risk averse than male owners (Cooper (1993); Anna et al. (1999)). Third, female owners may be less concerned with financial rewards than male owners (Brush (1992); Rosa, Carter, and Hamilton (1994)). Finally, female owners may have more family commitments and less time to search for the best financing alternative than male owners (Birley (1986); Fasci and Valdez (1998)).

II. Research Design

A. Survey Instrument

The final version of the four-page questionnaire contains 28 questions (later referred to as Q#) that are partitioned into three parts (see Appendix A). The first part focuses on company data. The second part consists of questions on the motivation, financing alternatives, financial management, and financial planning of the small businesses in West Texas. Most questions in this section are forced-choice but some are open-ended questions. The last section contains questions about demographic information of the business owners.

B. Sample

We derived our initial sample from a list of small businesses registered with the Chamber of Commerce in Odessa and Midland, Texas. Following the definition of small business by the Small Business Administration, we generated a sample of 1,050 firms with less than 500 employees. We sent the questionnaire to the owners of each sample firm as they would be in the best position to answer questions on financial decisions. To ensure the questionnaires were properly answered, we included a statement in the cover letter asking the business owners to complete the questionnaire and assured them their responses would be kept confidential. To preserve anonymity and confidentiality, we did not code the survey. Finally, we enclosed a prepaid self-addressed envelope to facilitate a response to the survey. We mailed the initial survey on July 20, 2005 and a follow-up survey on August 12, 2005. We received a total of 310 usable responses, representing a 29.5% response rate.

As with any survey-based research, this study may contain non-response bias. Because we could not identify respondents versus non-respondents, we used an approach suggested by Wallace and Mellor (1988) to test for non-response bias. Specifically, we compared the responses to four firm characteristics – age (Q1), size (Q2), stage in business cycle (Q4), and number of employees (Q5) – of the 224 firms that returned the survey after the first mailing to those responses of the 86 firms after the second mailing. The underlying premise of this approach is that the later respondents tend to resemble non-respondents more than do earlier respondents.

Based on the chi-square tests, the evidence on non-response bias is mixed. No significant differences at the 0.05 level exist between responses to the first and second mailings on firm size (χ^2 = 2.575 with df = 4) and stage in business cycle (χ^2 = 4.267 with df = 3). Yet, there are significant differences at normal levels for age (χ^2 = 9.550 with df = 4) and number of employees (χ^2 = 10.026 with df = 4). Compared to firms responding to the first mailing, those responding to the second mailing tend to be younger and employ more people in the business.

C. Hypotheses

In this paper, we use the general form of regressions below to test the hypotheses:

$$DV = \alpha + \beta_1 Ethnicity + \beta_2 Education + \beta_3 Gender + \beta_4 Age + \beta_5 Firm\ size + \beta_6 Firm\ age + \beta_7 Cash\ flow + \beta_8 Growth + \beta_9 Maturity + \beta_{10} Survival + \beta_{11} Other\ stage + \varepsilon$$

where

DV = the dependent variable in each hypothesis.
Ethnicity = a dummy variable in which 1 if the owner is white, 0 otherwise.
Education = a dummy variable in which 1 if the owner has college degree or higher, 0 otherwise.
Gender = a dummy variable in which 1 if the owner is male, 0 otherwise.
Age = owner's age in years.
Firm size = the log form of firm size measured by total assets.
Firm age = firm's age in number of years in operation.
Cash flow = a dummy variable in which 1 if occasional or frequent cash flow difficulty occurs, 0 otherwise.
Growth = a dummy variable in which 1 if the business is at the growth stage, 0 otherwise.
Maturity = a dummy variable in which 1 if the business is at the maturity stage, 0 otherwise.
Survival = a dummy variable in which 1 if the business is at the survival stage, 0 otherwise.
Other stage = a dummy variable in which 1 if the business is at a stage other than the above stages, 0 otherwise.
α, β_1 - β_{11} = coefficients.

We hypothesize that a significant relation exists between:

H_1: The perceived importance of start-up financing and the demographic factors of the business owner such as age, gender, ethnicity, and education. The dependent variable is the perceived importance assigned by respondents ranging from 1 to 5. We expect to find female, young, minority, and less educated business owners to value internal sources of funds such as

personal saving more and external sources of funds such as commercial bank less important than their counterparts.

H_2: The usage of financial services and the demographic factors of the business owner such as age, gender, ethnicity, education, and firm characteristics such as firm size, firm age, and business cycle. The dependent variable is a dummy variable in which 1 if the financial service is chosen, 0 otherwise. We expect to find female, young, minority, and less educated business owners and businesses of relatively small size, short history, and at growth stage using commercial banks less than their counterpart.

H_3: The failure rate of loan application and the demographic factors of the business owner such as age, gender, ethnicity, education, and firm characteristics such as firm size, firm age, business cycle, and cash flow situation. The dependent variable is the loan denial rate. We expect to find female, young, minority, and less education business owners and businesses of relatively small size and short history to have a higher loan denial rate than their counterpart.

H_4: The occurrence of cash flow difficulties and firm characteristics such as firm size, firm age, and business cycle. The dependent variable is a dummy variable in which 1 if the business indicates occasional or frequent cash flow difficulty, 0 otherwise.

H_5: The frequency of financial review and the demographic factors of the business owner such as age, gender, ethnicity, education, and firm characteristics such as firm size, firm age, business cycle, and cash flow situation. The dependent variable is the frequency of financial review in a year. We expect to find business owners with relatively high education and age and business of relatively large size, high age, sound cash flow situation, and at growth stage to review their financial situation more frequently than their counterpart,

H_6: The usage of different financial planning techniques and the demographic factors of business owner such as age, gender, ethnicity, education, and firm characteristics such as firm size, firm age, business cycle, and cash flow situation. The dependent variable is the number of financial planning techniques used. We expect to find business owners with relatively high education and businesses of relatively large size, high age, sound cash flow situation, and at growth stage to use more different financing planning techniques than their counterpart,

We use multiple regression analysis to test hypotheses H_1, H_3, H_5, and H_6 and logit regressions to test hypotheses H_2 and H_4.

III. SURVEY RESULTS

A. Characteristics of Firms and Their Owners

Panel A of Table I shows the gender (Q25), age (Q26), ethnicity (Q27), education (Q28), and experience (Q7) of the principal owners. Respondents are typically male (85.9%), at least 50 years old (68.4%), white (91.6%), have no college degree (54.2%), and more than 15 years of experience managing or owning a business (82.2%).

Panel B of Table I partitions the sample by industry (Q3), firm size (Q2), firm age (Q1), number of employees (Q5), and stage in the business cycle (Q4). The most common industry types (Q3) are mining including firms in the oil services industry (28.4%), retail (17.4%), service (16.1%), and manufacturing (10.6%). In terms of firm size, 46.4% of the firms have an asset value of greater than $1 million. The majority of firms (53.2%) have been under the current ownership for more than 20 years. About two-thirds (67.7%) of the firms have 20 or fewer employees. Regarding the stage in the business cycle, most firms are either in the growth (47.6%) or maturity stage (42.4%) with the remainder in the start-up (2.2%) or survival (7.8%) stage.

B. Motives for Starting a Small Business

Panel A of Table II presents our findings on the motives for starting a small business in West Texas. Because respondents could indicate more than one objective, the percentages sum to greater than 100 for the 310 firms indicating a specific motive. The dominant motive is financial rewards (61.9%), followed by the desire to be entrepreneur (43.9%) and to provide career progression (20.3%). No other motive amounts to as much as 10% of the responses (Q6).

C. Financing Patterns of Small Business

Panel B of Table II shows the major sources of start-up financing. Because respondents could indicate more than one source of start-up funds, the percentages sum to greater than 100. Small businesses use different financing patterns at various stages of the business cycle. As previously indicated, prior studies suggest that small businesses tend to use private sources of financing at start-up due to the difficulty of accessing external sources of funds. Our results support this notion.

Panel B (1) shows the sources of funds used by the principal business owner upon starting the business (Q8). The most common form of start-up financing is personal savings (69.4%), followed by loans from commercial banks (44.8%), and family and friends (16.8%). Consistent with the literature, venture capitalists and business angels represent minor sources of funds at the start-up stage with 2.6% and 1.9% of the responding firms, respectively (Q8). Panel B (2) indicates the importance attached to various financing sources for a start-up business (Q9). The identical rankings of Panels B (1) and B (2) suggest that the importance attached to various sources of funds at the start-up stage is consistent with their current usage.

As previously noted, Berger and Udell (1998) posit that small businesses have a financial growth cycle in which their financial needs and options change with growth opportunities. Thus, we designed several questions to identify the different financial services used by small businesses to finance their daily operations and future expansion. The percentages in Table III sum to greater than 100 because respondents could give more than one answer to each question.

Panel A of Table III shows the financial services commonly used to support daily operation and growth (Q10). Of the 310 responding small businesses, 64.2% use lines of credit. Unlike large corporations, small businesses use non-traditional financial services such as business credit cards (50.6%) and personal credit cards (16.1%). At least a quarter of the small firms also use trade credit (42.3%), vehicle loans (32.6%), and equipment loans (24.5%) to support daily operation and growth.

To investigate whether demographic factors of business owners play a role in the selection of financial services, we used chi-square tests to examine whether significant differences exist in the use of financial services by gender, ethnicity, education, and age of the business owners. For purposes of conducting these tests, we collapsed the respondents by age into those above and below 50 and by ethnicity into white and minority, which consists of African-American, Hispanic, Asian, and others. Of the 32 potential chi-square tests, we were unable to conduct 8 tests due to the small cell size of less than 5. Of the 24 tests conducted, the only significant difference was the use of personal credit cards. In this instance ($\chi^2 = 4.123$, significant at the 0.05 level), more minorities (37.0%) use personal credit cards for business purposes than do whites (14.5%).

We specifically looked into the uses of trade credit for working capital purposes (Q15 and Q16). Although not reported in Table II, our results show that 65.2% of the respondents do

not use trade credit. Among the users of trade credit, 23.5% use free trade credit only, 1.3% use costly trade credit, and 10.0% use both.

In addition, the survey asked the respondents to indicate the common purposes of using financial services for their businesses (Q11). As shown in Panel B of Table III, transaction purposes dominate with 42.3% of the respondents followed closely by working capital management (41.9%), and financing business expansion (36.1%). Panel C of Table III shows the types of banking accounts held for working capital purposes (Q17). Almost all firms (98.4%) hold checking accounts and 42.3% hold money market accounts. A much smaller percentage of small businesses use interest-earning accounts such as savings accounts (26.1%) and certificates of deposit (18.7%).

The perceived importance of start-up financing (Q9) may lead to future usage of financial services. Thus, we examined the top two sources of start-up financing that owners prefer to use for future funding, personal savings, and commercial bank loans, respectively, as shown in Panel B of Table II. We tested the hypothesis (H_1) that the preference of start-up financing choice is related to the demographic factors of the business owner such as age, gender, ethnicity, and education. As shown in Column A of Table IV, female and older entrepreneurs significantly favor using personal savings as start-up funds at the 0.01 and 0.10 levels, respectively. In contrast, Column B of Table IV indicates male entrepreneurs view commercial banks as an important source of start-up financing at the 0.10 level. Our findings mirror the results obtained by Coleman and Carsky (1996a, 1996b) and Coleman (2000) that female-owned businesses are significantly less likely to use external debt capital than male-owned business. This result may reflect the perception that banks and other potential creditors consider businesses owned by women entrepreneurs as relatively risky.

To examine the three most commonly used financial services -- lines of credit, business credit cards, and trade credit as shown in Panel A of Table III, we use logit regressions to test hypothesis (H_2) that the usage of these financial services is related to the characteristics of small business and business owner. Evidence in Columns C and D of Table IV reveals that firm size is the only significant variable in explaining the use of lines of credit and business credit cards. The "larger" small businesses tend to use more lines of credit whereas the "smaller" small businesses prefer business credit cards. As shown in Column E of Table IV, older businesses tend to use trade credit.

Table V shows the responses to Q12 and Q23 concerning the past and expected future sources of financial services used by small businesses. The responses relating to questions seeking out perceptions and the type of financial sources to be used in the future tend to be subjective and prone to respondents' biases. Thus, interpreting these data requires caution. Almost 91% of the respondents report that commercial banks served as the most common source for receiving financial services in the past. Leasing (14.6%) and credit unions (5.5%) rank a distant second and third place, respectively. Less than 5% of the respondents reported using any other financial services in the past. In the future, 84.5% of the respondents expect to rely on commercial banks as the primary source of financial services. Respondents, however, expect to use the other financial services much more frequently in the future than in the past. For example, between about 37% and 43% of the respondents expect to use each of the other nine financial services in the future. An implication of these results is respondents perceive that financial services unavailable to their businesses in the past may be accessible to them in the future.

Using the data shown in Table V, we calculated Spearman's rank order correlation coefficient, r_s, between the rankings of the 10 financial services used in the past and likely to be used in the future. The r_s of 0.7003 is significant at the 0.05 level ($t = 2.77$ with $df = 8$). Thus,

the rankings are highly correlated despite the large differences in the percentage usage of financial services between the past and future.

We also conducted chi-square tests to further investigate whether the usage of financial services varies significantly by the characteristics of business owners such as gender, ethnicity, education, and age. Of the 40 potential chi-square tests, we were unable to conduct 31 tests due to the small cell size of less than 5. Of the 9 tests conducted, the only significant difference at normal levels was the use of commercial banks by different gender group. In this instance (χ^2 = 8.705, significant at the 0.01 level), a greater percentage of males (79.6%) use commercial banks for business purposes than do females (11.3%). Consistent with the findings of Cole and Wolken (1995), Coleman and Carsky (1996a, 1996b) and Coleman (2000), male-owned businesses were more likely to use commercial bank loans as a source of capital than female-owned businesses.

As commercial banks currently are and are likely to continue to be the primary source of financing, we investigated the small businesses access to commercial loans in the past five years to see whether perceived discrimination exists in terms of loan applications in West Texas. Panel A of Table VI shows how many times the firm applied for a loan in the past five years by the ethnicity of business owners (Q13). The results show that 29.8% have never applied for a commercial loan, 41.7% of the sample firms applied once or twice, 9.7% applied three to four times, and 18.8% applied more than 4 times. Small businesses run by a minority owner applied for loans much more frequently than those run by white owners. Panel B of Table VI indicates how many times the firm was denied for a commercial loan in the past five years by the ethnicity of business owners (Q14). The failure rate of loan applications appears low in West Texas. The results show that 95.4% of the responding firms were never denied for a loan application, 4.2% was denied once or twice, and 0.3% was denied more than four times. Business owners from the minority group in West Texas were never denied for their loan applications, unlike the evidence reported by Duca and Rosenthal, (1993), Munnell, Tootell, Browne, and McEneaney, (1996), Dymski, (2001), Cavalluzzo, Cavalluzzo, and Wolken, (2002), and Coleman (2004).

D. Financial Management of Small Business

Another issue examined is how small businesses in West Texas manage financial activities. The failure of a loan application might result from a poor financial position, especially poor cash flow management. Panel C of Table VI presents the results for Q18 for the frequency of cash flow difficulties. A majority of the responding firms report experiencing cash flows difficulties either occasionally (47.4%) or frequently (13.7%), but others indicate that such problems occur rarely (21.0%) or never (17.4%).

To further examine whether poor cash flow conditions contribute to the failure of commercial loan applications, we tested the hypothesis (H_3) that a significant relation exists between the failure rate of loan applications and the characteristics of small business and business owner. Column A of Table VIII indicates that the financial position of a firm, proxied by the frequency of cash flow difficulties, is significantly related to the success of a loan application. Firms that incur cash flow difficulties are more likely to have their loan applications denied. There appears to be no significant discrimination in terms of race, age, education, and gender in the loan approval process in West Texas.

Panel D of Table VI shows the responses on the causes of cash flow difficulties (Q19). The percentages sum to greater than 100 because respondents could indicate more than one cause of cash flow difficulties. The most common causes are incurring late payment from

customers (52.6%), uncertain cash flow (32.5%), high working capital requirements (22.6%), and early payment to suppliers (14.0%).

Since cash flow management is crucial to the success of a small business, we tested the hypothesis (H_4) that cash flow difficulty is significantly related to firm characteristics such as size, age, and business cycle using logit regression. The dependent variable (cash flow) is 1 if the business indicates occasional or frequent cash flow difficulty, 0 otherwise. As shown in Column B of Table VIII, relatively small firms in terms of assets are more likely to experience cash flow difficulties but such difficulties are not specific to firms at any particular stage of the business cycle.

E. Financial Planning of Small Business

We examined the frequency of evaluating financial performance and the tools used to do so. Financial planning is another critical function to ensure sound financial position of a small business. Panel A of Table VII shows the results to Q20 involving how often businesses evaluate financial performance. The results show that the majority of firms review their financial performance once (52.0%) or twice (11.9%) a month while others review performance less often. Surprisingly, 9.5% of the responding firms indicated that they never review their financial performance.

We tested the hypothesis (H_5) that a significant relation exists between the frequency of financial review and the demographic factors of the business owner and firm characteristics. Column C of Table VIII shows the regression results for financial review, with the frequency of financial review in a year as the dependent variable. This evidence indicates that larger-sized firms with highly educated owners emphasize the importance of financial review.

Panel B of Table VII shows the financial tools used by small businesses to evaluate financial performance (Q21). Because the respondents could indicate more than one tool, the sum of the percentages exceeds 100. The results show that 55.2% of the respondents review cash balances, 54.5% calculate profitability and efficiency ratios, and 39.6% check other financial ratios.

To further examine the usage of financial analysis tools by small businesses, we tested the hypothesis (H_6) that the usage of complicated financial tools, as measured by the number of financial planning tools used, is related to the characteristics of small business and business owner. As shown in Column D of Table VIII, the number of financial tools used by small business is significantly positively related to the firm size and the education level of business owner and significantly negatively related to the age of business owners. Larger firms owned by young, highly educated owners tend to use more complicated financial tools to review their financial performance than their counterparts.

Questions on financial planning aspects also included the time horizon of future financial plans (Q22). As shown in Panel C of Table VII, the vast majority of the responding firms (74.0%) report that they plan for the next one to two years, 19.4% plan for the next three to five years, and 6.6% plan beyond five years. Thus, the planning horizon of the responding tends to be short term.

As ventures reach the peak of their profitability and productivity, the owners usually exit a business through: (1) a systematic liquidation of assets to the owners, (2) an outright sale of the venture to others, or (3) an initial public offering of new shares followed by a secondary offer of existing owners' shares. Table IX reports the results to Q24 on the expected exit strategy. The vast majority (70.8%) of the sample firms plan for an outright sale, 6.7% prefers a systematic liquidation, 2.6% plan for an initial public offering, while the remaining 19.9% prefer other ways of harvesting such as gifts to heirs.

IV. Conclusion

Using a survey, we investigate the financial aspects of small businesses in West Texas including financing patterns, financial management, and financial planning. Evidence shows that the dominant motive for starting a small business is financial rewards. The primary start-up financing is personal savings followed by commercial bank loans. Female and older entrepreneurs prefer to use personal savings whereas male entrepreneurs prefer commercial bank loans. For this region of the U.S., venture capitalists and business angels are not important sources of funds at the start-up stage.

With respect to the financing patterns of daily operations and future expansion, commercial bank loans remain the most popular source of financing for both present and future needs followed by leasing companies. Firms with frequent cash flow difficulties are more likely to fail in their loan applications. Nevertheless, the failure rate of loan applications appears low and no apparent evidence of discrimination exists in West Texas. Unlike large corporations, small businesses rely heavily on informal types of financing such as business credit cards in addition to trade credit and lines of credit for transaction and working capital purposes. Small businesses with relatively large asset sizes tend to use more lines of credit whereas those with relatively small sizes prefer business credit cards.

Regarding financial planning, more than half of firms review their financial performance monthly and use cash balances as the primary financial tool. Larger firms with highly educated owners tend to use more complicated financial tools to review their financial performance and engage in more advanced financial planning. Typically, firms make future financial plans for only the next one to two years. Finally, the most common expected exit strategy is the outright sale of the business.

While our analysis has revealed substantial evidence on the financial decisions of small businesses in West Texas, these findings may not apply to small businesses in other regions of the United States. Thus, other researchers may want to survey small business owners to confirm these results at a regional or national level. Other topics for future research include investigating how sources of small business financing may change over the business cycle and during different economic conditions in response to changes in monetary or fiscal policies and improvements in financial services. Given the growing financial education support to small business owners, another research topic would be to evaluate whether the usage of analytical tools increases the effectiveness of financial management and the frequency of financial planning efforts.

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Table I
Characteristics of Small Business Owners and Their Firms

In this table, Panel A presents selected demographic characteristics of small business owners including gender, age, ethnicity, education, and experience in managing or owning a business. Panel B presents selected characteristics of small businesses including industry, firm size, firm age, number of employees, and stage in the business cycle. The sample size is 310.

Panel A. Gender, Age, Ethnicity, Education, and Experience

Gender	(%)	Age (Years)	(%)	Ethnicity	(%)
Male	85.9	< 30	1.0	White	91.6
Female	14.1	30 to 39	4.2	Africa-American	0.6
		40 to 49	26.4	Hispanic	5.9
		50 to 59	36.5	Asian	0.6
		60 and older	31.9	Others	1.3

Education	(%)	Experience (Years)	(%)
Lower than high school degree	2.9	No experience	2.3
High school graduates	13.1	0 - 3	1.6
Some college	31.4	4 - 6	1.9
Associate degree	3.9	7 - 9	1.0
Trade school	2.9	10 - 15	11.0
College	36.6	> 15	82.2
Post graduate	9.2		

Panel B. Industry, Firm Size, Firm Age, Number of Employees, and Stage in the Business Cycle

Industry	(%)	Firm Size (Assets in $000)	(%)
Mining including oil services	28.4	# 10	0.7
Retail	17.4	> 10 # 50	4.3
Service	16.1	> 50 # 100	8.9
Manufacturing	10.6	> 100 # 500	23.6
Construction	9.4	> 500 # 1,000	16.1
Real estate and finance	5.8	> 1,000	46.4
Transportation and communication	3.5		
Wholesale	1.6		
Agriculture	1.3		
Other	5.9		

Firm Age (Years)	(%)	Number of Employees	(%)	Stage in the Business Cycle	(%)
1 to 5	13.9	2 to 5	31.1	Start-up	2.2
6 to 10	9.0	6 to 20	36.6	Growth	47.6
11 to 20	23.9	21 to 50	19.4	Maturity	42.4
> 20	53.2	51 to 100	6.8	Survival	7.8
		> 100	6.1		

Table II
Motives and Financing Sources of Starting up a Small Business

In this table, Panel A presents the motives for starting a small business. Panel B reports the current usage and importance of different sources of start-up financing. Because respondents could indicate more than one motive for starting a business or source of start-up funds, the percentages sum to greater than 100. The sample size is 310.

Panel A. **Motives**	**Firms (%)**	**Rank**
Financial rewards	61.9	1
Desire to be an entrepreneur	43.9	2
Career progression	20.3	3
Influence of family or friends	7.7	4
Unemployed before start-up	6.1	5
Tax credit or savings	2.6	6
Flexibility	1.0	7
Contribution to the community	0.3	8

Panel B. **Sources of Start-up Funds**	**(1) Actual Usage**		**(2) Perception of Importance**	
	Firms (%)	**Rank**	**Mean**	**Rank**
Personal savings	69.4	1	4.48	1
Commercial banks	44.8	2	4.35	2
Family and friends	16.8	3	2.43	3
Government assistance program	3.9	4	2.34	4
Venture capitalists	2.6	5	2.29	5
Business angels	1.9	6	2.19	6

Table III
Use of Financial Services in Small Business Operations

In this table, Panel A presents the types of financial services used by small business operations. Panel B reports the purpose of using financial services. Panel C lists the types of banking accounts held for working capital purposes. Percentages sum to greater than 100 because respondents could indicate more than one response to each question. The sample size is 310.

Panel A. **Types of Financial Services**	**Firms (%)**	**Rank**
Lines of credit	64.2	1
Business credit cards	50.6	2
Trade credit	42.3	3
Vehicle loans	32.6	4
Equipment loans	24.5	5
Personal credit cards	16.1	6
Capital leases	12.6	7
Mortgages	10.6	8
Loans from partners/individuals	7.7	9
Others	5.2	10
Factoring	1.9	11

Panel B. **Purpose of Using Financial Services**	**Firms (%)**	**Rank**
Transaction purposes	42.3	1
Working capital management	41.9	2
Financing business expansion	36.1	3
Credit related purposes	19.0	4
Low financing costs	11.9	5
Others	3.2	6

Panel C. **Types of Banking Accounts Held for Working Capital Purposes**	**Firms (%)**	**Rank**
Checking accounts	98.4	1
Money market accounts	42.3	2
Saving accounts	26.1	3
Certificates of deposit	18.7	4
Others	5.2	5

Table IV
Regression Analysis of the Determinants of Start-up Sources of Financing and Regular Usage of Financial Services

This table presents the multiple regression results for the importance of personal savings and commercial banks as start-up financing for regression (A) and (B), and logit regression results for the use of lines of credit, business credit cards, and trade credit for regression (C), (D), and (E), respectively. The independent variables include demographic characteristics of small business owners and firm characteristics. Using dummy variables, ethnicity is 1 if the owner is white, 0 otherwise. Education is 1 if the owner has a college degree or higher, 0 otherwise. Gender is 1 if the owner is male, 0 otherwise. Age is measured in number of years. Growth is 1 if the business is at the growth stage, 0 otherwise. Maturity is 1 if the business is at the maturity stage, 0 otherwise. Survival is 1 if the business is at the survival stage, 0 otherwise. Other stage is 1 if the business is at a stage other than the above stages, 0 otherwise. Firm size is measured by the log value of total assets. Firm age is measured by the number of years. P-values are in parentheses. The sample size is 310.

Variables	Personal Savings (A)	Commercial Banks (B)	Lines of Credit (C)	Business Credit Cards (D)	Trade Credit (E)
Constant	4.496	4.370	-2.700	3.691	-4.510
Ethnicity	-0.240	-0.198	-0.195	0.503	0.730
	(0.213)	(0.353)	(0.673)	(0.245)	(0.116)
Education	0.054	0.122	0.194	-0.275	-0.351
	(0.619)	(0.310)	(0.452)	(0.263)	(0.163)
Gender	-0.503***	0.333*	0.251	-0.416	0.077
	(0.002)	(0.059)	(0.490)	(0.257)	(0.837)
Age	0.011*	-0.001	-0.014	-0.023	0.002
	(0.054)	(0.891)	(0.376)	(0.128)	(0.902)
Growth			-0.320	0.798	0.568
			(0.534)	(0.108)	(0.267)
Maturity			-0.311	0.749	0.590
			(0.534)	(0.122)	(0.233)
Survival			0.312	0.418	0.258
			(0.591)	(0.443)	(0.635)
Other stage			-1.009	-0.105	1.937**
			(0.300)	(0.910)	(0.040)
Firm size			0.327**	-0.226**	0.165
			(0.003)	(0.043)	(0.149)
Firm age			0.001	0.001	0.036**
			(0.984)	(0.998)	(0.013)
R^2	0.04	0.01			
F-statistic	3.776**	1.517			

*, **, *** Significant at the 0.10, 0.05, and 0.01 levels, respectively.

Table V
Past and Expected Future Sources of Financial Services
Used by Small Businesses

This table shows the sources of financial services used by small businesses for daily operations in the past and likely to be used in the future. The Spearman rank order correlation coefficient of 0.7003 between the rankings of the past and expected future sources of financial services used by small businesses is significant at the 0.05 level. The sample size is 310.

Service Providers	In the Past		In the Future	
	Firms (%)	Rank	Firms (%)	Rank
Commercial bank	90.9	1	84.5	1
Leasing company	14.6	2	43.2	2
Credit union	5.5	3	40.3	3
Saving and loan association	4.2	4	39.7	4.5
Finance company	3.2	5	39.0	6
Insurance company	2.9	6	36.8	10
Saving bank	2.6	7	38.7	7.5
Brokerage or mutual fund	1.9	8.5	38.7	7.5
Mortgage bank	1.9	8.5	37.7	9
Venture capital firm	0.6	10	39.7	4.5

Table VI
Commercial Loan Application and Cash Flow Management of Small Businesses

In this table, Panels A and B present the frequency of small business loan applications and loan denials of different ethnicity groups in the past five years. The minority group includes African-American, Hispanic, Asian, and others. Panel C presents the frequency that firms have ever had cash flow difficulty. Panel D lists the different causes of cash flow difficulties. In Panel D, the percentages sum to greater than 100 because respondents could give more than one response. The sample size is 310.

Panel A. Frequency of Loan Applications	**Firms (%)**		
	White	**Minority**	**Total**
Never	3.9	25.9	29.8
1 to 2 times	2.5	39.2	41.7
3 to 4 times	1.3	8.4	9.7
More than 4 times	1.3	17.5	18.8
Panel B. Frequency of Loan Denial			
Never	87.2	8.2	95.4
1 to 2 times	4.2	0.0	4.2
3 to 4 times	0.0	0.0	0.0
More than 4 times	0.3	0.0	0.3
Panel C. Frequency of Cash Flow Difficulties			
Never		17.4	
Quite rare and unusual		21.0	
Occasionally		47.4	
Fairly frequent but not permanent		13.5	
Uncertain		0.7	
Panel D. Causes of Cash Flow Difficulties			
Late payment from customers		52.6	
Unbalanced cash flow		32.5	
High levels of working capital required by business		22.6	
Early payment to suppliers		14.0	
Difficulty in getting credit		1.3	
Others		7.1	

Note: Percentages may not add to 100 due to rounding.

Table VII
Financial Performance Evaluation and
Financial Planning of Small Businesses

In this table, Panel A describes the frequency of financial evaluation; Panel B reports the different financial evaluation tools used by small businesses; and Panel C lists the time horizon of financial planning. The sample size is 310.

Panel A. Frequency of Financial Evaluation	**Firms (%)**
Twice a month	11.9
Once a month	52.0
Once a quarter	13.6
Twice a year	5.2
Once a year	7.8
Never	9.5
Panel B. Financial Evaluation Tools	
Cash balances	55.2
Profitability and efficiency ratios	54.5
Other financial ratios	39.6
Industry averages	12.0
Cash conversion period	7.5
Leverage ratios	5.2
Panel C. Time Horizon of Financial Planning	
1 to 2 years	74.0
3 to 5 years	19.4
Beyond 5 years	6.6

Table VIII
Regression Analysis on the Determinants of Loan Application Success and Financial Review and Planning

This table presents the multiple regression results with the loan denial rate, frequency of financial review, and number of financial planning tools as the dependent variable for regression (A), (C), and (D), and logic regression result with occurrence of cash flow difficulty as the dependent variable for regression (B) respectively. The independent variables include demographic characteristics of small business owners and firm characteristics. Ethnicity is 1 if the owner is white, 0 otherwise. Education is 1 if the owner has a college degree or higher, 0 otherwise. Gender is 1 if the owner is male, 0 otherwise. Age is measured in number of years. Growth is 1 if the business is at the growth stage, 0 otherwise. Maturity is 1 if the business is at the maturity stage, 0 otherwise. Survival is 1 if the business is at the survival stage, 0 otherwise. Other stage is 1 if the business is at a stage other than the above stages, 0 otherwise. Cash flow is 1 if occasional or frequent cash flow difficulty occurs, 0 otherwise. Firm size is measured by the log form of total assets. Firm age is measured by the number of years. P-values are in parentheses. The sample size is 310.

Variables	Loan Denial Rate (A)	Cash Flow Difficulty (B)	Financial Review (C)	Financial Planning (D)
Constant	-0.294	3.740	14.880	1.561
Ethnicity	0.133		-0.816	0.404
	(0.143)		(0.581)	(0.115)
Education	0.030		1.968**	0.324**
	(0.557)		(0.021)	(0.028)
Gender	0.011		-0.062	-0.056
	(0.890)		(0.960)	(0.801)
Age	-0.001		-0.080	-0.028***
	(0.654)		(0.110)	(0.001)
Growth	0.175	-0.474	-2.736	0.966
	(0.681)	(0.365)	(0.694)	(0.400)
Maturity	0.139	-0.732	-1.918	0.949
	(0.743)	(0.152)	(0.782)	(0.407)
Survival	0.489	-0128	-2.041	1.135
	(0.257)	(0.729)	(0.772)	(0.332)
Other stage	0.157	-0.354	3.857	2.001
	(0.734)	(0.724)	(0.609)	(0.110)
Cash flow	0.103**		0.874	0.055
	(0.046)		(0.301)	(0.707)
Firm size	-0.001	-0.200*	0.001*	0.001***
	(0.969)	(0.075)	(0.074)	(0.007)
Firm age	0.003	-0.003	-0.008	0.011
	(0.262)	(0.846)	(0.871)	(0.178)
R^2	0.04		0.03	0.05
F-statistic	2.035**		1.675*	2.335**

*, **, *** Significant at the 0.10, 0.05, and 0.01 levels, respectively.

Table IX
Exit Strategy of Small Businesses

This table reports the expected exit strategy of the sample firms. The sample size is 310.

Exit Choices	**Firms (%)**
Going public	2.6
Systematic liquidation	6.7
Outright sale	70.8
Other (e.g. gifts to heirs)	19.9

Appendix A

WEST TEXAS SMALL BUSINESS RESEARCH SURVEY

Please spare a few minutes to complete this questionnaire. Your participation in the Small Business Research Survey will help us to understand your business and give you a chance to get to know the Small Business Perspectives in West Texas. Please be assured that your responses will be treated with the strictest confidence. If you would like to have the survey results sent to you, please attach your business card with the completed questionnaire. The cards will be kept separate to guarantee anonymity for the responses. Your time and cooperation are highly appreciated!

1. What is the age of your business under the current ownership?

_____ 1 to 5 years _____ 6 to 10 years
_____ 11 to 20 years _____ More than 20 years

2. Please indicate your firm size measured by total assets.

_____ $10,000 or less
_____ More than $10,000 but less than or equivalent to $50,000
_____ More than $50,000 but less than or equivalent to $100,000
_____ More than $100,000 but less than or equivalent to $500,000
_____ More than $500,000 but less than or equivalent to $1 million
_____ More than $1 million

3. Which Industry/sector does your business operate in?

Please specify _____

4. What best describes the status of your business?

_____ Start up stage _____ Growth stage
_____ Maturity stage _____ Survival stage

5. How many people does your business employ on a regular basis (including the entrepreneur)?

_____ 2 to 5 people _____ 6 to 20 people
_____ 21 to 50 people _____ 51 to 100 people
_____ More than 100 people

6. What are the main objectives in starting up a small business?

_____ To be an entrepreneur _____ Financial rewards
_____ Unemployed before start-up _____ Career progression
_____ Tax credits or savings _____ Influence of family or friends
_____ Other (specify) _____

7. How many years of experience has the principal owner had managing or owning a business, including this business?

_____ No experience at all _____ 0 to 3 years
_____ 4 to 6 years _____ 7 to 9 years
_____ 10 to 15 years _____ More than 15 years

Appendix A, continued

8. What were the sources of funds used by the principal business owner upon starting the business?

_____ Personal savings
_____ Commercial banks
_____ Government assistance programs
_____ Other (specify) _____
_____ Family and friends
_____ Business angels
_____ Venture capitalists

9. How important do you think the following sources of financing are for a start-up business?

	Importance				
	Very				Not at all
	5	4	3	2	1
Personal savings	__	__	__	__	__
Family and friends	__	__	__	__	__
Relationship banking	__	__	__	__	__
Government assistance programs	__	__	__	__	__
Business angels	__	__	__	__	__
Venture capitalists	__	__	__	__	__

10. What are the common uses of financial services by your business to support daily operation and growth?

_____ Business credit cards
_____ Trade credit
_____ Lines of credit
_____ Vehicle loans
_____ Capital leases
_____ Other (specify) _____
_____ Personal credit cards
_____ Factoring
_____ Mortgages
_____ Equipment Loans
_____ Loans from partners/Individuals

11. What are the common purposes of using financial services for your business?

_____ Transaction purposes
_____ Credit related purposes
_____ Low financing costs
_____ Working capital management
_____ Financing business expansion
_____ Other (specify) _____

12. Where has your business obtained financial services in the past?

_____ Commercial bank
_____ Savings and loan association
_____ Finance company
_____ Brokerage or mutual fund
_____ Mortgage bank
_____ Saving bank
_____ Credit union
_____ Insurance company
_____ Leasing company
_____ Venture capital firm

13. How many times has your business applied for a loan in the past five years?

_____ Never
_____ 3 to 4 times
_____ 1 to 2 times
_____ More than 4 times

14. How many times has your business been denied for a commercial loan in the past five years?

_____ Never
_____ 3 to 4 times
_____ 1 to 2 times
_____ More than 4 times

Appendix A, continued

15. Does your business use trade credit for working capital purposes? If your answer is "No", skip Question 16.

_____ Yes _____ No

16. Does your business take advantage of the cash discount with free trade credit or use costly trade credit?

_____ Free trade credit only _____ Costly trade credit only _____ Both

17. What are the types of accounts held by your business for working capital purposes?

_____ Checking accounts _____ Saving accounts
_____ Money market accounts _____ Certificates of deposit
_____ Other (specify) _____

18. Has your business ever had cash flow difficulty? If never, skip Question 19.

_____ Never _____ Quite rare and unusual
_____ Occasionally _____ Fairly frequent but not permanent
_____ Uncertain

19. Which is/are the main cause(s) of cash flow difficulty?

_____ Late payment from customers
_____ Early payment to suppliers
_____ Difficulty in getting credit
_____ Unbalanced cash flow
_____ High levels of working capital required by business
_____ Other (specify) _____

20. How often does your business evaluate financial performance? If never, skip Question 21.

_____ Twice a month _____ Once a month
_____ Once a quarter _____ Twice a year
_____ Once a year _____ Never

21. What are the tools your business uses to evaluate financial performance?

_____ Profitability and efficiency ratios _____ Leverage ratios
_____ Other financial ratios _____ Cash conversion period
_____ Industry averages _____ Cash balances

22. In what time horizon does your business make future financial plans?

_____ 1 to 2 years _____ 3 to 5 years _____ Beyond 5 years

23. Please indicate the sources of capital your business is likely to use in the future.

_____ Commercial bank _____ Saving bank
_____ Savings and loan association _____ Credit union
_____ Finance company _____ Insurance company
_____ Brokerage or mutual fund _____ Leasing company
_____ Mortgage bank _____ Venture capital firm

Appendix A, continued

24. What is the expected exit strategy of your business in the future?

_____ Going public
_____ Systematic liquidation
_____ Outright sale
_____ Other (specify) _____

Demographic information of the principal business owner.

25. Gender of the principal business owner. _____ Male _____ Female

26. Age of the principal business owner.

_____ Below 30 _____ 30 to 39
_____ 40 to 49 _____ 50 to 59
_____ 60 and older

27. Ethnic group of the principal business owner.

_____ White _____ Black
_____ Hispanic _____ Asian
_____ Other

28. Highest level of education of the principal business owner:

_____ Less than high school degree (grade 11 or less)
_____ High school graduate or equivalent
_____ Some college but no degree granted
_____ Associate degree occupational/Academic program
_____ Trade School/vocational program
_____ College degree (BA, BS, AB, etc.)
_____ Post-graduate degree (MBA, MS, MA, Ph.D., JD, MD, DDS, etc.)

THANK YOU FOR COMPLETING THIS SURVEY! PLEASE RETURN IT IN THE ENCLOSED BUSINESS-REPLY ENVELOPE OR MAIL IT TO:
Dr. Wei He, School of Business, 4901 E. University, Odessa, TX 79762