

MICROENTERPRISE DEVELOPMENT PROGRAM SUCCESS: A PATH ANALYSIS OF FACTORS THAT LEAD TO AND MEDIATE CLIENT SUCCESS

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Through a path regression analysis of data from the Vermont Micro Business Development Program, this study examines the relationships between client characteristics, program activities, interim outcomes, and impacts, to understand factors that lead to and mediate client success in microenterprise development programs and as entrepreneurs. Statistics demonstrated excellent model fit to the data. The interim outcome of improved personal well-being was related to more sources of capital, course completion, being partnered and younger. Starting a business was related to having more financial resources and mediated by improved well-being. Clients who experienced an increase in income had previous business experience and an increase in assets. Increased income was mediated by improved well-being and business start. Reduction in public assistance was related to course completion, more sources of capital, not being in poverty, and increased assets. Increased assets were related to more education, not being in poverty, and more sources of capital. Being older, more sources of capital, a larger family, and improved well-being led to job creation. Overall, access to more financial resources enabled clients to meet personal and business goals and work toward self-sufficiency. The results suggest implications for public policy regarding business training and loan financing.

Keywords: Micro business; microenterprise; evaluation; path analysis; low-income.

1. Introduction

Microenterprise development (MED) training and assistance programs that serve lower-income individuals have grown over the past sixteen years from a handful of programs to over 500 throughout the United States (Aspen Institute, 2005). The premise behind MED theory is that through services, including training, technical assistance, access to capital,

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and financial literacy, low- to moderate-income individuals can start or expand a micro business to generate income. MED training fulfills personal, family, and community needs by creating income, building assets, and contributing to local employment creation. This theory in action assists disadvantaged individuals to work their way out of poverty through self-employment. For the purposes of this study, a microenterprise business, also referred to as a micro business or being self-employed, is defined as any type of business that has fewer than five employees and generally requires \$35,000 or less in start-up capital. In general, micro business owners do not meet the eligibility requirements with regard to credit or collateral to access the traditional commercial banking sector (AEO, 2005).

Much attention has been given to MED by policy makers, non-government and government organizations as a strategy to alleviate poverty and promote economic well-being. Although some studies show mixed results regarding the success of MED initiatives as a tool to alleviate poverty, many evaluations have shown that MED programs are effective at improving both the economic and non-economic lives of many disadvantaged Americans (Klein, Alisultanov and Blair, 2003; Raheim and Alter, 1998; Sanders, CK, 2002; Schmidt *et al.*, 2006; Schreiner, 1998; Soto, 2002; Spalter-Roth *et al.*, 1994).

Through a path regression analysis (PA) of data from the Vermont Micro Business Development Program (MBDP), this study examines the relationship between client characteristics and course completion and MBDP client achievement of interim outcomes, defined as improved personal well-being and business start-up, and program impacts, including increased income, reduced federal assistance, job creation, and increases in assets. This study builds on existing research that demonstrates the importance of demographics and experiences, such as having previous business experience, as well as access to resources to the achievement of short- and long-term success in entrepreneurship. A key finding is the impact of having access to more sources of capital on MED success. Access to capital was a significant predictor of improved personal well-being, business start, reduced federal assistance, gaining assets, and job creation. This study also adds a comprehensive analysis of MED program success theory to the literature by utilizing a PA to simultaneously analyze multiple independent, mediator, and dependent variables.

2. Literature Review

2.1. Microenterprise development in the United States and Vermont

In 2004, MED programs served the 10.3 million self-employed workers in the United States, with 70 percent reporting that more than half of their clients were low-income, defined as below 80 percent of Housing and Urban Development median income (Hipple, 2004). From 2000–2002, employment in the microenterprise sector grew by 3.5 percent compared to private sector employment that decreased by 0.7 percent (Sanders, S, 2002). In Vermont, self-employment represented 22 percent of private employment in 2002, which is second highest in the United States (Levy-Benitez, Sanders and Hansen, 2003). Data from a University of Vermont statewide representative survey corresponds with this figure, showing that 22.7 percent of respondents reported being self-employed (Cranwell, 2004). Because self-employment is an important sector to the economy, Vermont offers MED training programs

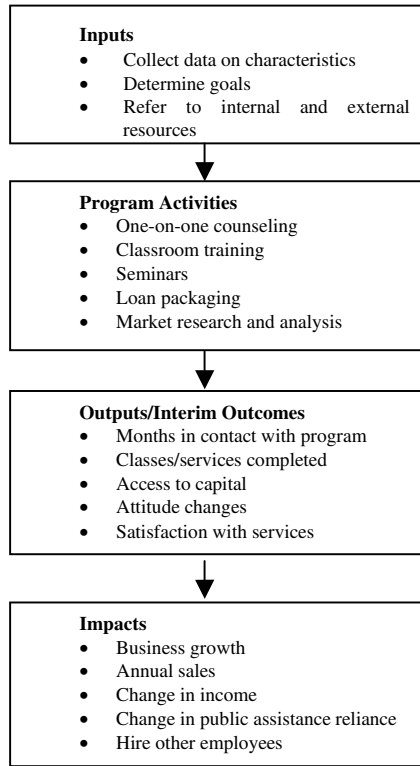


Fig. 1. Micro business development program theory.
Source: MBDP (2000).

to low- to moderate-income residents through the Micro Business Development Program (MBDP).

The Vermont MBDP is a statewide program of Vermont's five Community Action agencies. The MBDP uses a MED model of training and technical assistance, depicted in Figure 1, similar to those used by other MED programs (Blair and Klein, 2001; Clark and Kays, 1995, 1999; Edgcomb, Klein and Clark, 1996; Philadelphia Development Partnership, 1999; Raheim and Friedman, 1999). Strategies employed by MBDP include: business planning, individual business counseling, post-start-up support, classroom training, access to capital, loan packaging and referrals to resources (MBDP, 2000). Previous research conducted on Vermont's MBDP shows that after receiving services, clients have been successful at accessing capital, starting a business, creating other jobs, increasing their annual household income, and decreasing reliance on public assistance (Cranwell and Kolodinsky, 2002, 2003; Schmidt *et al.*, 2006).

2.2. Conceptual model

Studies in the field of MED have demonstrated that factors such as client demographics, previous business experience, and access to capital are associated with client success in MED

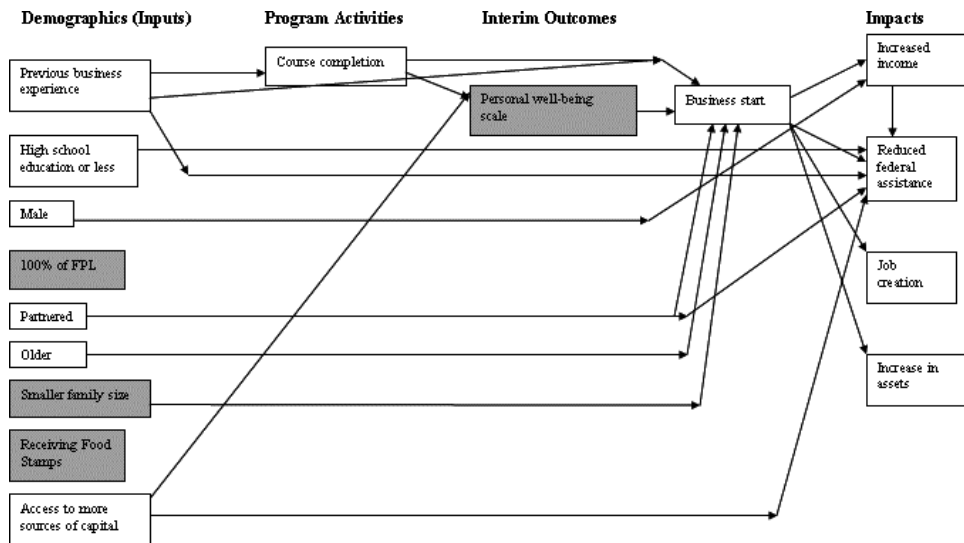


Fig. 2. Conceptual model of microenterprise development program success theory.

Note: Non-shaded boxes and the hypothesized direction of effects are based on the literature and represent variables examined by previous studies. The shaded boxes represent variables not tested in other studies but included in this study.

programs (Aspen Institute, 2000; Edgcomb, 2002; Else and Gallagher, 2000; Raheim and Friedman, 1999; Rugg, 2002; Soto, 2002; Spalter-Roth *et al.*, 1994). The conceptual model used in this study (Figure 2) builds on previous research conducted on interrelationships between client characteristics, program inputs, and the achievement of success and is based on Weiss’s (1998) model of program theory. Weiss (1998) states that an agency’s program theory is a set of hypotheses upon which people build their program plans and explain the causal links that tie program inputs to expected program outputs.

Figure 2 shows that there are four general areas involved in MED client success, including hypothesized inputs, program activities, interim outcomes (short-term) and desired end results (long-term impacts), as points of data collection (Weiss, 1998). In Figure 2, the non-shaded boxes and the hypothesized direction of effects (indicated by the arrows) are based on the literature and represent variables examined by previous studies that are included in this study. The shaded boxes represent variables not tested in other studies but included in this study.

As depicted in Figure 2, literature demonstrates that achievement in MED programs is related to certain client demographics, access to resources, previous experience, development of social and human capital, and successful business start-up. These factors lead to both short- and long-term gains for clients.

2.2.1. Impact of client demographics on success

Research shows that certain client demographics are related to business start-up and longer-term success in MED programs. An MED study in Iowa showed that being married was

associated with a higher probability of participant business start-up (Raheim and Friedman, 1999). This study found no associations between business start-up and age, gender, number of children in the household, and number of dependents. In accord with this finding, a study on Vermont MBDP clients showed that persons in a two-parent household (partnered or married) were significantly more likely at the 0.05 level to no longer receive welfare compared to single-parent households. No significant relationships were found between age, gender, and educational status and decreased reliance on welfare (Schmidt *et al.*, 2006). However, Soto (2002) found that being male was a significant predictor for increasing the family's annual household income to be above the poverty threshold. Soto also found that having a high school education or less and spending more time in the program were significant predictors for reducing family federal assistance benefits. Further, Spalter-Roth *et al.* (1994) reported that successful entrepreneurs are more likely to be older and have children above preschool age. Based on this literature, varying demographics impact a client's achievement of short- and longer-term success, with inconsistency in findings overall possibly due to external factors not accounted for in the models.

2.2.2. *Impact of resources and experience on success*

A consistent finding across the literature is that clients who enter MED programs with previous business experience, have access to financial resources, and who have other preparations in place are more likely to start a successful business. Several studies on MED programs throughout the United States showed that starting a business was associated with having previous business or relevant work experience, entering the program with a definite business idea, having a completed business plan, and securing needed financing (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002). Similarly, another study showed that successful entrepreneurs are more likely to have access to financial resources, job training, and previous work experience (Spalter-Roth *et al.*, 1994). A study on Vermont MBDP clients also showed that persons who entered the program with an established business were significantly more likely at the 0.05 level to no longer receive welfare benefits compared to those who did not have previous business experience (Schmidt *et al.*, 2006).

Along the same line, Raheim and Friedman (1999) reported that microentrepreneurs in Iowa who had previous business and work experience and were employed part-time at the time of enrolment were more likely to have started a business, with statistical significant at a level of 0.05 or higher. This study found no associations between business start and having worked part-time or full-time prior to enrolment, full-time employment at the time of enrolment, and type of business training received. Finally, a report by the Aspen Institute (2000) stated that other characteristics that clients need for success include a willingness to take on self-employment, previous business experience, and entrepreneurial skills such as organization, motivation, and communication skills. These collective findings demonstrate the importance of access to capital and previous experience, in the form of business skills or employment, in aiding client success as a microentrepreneur.

2.2.3. *Impact of improved personal well-being and social capital on success*

Beyond the characteristics of clients and their experiences and background at their intake to MED programs, research shows that skills clients develop while in the program lead to varying levels of success as a microentrepreneur. MED training assists clients to improve their personal well-being through an increase in intangible assets or “soft skills,” including increased self-esteem and self-worth and positive attitude changes (Blair and Klein, 2001; Clark and Huston, 1993; Clark and Kays, 1995, 1999; Else and Gallagher, 2000; Mount Auburn Associates, 1994; Philadelphia Development Partnership, 1999; Servon, 1998; Wehrell, 2002). This foundation, in addition to the building of social capital and community networks, enables small business owners to be more successful in their work of starting a business (Clark and Huston, 1993; Clark and Kays, 1995, 1999; Cranwell and Kolodinsky, 2002; Edgcomb *et al.*, 1996; Edgcomb, 2002; Else and Gallagher, 2000; Raheim and Friedman, 1999; Rugg, 2002; Servon, 1998).

Raheim and Alter (1998) showed that participants of the Self-Employment Investment Demonstration (SEID) and the Rivercities of Iowa/Illinois Self-Employment Program (RISE) reported improved family relationships and self-esteem after completing training. This positive change was related to having completed training rather than to whether a client started a business or not. Clark and Kays (1999) demonstrated that through the relationships and networks that clients established while working with MED programs, clients ultimately gained financial capital by connecting to alternative and mainstream financial and business sectors. In accordance, Servon’s (1998) research showed that with the establishment of relationships between borrowers and business consultants where none previously existed, disenfranchised women in MED programs gained access to tangible resources such as credit and training and intangible resources such as support, networking, and mentoring. Thus, the development of social capital and improved personal well-being, through coursework, training, and work with business counselors, places MED clients in a better position to improve their credit and gain access to needed financial resources.

2.2.4. *Impact of business start on success*

Once clients are in MED programs and have started a business, research shows that their business leads to longer-term success, including increased income, decreased reliance on public assistance, and business revenue. This is the ultimate goal of most MED programs — for clients to gain economic self-sufficiency through their business alone or as supplemental income. Soto (2002) reported that being self-employed was a significant predictor for clients who reported an increase in annual household income above the poverty threshold and an increase in business earnings from the first to the last year of the study. Further, the study on Vermont MBDP clients showed that entrepreneurs who reported a greater loss in annual household income due to their business (average $-\$5,600$) reported no longer receiving welfare benefits compared to those who experienced a more mild loss of annual household income (average $-\$768$). The researchers speculate that the loss in household income was related to taking on more business assets. In addition, clients who reported higher average business sales ($\$22,900$) reported no longer receiving welfare compared to those who earned

a lower average in sales (\$2,300). Significance for both tests was found at the 0.05 level (Schmidt *et al.*, 2006). This research shows that once a business is established, entrepreneurs are able to earn a living and improve their financial situation as a result.

2.3. Research questions

The conceptual model and literature reviewed for this study demonstrate that factors, including client demographics, previous business experience, access to capital, and gains in social capital and personal well-being, are associated with client success in MED programs. However, most of these studies use bivariate analysis or multivariate analysis that employ regression models examining one dependent variable at a time. Other studies are qualitative in nature, using interviews, case studies and anecdotal evidence to determine what factors lead to client success. This present study on Vermont MBDP clients builds and expands on this literature by conducting a path regression analysis using maximum likelihood estimation. This type of analysis simultaneously determines the relationship of all equations in the model, including: (1) independent variables of client characteristics (previous business experience, education, gender, poverty, partnered, age, family size, food stamp receipt, and access to capital); (2) mediator variable of course completion; and (3) client achievement of interim outcomes (improved personal well-being and business start-up) and program impacts (increased income, reduced federal assistance, job creation, and an increase in assets). The model is then displayed pictorially, indicating correlations and covariances of variables.

The following research questions are addressed through this analysis that add to the larger body of knowledge: (1) What client demographics and activity completion differentiate program participants who achieve interim outcomes and longer-term impacts? (2) What effect does the achievement of interim outcomes have on achieving longer-term impacts? (3) What effect does the achievement of longer-term impacts have on achieving other longer-term impacts? By answering these questions, this study aims to add to the literature to better understand what type of clients and levels of achievement lead to increased success among low- to moderate-income MED clients, with the ultimate goal of reaching economic self-sufficiency.

3. Methods

3.1. Sample

The dataset used in this study combines data from three MBDP evaluation projects conducted from 2001–2005: (1) the Statewide MBDP client survey (SM) ($n = 136$); (2) the Vermont Kitchens Project (VKP) ($n = 69$); and (3) the Child Care Business Initiative (CCBI) ($n = 97$), for a total sample of 302 participants. The researchers combined the three datasets to increase the robustness of the study. Combining the datasets were possible because consistent survey instruments were used for all evaluations to ensure that identical variables were collected. As clients could have participated in more than one project, duplicated responses were removed from the sample. The intake profile of the 302 participants

Table 1. Intake characteristics of study participants.

Characteristic		Statistic
Gender	Female	77% (231)
	Male	24% (71)
Ethnicity	Caucasian	91% (237)
	Mixed decent	4% (10)
	African American	2% (5)
	Native American	2% (5)
	Asian	1% (3)
Age	Range	20–75
	Mean/median	40
	Mode	36
Children	Children in household	63% (190)
	No children in household	37% (110)
Family Size	Range	1–9
	Average	3
Relationship Status	Single parents	31% (93)
	Married/partnered	48% (143)
	Single/divorced/widowed	53% (158)
Education	High school degree/GED or less education	63% (190)
	1–4 years of higher education	37% (111)
Business Experience	No prior experience	65% (191)
	Prior experience	35% (104)
Public Assistance	Food stamps	33% (100)
	TANF	15% (46)
	Housing assistance	7% (22)
	Living in public housing	2% (7)
Status in Labor Force	Employed or self-employed	58% (174)
	Unemployed or not in labor force	42% (126)
Poverty Status	At or below 100% FPL	64% (194)
	Above 100% of FPL	36% (108)

included in the dataset is presented in Table 1. The profile of participants parallels that of other studies conducted in the field, with the exception of race^a (Blair and Klein, 2001; Clark and Kays, 1995, 1999; Philadelphia Development Partnership, 1999; Rugg, 2002).

The sample consisted mostly of females (77 percent or 231) and 23 percent (71) were male. The majority of those participating self-identified as being Caucasian (91 percent or 237) and 9 percent (23) self-identified as being from a minority or mixed racial background. Participant ages ranged from 20–75 years with a mean and median of 40 years and mode of 36 years. 63 percent (190) of clients had children and 37 percent (110) did not. The average family size was three with a range from one to nine family members. 31 percent (93) were single parents. 48 percent (143) were married or living with a partner and 53 percent (158) were single, divorced, or widowed. 63 percent (190) reported having a high school degree or

^aThe U.S. Census of Population and Housing (2000) reports that 98 percent of Vermont residents are white. Thus the racial profile of MBDP clients resembles that of Vermont. Other studies in the field of microenterprise were conducted primarily in areas with higher minority representation.

GED equivalent or less education and 37 percent (111) had from one to four years of higher education. 35 percent (104) reported having prior business experience and 65 percent (191) had no prior business experience.

Most respondents reported receiving some form of public assistance at their intake to the program, with 33 percent (100) receiving food stamps, 23 percent (70) disability income, 15 percent (46) Temporary Assistance for Needy Families (TANF), 7 percent (22) housing assistance, and 2 percent (7) living in public housing. 58 percent (174) were employed or self-employed and 42 percent (126) were unemployed or not in the labor force. Clients surveyed were mostly low-income with 64 percent (194) being at or below 100 percent of the federal poverty level (FPL) and 36 percent (108) slightly above this threshold.

3.2. Procedure

Data was collected by MBDP through telephone surveys in March 2003 (for SM), January 2004 (VKP), and February 2005 (CCBI). A letter sent from project staff one week prior to the start of the survey was initially used to contact clients. This letter informed clients about the study, estimated duration of the survey, that participation was optional and would not impact the services they received, and responses would be kept confidential. The surveys were administered using computer-aided telephone interviewing (CATI). Trained interviewers conducted the survey during daytime and evening hours and up to eight attempts were made on each number.

The studies used a reflexive control design, similar to that of other research in the field, where participant outcomes after MED training are compared to the baseline collected at intake before receiving services (Clark and Kays, 1995, 1999; Cranwell and Kolodinsky, 2002, 2003; Klein *et al.*, 2003; Rugg, 2002; Schmidt *et al.*, 2006). Consistent survey instruments were used for all three projects to ensure reliability and validity of the measures and for comparability of the data. The survey instrument was developed in collaboration with MBDP Program Coordinators and Evaluators, using models of previous surveys conducted for MBDP (Cranwell and Kolodinsky, 2002, 2003; Schmidt *et al.*, 2006) and other researchers (Clark and Kays, 1995, 1999; Klein *et al.*, 2003). The survey instruments consisted of closed-ended questions to collect nominal, ordinal and interval variables as well as open-ended questions to obtain short-answer, qualitative responses. Question topics include: reasons for entering the program, services used, business status and development, business and personal income, receipt of public assistance, asset development, job creation, skills gained, social and human capital gains, gains in personal well-being, satisfaction, and feedback for program improvement.

3.3. Variables and measures

3.3.1. Demographic variables

Demographic variables or inputs clients bring to the program (see Weiss, 1998) used in this model included: previous business experience, education, gender, status of federal poverty

level, marital status, age, family size, food stamp receipt, and access to capital, as indicated in Figure 2. These variables are considered independent variables in the model. Demographic information was gathered at the client's intake to the program. Previous business experience is a dummy variable with "0" being having no previous business experience and "1" having previous business experience at client intake to the MBDP program (Aspen Institute, 2000; Edgcomb, 2002; Else and Gallagher, 2000; Raheim and Friedman, 1999; Rugg, 2002; Spalter-Roth *et al.*, 1994). Education is also a dummy variable with "0" being more than high school education and "1" having a high school education or less (Soto, 2002). Gender is also a dummy variable with "0" being male and "1" being female (Soto, 2002). Poverty status is a dummy variable with "0" being above 100 percent of the FPL and "1" being at or below 100 percent of the FPL. Marital status, termed "partnered" for this study, is a dummy variable with "0" being not partnered (this includes single, separated, divorced, or widowed) and "1" being partnered (married or living with a significant other) (Raheim and Friedman, 1999).

Age is a continuous variable based on self-reported data collected at program intake (Spalter-Roth *et al.*, 1994). Family size is also a continuous variable based on self-reported data collected at program intake (Spalter-Roth *et al.*, 1994). Food stamp receipt is a dummy variable based on federally reported data with "0" being not receiving food stamps and "1" being receiving food stamps. Food stamp receipt was used as an indicator of public assistance because it increased the robustness of the model; twice as many clients received food stamps (33%) at intake compared to 15 percent or fewer who received other forms of public assistance. Access to sources of capital is a continuous variable based on the number of sources of capital clients indicated having accessed for their business (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002; Spalter-Roth *et al.*, 1994). Access to sources of capital is considered a demographic variable in this model and not a program output, as seen in other models, because preliminary linear regression analysis showed that none of the demographic variables were significant predictors of this achievement. Also, several clients came into the MBDP program with access to sources of capital.

3.3.2. *Program activities*

Program activities represent the manner in which the program is implemented (Weiss, 1998). The program activity variable included in the model was course completion, as indicated in Figure 2, with "0" being no courses were completed and "1" being completed at least one course (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002; Spalter-Roth *et al.*, 1994). This variable was used to represent program activities because course offerings and services clients may have received varied based on the focus of the original study (i.e., VKP focused on food-based business classes). Further, MBDP operates using an "a la carte" style where clients may take courses at their convenience and courses offered vary across the state of Vermont. In this case, no single course completion could be tested for all clients. This variable is included in the model as a mediator variable because of the importance of course

completion on client success as demonstrated by other researchers (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002).

3.3.3. *Interim outcomes*

Interim outcomes are the variables that are the immediate result of participation in the MBDP program or chain of responses that the activities elicit (Weiss, 1998). Interim outcomes included in this study were social and human capital development and business start, as indicated in Figure 2. These variables are included as both dependent and mediator variables. The variable “personal well-being scale” was developed for this study through a factor analysis of five variables in SPSS as an indicator of social and human capital development (Clark and Huston, 1993; Clark and Kays, 1995, 1999; Cranwell and Kolodinsky, 2002; Edgcomb *et al.*, 1996; Raheim and Alter, 1998; Servon, 1998). Clients were asked five questions about their lives, attitude changes, and program satisfaction, which were included in a factor analysis. One principal component was extracted to create the personal well-being variable that explained 62 percent of the variance of the variable. All variables included in the factor analysis and the personal well-being scale were tested for reliability and showed high internal consistency with a Chronbach Alpha score of 0.86. An Alpha of 0.70 or greater is considered to be acceptable (Nunnally, 1978). Business start-up is a dummy variable with “0” being did not start a business and “1” being started a business (Raheim and Friedman, 1999). 96 percent (76) of businesses that were started were first-time business owners with no previous experience.

3.3.4. *Desired end results: Impact*

The desired end results are the longer-term impacts that may occur based on the given program theory (Weiss, 1998). Levels of impact documented in the literature that are often longer-term after participation include increased income, reduced federal assistance, job creation, and an increase in assets, as indicated in Figure 2. These variables are included in the model as dependent and mediator variables, as achievement of impacts may lead to achieving other impacts. Clients may have achieved one or more types of impact in this model of study. Increased income is a dummy variable with “0” being income was self-reported to have decreased or stayed the same and “1” being self-reported increase in income (Clark and Kays, 1995, 1999; Klein *et al.*, 2003; Raheim and Alter, 1995, 1998). Reliance on federal assistance is also a dummy variable with “0” being assistance had increased or stayed the same and “1” being decreased federal public assistance (Clark and Kays, 1995, 1999; Klein *et al.*, 2003; Raheim and Alter, 1995, 1998).

Job creation is also a dummy variable with “0” being client did not create any other jobs and “1” being client did create other jobs through their business (Else and Gallagher, 2000; Raheim and Alter, 1998; Raheim and Friedman, 1999; Wehrell, 2002). Clients were asked if they had either purchased a home or achieved any post-secondary education during the survey. If clients have achieved one or both, MBDP used this information as an indicator of

increased assets. This data was recoded to a dummy variable with “0” being did not increase their assets and “1” being did increase their assets (Clark and Kays, 1999; Soto, 2002).

3.4. Data analysis

An SPSS data file that combined identical variables from the three datasets was developed. An analysis of descriptive statistics for demographic variables was conducted to ensure that the sample was similar to other samples used in related research and the larger MBDP population. Preliminary analysis to determine the relationship between variables was conducted including Pearson correlation and logistic and linear regressions. A path regression analysis (PA) using maximum likelihood estimation was carried out using AMOS 5.0 to test the MBDP client data against the hypothesized effects of the model in Figure 2 (Arbuckle, 2003; Arbuckle and Wothke, 1999). PA is an excellent methodology for examining complex and multidimensional relationships as it provides complete and concurrent tests of all relationships exhibited in the model (Byrne, 2001; Kline, 2005). PA is advantageous because it uses maximum likelihood estimation and model iteration (Meyers, Gamst and Guarino, 2006). Parameter estimates and model fit statistics were used to evaluate the model fit of the data, including: chi square (X^2), incremental fit index (IFI), comparative fit index (CFI), non-centrality parameter estimate (NCP), root mean square error of approximation (RMSEA), Akaike’s information criterion (AIC), expected cross-validation index (ECVI) and the Hoelter’s Critical N (CN) (Byrne, 2001; see also Hoyle and Panter, 1995; Hu and Bentler, 1995; Kline, 2005; Meyers *et al.*, 2006).

4. Results

Figure 3 summarizes the standardized results of the PA, which is presented in the discussion that follows, and Table 2 summarizes the unstandardized results of the analysis. The model was considered to be identified as it met the rank and order conditions for simultaneous equation models as described by Pindyck and Rubinfeld (1998). The model used in this study is recursive, indicating that the structural equations form a causal chain and there are no contemporaneous feedbacks between endogenous variables and their disturbances are not correlated (Kline, 2005; see also Strotz and Wold, 1960; Wallis, 1972).

The double-headed arrows presented in Figure 3 represent correlation between independent variables, as initially determined through a Pearson correlation conducted in SPSS. The single-headed arrows represent the direct effects or “paths” between variables and the number near the head of the arrow represent the β coefficient of each path as presented in AMOS. The seven endogenous variables in the model have error estimates attached, representing all causes of an endogenous variable that are omitted from the model.

4.1. Achievement of interim outcomes

Figure 3 and Table 2 show the relationship between client characteristics and experiences and the achievement of interim outcomes, defined in this study as improved personal

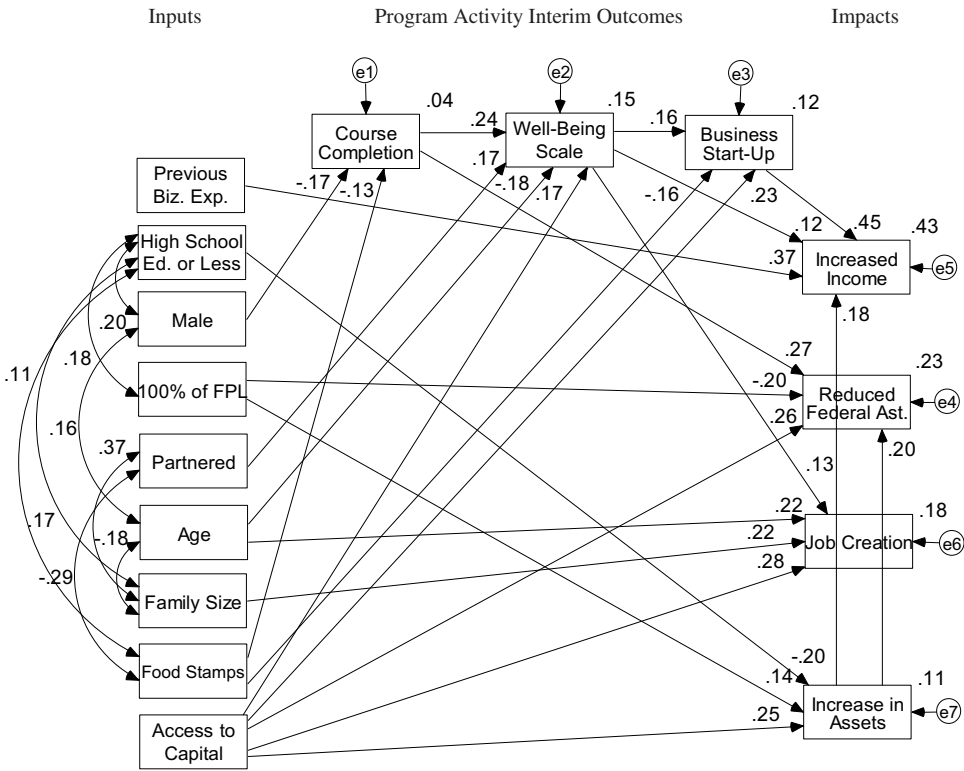


Fig. 3. Path analysis of microenterprise development program success theory, standardized regression weights. Note: All paths are significant at the 0.01 or 0.05 levels with exception of job creation to well-being. See Table 2 for specific values. This variable was kept in the model because it increased the R² value from 0.16 to 0.18 and it is approaching significance with a p-value of 0.12.

well-being and business start-up. Looking at improved personal well-being, the model shows that increased personal well-being is significantly related to being partnered ($\beta = 0.17, p \leq 0.01$), younger ($\beta = -0.18, p \leq 0.01$), having access to more sources of capital ($\beta = 0.17, p \leq 0.01$), and course completion ($\beta = 0.24, p \leq 0.01$) ($R^2 = 0.15$). Regarding business start-up, the model shows that starting a business is significantly related to having access to more resources and an improved well-being ($R^2 = 0.12$). Specifically the model shows that not receiving food stamps at intake ($\beta = -0.16, p \leq 0.05$) and having access to more sources of capital ($\beta = 0.23, p \leq 0.05$) predict client business start-up, which is also mediated by improved personal well-being ($\beta = 0.16, p \leq 0.05$).

4.2. Achievement of impacts

Figure 3 and Table 2 also show the relationship of client characteristics, experiences, and interim outcomes to the achievement of longer-term impacts. These impacts are defined in

Table 2. Unstandardized regression coefficients in path analysis.

Endogenous Variable	Exogenous and Mediator Variables	<i>b</i> Estimate	Standard Error of <i>b</i>	Critical Ratio	R ²
<i>Interim Outcomes</i>					
Well-Being Scale	Course completion	0.500***	0.134	3.735	0.15
	Age	-0.019***	0.006	-2.949	
	Partnered	0.350***	0.123	2.839	
	Access to capital	0.178***	0.064	2.757	
Business Start-Up	Receive food stamps	-0.176**	0.073	-2.434	0.12
	Access to capital	0.127***	0.036	3.500	
	Well-being	0.084**	0.039	2.142	
<i>Impacts</i>					
Increased Income	Previous business experience	0.344***	0.043	7.934	0.43
	Gained assets	0.165***	0.055	2.991	
	Well-being	0.055**	0.025	2.220	
	Business start-up	0.390***	0.047	8.211	
Reduced Public Assistance	Course completion	0.290***	0.099	2.934	0.23
	Access to capital	0.139***	0.047	2.985	
	≤100% FPL	-0.215**	0.090	-2.380	
	Gained assets	0.204**	0.019	2.236	
Job Creation	Age	0.010***	0.003	2.875	0.18
	Access to capital	0.127***	0.033	3.822	
	Family size	0.062***	0.021	2.990	
	Well-being	0.055	0.036	1.532	
Gained Assets	High school education or less	-0.211***	0.077	-2.729	0.12
	≤100% FPL	0.149**	0.077	1.925	
	Access to capital	0.131***	0.038	3.414	

*** $p < 0.01$; ** $p < 0.05$.

the study as increased income, reduced public assistance, job creation, and asset development. The model shows that clients who reported an increase in annual household income had previous business experience ($\beta = 0.37, p \leq 0.01$) and an increase in assets ($\beta = 0.11, p \leq 0.05$). Increased annual income is also mediated by starting a business ($\beta = 0.45, p \leq 0.01$) and having an improvement in personal well-being ($\beta = 0.12, p \leq 0.05$). The dependent variable of increased income received the highest R² value of 0.43, indicating that the model explains 43 percent of the variance in this dependent variable.

The model also shows that reduced public assistance benefits is related to having access to more financial resources, including more sources of capital ($\beta = -0.20, p \leq 0.01$), not being in poverty ($\beta = 0.26, p \leq 0.05$), and more assets ($\beta = 0.20, p \leq 0.05$). Reduced reliance on public assistance is also mediated by course completion ($\beta = 0.27, p \leq 0.01$). The model explains 23 percent of the variance for reduced public assistance. Being

older ($\beta = 0.22, p \leq 0.01$), having access to more sources of capital ($\beta = 0.28, p \leq 0.01$), and having a larger family size ($\beta = 0.22, p \leq 0.01$) were significant predictors of microentrepreneurs who created jobs other than their own. Job creation is also mediated by an improved personal well-being, which was approaching significance ($\beta = 0.13, p = 0.12$). This variable was kept in the model because it increased the equation's R^2 value from 0.16 to 0.18 and was approaching significance at the 0.10 level. Finally, the model showed that asset development, defined as the completion of post-secondary education and/or the purchase of a home, is related to having more than a high school education ($\beta = -0.20, p \leq 0.01$), being in poverty at intake ($\beta = 0.14, p \leq 0.05$), and having access to more sources of capital ($\beta = 0.25, p \leq 0.01$). The model explains 12 percent of the variance for this dependent variable.

4.3. Model fit statistics

The primary interest in PA is the extent to which a hypothesized model “fits” or adequately describes the sample data. There are two aspects to analyze for model fit, including: (1) the parameter estimates, and (2) model fit statistics (Byrne, 2001). Examining the results based on criteria presented in Byrne (2001) and Kline (2005), none of the parameter estimates are greater than one; none of the standard errors are excessively large (approaching one) or small (approaching zero); and all critical ratio values are greater than ± 1.5 based on the parameter significance value of 0.10. Examination of the standardized estimates in Figure 3 and unstandardized estimates in Table 2 shows that both are reasonable and statistically significant (with one exception as noted) and all standard errors are appropriate.

Researchers promote the use of various fit statistics, including absolute and incremental fit, because there is little consensus concerning the best index of overall fit. Indexes included in this analysis are: X^2 , IFI, CFI, NCP, RMSEA, AIC, ECVI and CN (Byrne, 2001; Hoyle and Panter, 1995; Hu and Bentler, 1995; Kline, 2005; Meyers *et al.*, 2006). The results of the fit tests are presented in Tables 3–9. The MBDP model is compared to the saturated (complete relation among variables) and/or independence model (no relation among variables) for all statistics. Overall, the model met the accepted criteria for six of the seven model fit statistics, indicating that the model is an excellent fit of the data and the sample size is adequate for the analysis conducted (Byrne, 2001).

Table 3 reports the model fit summary statistics for absolute fit. The MBDP model has 64 parameters, a X^2 value of 120.997 and 88 degrees of freedom ($p \leq 0.01$). A desirable X^2 statistic has a significance level greater than 0.05 so the researcher does *not* reject the null hypothesis (H_0), which indicates that the model fits the population. With insignificance, the test supports the researcher's model (Byrne, 2001; Kline, 2005; Meyers *et al.*, 2006). Table 3 shows that the model X^2 statistic is significant, indicating that the model may not be the best fit of the data. However, researchers suggest using other model fit tests because of the X^2 sensitivity to sample size (Byrne, 2001; Kline, 2005; Hu and Bentler, 1995).

Table 4 shows the results of the incremental fit indexes for the model, the IFI and CFI. These measures assess the fit of the proposed model relative to the independence model, which assumes no relationships in the data. The measures indicate the improvement of the

Table 3. Model fit summary.

	No. of Parameters	X^2	Degrees of Freedom	P	N
MBDP model	64	120.997	88	0.011	302
Saturated model	152	0.000	0		-
Independence model	16	504.151	136	0.000	-

Table 4. Baseline comparisons model.

	IFI	CFI
MBDP model	0.921	0.910
Saturated model	1.000	1.000
Independence model	0.000	0.000

Table 5. Non-centrality parameter estimate model.

	NCP	LO 90	HI 90
MBDP model	32.997	8.092	65.952
Saturated model	0.000	0.000	0.000
Independence model	368.151	303.196	440.682

hypothesized model compared with that baseline. A value of 0.90 or greater for both the IFI and CFI is deemed acceptable (Byrne, 2001; Hoyle and Panter, 1995; Hu and Bentler, 1995). The IFI and CFI statistics for the MBDP model are 0.92 and 0.91 respectively, indicating that the hypothesized model represents an adequate fit to the data.

The NCP is a fixed parameter with associated degrees of freedom and functions as a measure of the discrepancy between the population covariance matrix and the specified structure of the hypothesized model. The larger the NCP value, the farther apart the hypothesized model is from H_0 (Steiger, 1990). Table 5 shows that the MBDP model yielded a NFP value of 32.997 and a 90 percent confidence level that the true value falls between 8.092 and 65.952. This small value indicates that the hypothesized model is an appropriate fit of the study population.

The RMSEA is the average of the residuals between the observed correlation/covariance from the sample and the expected model estimated for the population. RMSEA values of less than 0.05 and PCLOSE (test of close fit) values of greater than 0.50 indicate good fit (Browne and Cudeck, 1993; Meyers *et al.*, 2006). Table 6 shows that the MBDP model

Table 6. Root mean square error of approximation model.

	RMSEA	LO 90	HI 90	PCLOSE
MBDP model	0.035	0.017	0.050	0.951
Independence model	0.095	0.086	0.104	0.000

Table 7. Akaike's information criterion model.

	AIC
MBDP model	248.997
Saturated model	304.000
Independence model	536.151

Table 8. Expected cross-validation index model.

	ECVI	LO 90	HI 90	MECVI
MBDP model	0.827	0.744	0.937	0.853
Saturated model	1.010	1.010	1.010	1.070
Independence model	1.781	1.565	2.022	1.788

Table 9. Hoelter's critical *N* model.

	HOELTER 0.05	HOELTER 0.01
MBDP model	276	303
Independence model	99	106

yielded a RMSEA value of 0.035, with a 90 percent confidence interval of 0.017 and 0.05, and PCLOSE value of 0.95. This test indicates that the model is an excellent fit of the data.

The AIC (Akaike, 1987) test is used to compare the MBDP model to the saturated and independence models. A smaller AIC value for the MBDP model is desirable, indicating the model represents a better fit of the hypothesized model. These measures also reflect the extent to which parameter estimates from the original sample will cross-validate in future samples (Hu and Bentler, 1995). Table 7 shows an AIC value of 248.997 for the MBDP model, which is lower than the values received for the saturated (304) and independence models (536.151), indicating the model is a good fit of the hypothesized model.

The ECVI measures the discrepancy between the fitted covariance matrix in the analyzed sample and the expected covariance matrix that would be obtained in another sample of equivalent size. The model with the smallest ECVI value is the best fit (Browne and Cudeck, 1993). Table 8 shows that the MBDP model yields the smallest ECVI value of 0.827, indicating this model exhibits the greatest potential for replication.

The CN fit statistic focuses directly on the adequacy of sample size rather than on model fit. Hoelter (1983) proposed that a value in excess of 200 is indicative of a model that adequately represents the sample data. Table 9 shows that both CN values of 276 at the 0.05 level and 303 at the 0.01 level are adequate, indicating that the sample size used in this study is sufficient to yield an adequate model fit (Hu and Bentler, 1995).

5. Discussion

The findings of this study correspond to related literature discussed in the conceptual model, as results suggest that certain client characteristics and achievement of mediator variables

predict an MBDP client's likelihood of achieving success through micro business development. Model fit statistics demonstrate that overall, the model is robust and suggest that causal relationships exist between variables as described by the model. Related research on MED programs show that relationships exist between client demographics and activities and the achievement of interim outcomes and impacts. The following discussion reviews the key conclusions for each interim outcome and impact depicted in the model, in light of the literature previously discussed.

Regarding improved personal well-being, previous research shows that education and financial resources through completion of MED training and access to capital are factors that lead to a person's improved self-esteem and confidence (Clark and Kays, 1995, 1999; Mount Auburn Associates, 1994; Raheim and Alter, 1998; Servon, 1998). The model in this study supports and adds to these findings. Improved personal well-being was significantly related to having access to more sources of capital and course completion, as well as the demographics of being partnered and younger. The findings suggest that having resources, education, a support system in place in one's personal life, and being younger can lead to improved personal well-being. The model also shows that personal well-being is an important mediator for business start, increased income, and job creation. This finding corresponds with research where increased social and human capital and personal well-being was an important facilitator of access to capital, business development and success (Clark and Huston, 1993; Clark and Kays, 1995, 1999; Cranwell and Kolodinsky, 2002; Edgcomb, 2002; Edgcomb *et al.*, 1996; Rugg, 2002; Servon, 1998).

A major goal of MED training is to enable participants to start a business, which was considered an interim outcome in this model. The model in this study suggests that business start is significantly related to not receiving food stamps and having access to more sources of capital. Starting a business is also mediated by having an improvement in one's personal well-being. The results imply that with access to more financial resources and greater self-confidence and esteem, a person is in a better position to start a business. This finding corresponds to that of other research where intangible assets and "soft skills" (Clark and Huston, 1993; Clark and Kays, 1995, 1999; Edgcomb, 2002; Rugg, 2002) and access to financial resources (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002; Spalter-Roth *et al.*, 1994) were stepping stones to business start. Business start was not related to a client having previous business experience, as found in other studies (Aspen Institute, 2000; Edgcomb, 2002; Else and Gallagher, 2000; Raheim and Friedman, 1999; Rugg, 2002; Schmidt *et al.*, 2006; Spalter-Roth *et al.*, 1994). This is because 97 percent of businesses started in this dataset were the clients' first businesses. Thus, most clients who started a business had no previous business experience. The relationship between business retention and previous experience in business should be examined in future research.

In achieving business impacts, the model showed that clients who experienced an increase in income after MBDP services had previous business experience. This is most likely related to the fact that clients who come to MBDP with an existing business had potentially passed the start-up phase of their business and had begun to earn greater revenue, specifically with assistance from additional training and technical assistance. Increased income was also related to an increase in assets and was mediated by improved personal

well-being and business start. The finding that starting a business increases clients' incomes is supported in the literature (Clark and Kays, 1999; Klein *et al.*, 2003; Soto, 2002) and related to the inflow of a primary or secondary source of income from the business (Raheim and Alter, 1998). Aside from previous business experience, no significant relationships were found in the model between increased income and other demographic variables, as seen in research from Soto (2002) and Spalter-Roth *et al.* (1994).

The MBDP program, along with other MED programs, have the goal of clients eventually achieving economic self-sufficiency and no longer relying on public assistance. The model showed that clients who experienced a reduction in public assistance had access to more sources of capital, were not in poverty at intake, had completed courses and experienced an increase in assets, either through education and/or the purchase of a home. Access to more sources of capital and reduced public assistance is consistent with previous research conducted by the authors using MBDP data (Schmidt *et al.*, 2006). These findings show that clients who were above poverty at intake and had made other types of financial gains after the program, reduced their public assistance benefits, possibly because of decreased eligibility or need.

Asset generation by clients is an important part of the overall equation toward self-sufficiency. Variables in the model that were related to an increase in assets, defined by MBDP as the purchase of property and/or completion of post-secondary education, included having more than a high school education, being in poverty at intake, and having access to more sources of capital. Not surprisingly, those who came into the program in poverty had the most to gain in terms of assets and in fact did gain the most. Higher levels of education and capital resources made asset accumulation possible. The model also showed that asset accumulation is a mediator of increased annual income and decreased reliance on assistance benefits. Interestingly, an increase in assets was not mediated by business start, as shown in other research (Clark and Kays, 1999; Soto, 2002), even though 42 percent of those who started a business reported an increase in assets. This is most likely related to the PA methodology and that the model controlled for all other variables.

Once microentrepreneurs are self-employed, creating other jobs is a way to improve the economic development of the larger community, especially in rural areas where employment may be limited. The model showed entrepreneurs who created other jobs are older, have access to more sources of capital, a larger family size, and reported an improvement in personal well-being, suggesting they are in a better position to expand their business and hire other people, possibly family members. Job creation was not mediated by business start, as observed in other studies (Clark and Kays, 1995; Else and Gallagher, 2000; Levy-Benitez *et al.*, 2003; Raheim and Alter, 1998; Raheim and Friedman, 1999; Schmidt *et al.*, 2006; Wehrell, 2002) because those who started businesses in this dataset were first-time businesses and 78 percent did not report any job creation. Again, a future study should examine the relationship between business retention and job creation.

Overall, an important finding to highlight is the impact of having access to more sources of capital on MED success. Access to capital was a significant predictor of improved personal well-being, which mediates the achievement of higher levels of success including business start, increased income and job creation. Access to capital was also a significant predictor of

business start, reduced federal assistance, gaining assets, and job creation. Thus, access to financial resources enables a person to succeed in meeting personal and business goals and work toward self-sufficiency. These findings correspond with several related studies that demonstrate the importance of access to financial resources on business success (Edgcomb, 2002; Else and Gallagher, 2000; Rugg, 2002; Schmidt *et al.*, 2006; Spalter-Roth *et al.*, 1994). This is an important finding as MED programs typically provide clients with financial literacy services, assist them to apply for funding through grants, seed funding, savings programs or microenterprise loans, or act as a lending source. Given the effect that access to capital has on client success, MED programs fulfill an important need for low- to moderate-income people who may have limited access to mainstream sources of capital because they may lack assets and collateral for loans, have poor or no credit histories, and have a limited cash flow (MBDP, 2000).

This finding has important implications for program offering, client referral and public policy. First and foremost, MED programs should continue to be sustained through federal, state and local funding, as well as private donations. MED programs should ensure that their service offerings include financial literacy, loan packaging, and gaining access to capital. MED programs that do not service loans directly should refer clients to other programs, such as Trickle Up and Job Start, which provide clients with access to seed grants and small loans at low interest rates. Clients should also be referred to savings programs such as Individual Development Accounts (IDA), which offer matched savings accounts that enable low-income families to save money, build assets, and enter the financial mainstream (Ssewamala and Sherraden, 2004). Further, microenterprise-lending legislation, such as the Program for Investment in Microenterprise (PRIME) Act of 1999, should continue to receive annual congressional appropriations (SBA, n.d). PRIME legislation addresses the funding gap between credit and training and ensures that adequate resources are targeted to very low-income entrepreneurs and the microenterprise organizations that serve them (AEO, 2006).

This study builds on existing research that demonstrates relationships between client characteristics and the achievement of program activities and short- and long-term success. Further, this study adds a comprehensive analysis of MED program success theory to the literature by utilizing a PA to simultaneously analyze multiple independent, mediator, and dependent variables. Although some clients may be more successful in the MBDP program because of their characteristics and experiences, all clients have the opportunity to achieve success through the MBDP program by working with business counselors, completing classes and specifically gaining access to capital. Further research using PA should be conducted using other MED datasets with variables comparable to those used in this study, with the addition of a business retention variable and variables that represent the different types of capital clients access. This will test if the model consistently fits different datasets and populations and examine the impact of business retention and different types of capital on client success.

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