Addis Ababa University
Office of Graduate Program

Faculty of Science
Department of Statistics

Empirical Impact Assessment of Business Development Service on Micro and Small Enterprises in Towns of Amhara National Regional State

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Acronym

ACSI	Amhara Credit and Saving Institution.
ADLI	Agricultural Development led Industrialization
ANOVA	Analysis of Variance
BDS	Business Development Service
BIM	Bhararathidasan Institute of Management.
CEFE	Creation of Enterprises through the formation of Enterprise (Competency-based Economies through the formation of Enterprises).
CSA	Central Statistical Agency.
DfES	Department for Education and Skill.
DTI	Department of Trade and Industry.
EDs	Electronic Data System.
EU	European Union.
FDRE	Federal Democratic Republic of Ethiopia.
GDP	Gross Domestic Product.
IFC	International Finance Corporation.
ILO	International Labour Organization.
ISBA	International Society for Bayesian Analysis.
ISI	Information Science Institute.
IYB	Improve Your Business.
MIT	Management Information Technology.
MSC	Mediterranean Shipping Company.
MSE	Micro and Small Enterprise.
NEDO	New Energy and Industrial Technology Development Organization.
NGO	Non-Government Organization.
OECD	Organization for Economic Co-operation and Development.
PBDA	Public Business Development advisors.
SBS	Small Business Service.
SYB	Start Your Business.

TVET	Technical and Vocational, Education and Training Center.
USAID	United states Agency for International Development.
WEs	Women Entrepreneurs.
WP	world Press.

Abstract

Among many reasons for micro and small business failures or slow growth is lack of management skills in smaller businesses has been highlighted as a contributory factor. In recognition of this, training provision and management development have dominated much of the policy debate on micro and small enterprise development since late 1980's. No research has given theoretical explanations about business development service in organization and the impact of such efforts even though researchers assume that management development and training can be directly related to performance and success of business. The focus has always been as a holistic intervention. Due to such kind of intervention, the impact of training could not be evaluated.

This empirical study investigates the perceptions of the enterprise owners about various development indicators and their added value due to the intervention of business development services. The analysis is based on the result of a sample survey of 195 micro and small enterprises in 12 towns of the Amhara National Regional State. Furthermore, to evaluate the impact of Business Development Service (BDS) intervention on MSEs, a considerable sample size of non-business persons and government bodies, other than Micro and Small Enterprise Development agency workers, were included in the survey.

It is found that the problems that MSEs face are not only financial and working place but also a problem of transparency on business regulation, finance regulation and important business information, inability to convince the authorized bodies and bureaucracy problems. Since the introduction of BDS in the form of spot advice is an attempt to alleviate such kind of problems, the study indicates that access to credit scheme alone could not make enterprises profitable and the introduction of minimum charge of market places are not really influential for business success.

Chapter One

Introduction

1. Background

1.1. General Situation of Ethiopia

Ethiopia has a population of about 75 million. The urban population is estimated at 8.5 million and 3.9 million of these are old enough to join the world of work. From this productive work force, 1.1 million are unemployed.

A study by the Ministry of Finance and Economic Development indicates that 37% of the urban population is below the poverty line. Some of the socio-economic factors that hinder the economic development in urban areas are migration of rural people to urban areas, inappropriate plan of natural growth of urban population and a rapid growth of urbanization process. The estimated average annual growth of population, in the next 20 years, is 6% and that the urban dwellers become 30% of the total population of the country. The total number of micro and small enterprises in the country is 1,805,897 and creates job opportunities for 2,204,000 people (CSA, 2004). Twenty-six micro finance institutions in the country facilitate credit to micro enterprises.

1.2. General Situation of Amhara Region

The region has 115 woredas and 212 towns. From these 12 of the region towns are administered autonomously from woredas. Above 18 million people are living in this region and 2,005,000 of these are urban dwellers and 901,900 are employable. Some 230,500 of the active age group are unemployed. Now a days, more than 405,000 micro and small enterprises are found in the region. About 99% of the business sectors are included in this category. The sector is second to agriculture in employment creation both in national and regional cases. The micro and small enterprise (MSE) sector includes operators that are involved in manufacturing, agro-industrial services, artisans and trading both in formal and informal ways. Since 2003 in 12 urban administrative areas, 6895 BDS operators are counseled continuously and created a job opportunity for 27,928 individuals. There are three micro finance institutions in the region. From these Amhara Credit and Saving Institution

(ACSI) is the largest. It covers 75% of the region providing loan at 18% annual interest rate. The other two are Meket and Wisdom, micro finance institutions with 20% and 12.5% annual interest rates, respectively.

According to the definitions given in Ethiopian context, micro enterprises are enterprises whose paid-up capital is less than 20000 Birr, while small enterprises are those whose capital are between 20000 and 500000 Birr and excluding high technical consultancy firms and other technology establishments. Large and medium enterprises, by default, are those with more than 500,000 birr in paid-up capital.

The number of employees or assets usually defines the size of categories, but these definitions vary from country to country, institution and objectives. A small to medium enterprise (SME) is defined as an enterprise that employs less than 500 people (The European union definition to SME). This study therefore follows the definitions given in Ethiopian context.

1.3. Statement of the Problem

Small enterprise development is increasingly seen as a crucial ingredient of strategies to create employment and to alleviate poverty. The Amhara region, in particular, has been prone to much suffering in the past, and was one of the hardest hit areas in the 1973, 1984 and more recent famines of Ethiopia. The Government has undertaken a series of economic reform programs aimed at re-orienting the economy from command to market economy, rationalizing the role of the state, and creating legal, institutional and policy environment to enhance private sector investment. The Rural Development Strategy, the Poverty Reduction Strategy Paper as well as the "*Sustainable Development and Poverty Reduction Program (*2002) have more clearly articulated the objectives in revitalizing development in the country.

Given that poverty reduction will continue to be the core of the agenda of the country's development, the strategy is built on *four pillars*. These are Agricultural Development Led Industrialization (ADLI), Justice System and civil service reform, decentralization and empowerment, and capacity building in public and private sectors. Such a four-pronged

approach is believed to be effective in a fight against poverty and ensure sustainable development.

Of all the four “pillars”, the ADLI strategy emphasizes rural finance. The existing realities in Ethiopia reveal that there is an acute shortage of capital. In contrast, the country is endowed with a large number of working age population and a potentially cultivable land although land is still relatively scarce in some part of the country, particularly the Northern and Central highlands. It is believed that faster growth and hence economic development could be realized if the country adopts a strategy that helps raise the employability of labor resources and enhance productivity of land resources aimed at capital accumulation.

In turn, for agriculture to continue serving as an engine of growth in the coming years, through the domestic economy and international trade, there has to be progress in terms of commercialization, with more intensive farming, increasing proportion of marketable output and correspondingly decreasing ratios of production for individual consumption. Aside from deepening technological progress, it will mean greater market interaction on the part of the farmer, more research and extension, application of inputs, irrigation, production of tools and equipment, rural roads will need to have more emphasis. Extension of credit to the small farmer has to gain importance with commercialization of agriculture and give inputs to the establishment of rural banks (FDRE, 2002).

On the other hand, as unemployment and traditional livelihood strategies for rural people disappear, poor urban dwellers in increasing numbers have had to make their ways into the informal sector, primarily in low paying and often menial work such as piece work, vending, petty trading, collecting garbage, and factory labour employment. Micro and small enterprises account for a large share of total non-agricultural employment in poorer countries than in richer ones (Snodgrass and Biggs, 1996). Intensive efforts to enhance self-employment and income generation schemes, through expanding micro-enterprise services appear very vital to avert this undesirable situation. Indeed, NGOs or government agencies, with different primary objectives like promoting literacy and education, or maternal, child health and nutrition, reducing female infanticide or child labour, taking up women's

empowerment, etc., have used micro-credit as an entry point, recognizing that it is harder to mobilize people and sustain interest around other issues in poverty situations. Honohan (2004) graphically illustrates that the "Poverty Gap" (i.e., the minimum aggregate amount, expressed as a percentage of GDP which, if appropriately distributed, would bring all people up to the poverty line) is very large for an important subset of poor countries in Africa. For these countries, achieving greater financial depth seems particularly important if the *poverty gap* is to be reduced. These countries include: Burkina Faso, Burundi, Cameroon, Central African Republic, Ethiopia, The Gambia, Ghana, Lesotho, Madagascar, Malawi, Mauritania, Niger, Sierra Leone, Uganda and Zambia.

Micro and small enterprises make undoubtedly a huge contribution to employment in many countries in the developing world. According to most studies, micro and small enterprises are more labour-intensive than large ones, and some even find that the smaller also "produce more output (value added) per unit of capital and thus generate more output as well as employment for a given investment than do larger firms" (Haggblade Liedholm and Mead, 1990:61-62; Steel and Takagi, 1983). A survey on small scale manufacturing industries in Addis Ababa indicated 43% of the total establishments existing in the country constitute 42% of the national labour force (Andualem Tegegn, 2001). The Ethiopian government has long recognized the important contribution that micro and small enterprises can make in poverty reduction, employment creation and private sector development. Micro and small enterprises offer both a safety valve for the survival of workers that is available to find steady wage employment and opportunity for the poor entrepreneurs to raise their capital and income. These enterprises also offer a vehicle for acquiring and applying skills to raise productivity and private sector growth, providing better wage earning opportunities for the poor, while raising national income. Due to these reasons and based on the government strategy of capacity building in public and private sectors, donors as well as national governments have attempted to promote micro and small enterprises through support for financial and non-financial services appropriate for them. The government had given special attentions for the sector and established a well concerned institution for the sector by the Council of Ministers of Ethiopian Regulation No 33/ 1998 on April 3, 1998. Based on this federal regulation, the Amhara Regional State established the agency by regulation No 42/ 2000.

The Amhara Regional State Micro and Small Enterprises Development Agency had taken several measures to support the MSEs sectors. The agency extends its structure down to Woreda level to reach the vast majority of the people. It also makes a network forum with major stakeholders like Chambers of Commerce, the micro financial institutions, municipalities and other government organizations. The problems that face the development of micro and small enterprises are:

*. Shortage of finance, raw materials supply, and skilled manpower.

*. Lack of working place, marketing, credit access, business advisory and counselling services, and information and technology.

*. Poor networking, continuous and sustainable training and counselling services, access to infrastructural services and

*. Problems of awareness, incentives, taxation and licensing.

The overall economic policies are still often biased in favour of larger enterprises. The cost of registering and complying with regulations, relative to the entrepreneur's turnover or profits, is often higher for micro and small enterprises than for larger ones. Even though micro enterprises may often lower their costs by evading tax and labour obligations more easily than larger ones, this may imply constraints on the access to markets, credit and services. As many countries have recognized the contribution of micro enterprises to employment, the issue of conducive policy for micro enterprises has received increased attention. Unfortunately, the knowledge on the impact of the policy environment on small and micro enterprises, and on their employment performance is still very limited (Berry, 1995).

Some appropriate measures were taken by the regional government to ease the MSEs problem and to have a great role in the economic and social development of the region. These are:

*.Timely implementation of the MSEs regional strategy.

*.Government regulations to foster MSEs.

*.Transparent loan and credit systems with low interest and better collateral.

*.Workable networking among government, donors and private institution leading to focused assistance to MSEs.

*.Support oriented sustainable counselling and training on entrepreneurship like start your business (SYB, June 2001), improve your business (IYB, June 2001) and creation of entrepreneurs through the formation of enterprises (CEFE)

*.Enhance the capacity building of Women Entrepreneurs (WEs), their Associations and other key partners.

The above measures are not sufficient for MSEs operators to become entrepreneurs. Because of the gaps and lack of follow-up created after training, the donors, government and other partners could not evaluate the performance of target groups. They should also design and implement follow-up mechanisms in order to monitor relevant activities and assess the effects of their investment for such interventions. Therefore, donors and governments have intervened by providing services to MSEs via public business development service (PBDS). The business development services (BDS) include training, consultancy and advisory services, marketing assistance, information, technology development and transfer, and business linkage promotion. Public BDS is a short-term strategy of providing services to MSEs by government. But, public BDS approach have failed to achieve high outreach, since the number of MSEs served is limited by the amount of subsidies available. Institutional sustainability has been low since programs cease when public funds are exhausted. The BDS market development paradigm is driven by the belief that the objectives of outreach and sustainability can only be achieved in well-developed markets for BDS, and not by direct provision from donors and government. In the long term, donors and government support should be shifted away from direct support to particular BDS providers toward facilitation functions that develop the market in a sustainable way. The objective of BDS market development challenges donors to push the commercial orientation of BDS market as far as possible through strategic investment with development orientation.

In Amhara Region, the Technical and Vocational Training Centers (TVET) are used as business providers for technical training of MSEs operators and 300 contract employed

advanced level professionals are counseling and diagnosing the MSEs problems. Each business development service advisor has 15 clients for one cycle (for 5 Months).

This study focuses on the impact of public business development services on micro and small enterprises operator in 12 urban administrations of the Amhara Regional State.

1.4. Overall Objective of the study

*. To check whether the already identified problems in situation analysis are alleviated or not, that is to study the impact.

*. To develop appropriate statistical models for performance measurement on BDS.

1.5. Goal of the study

*. Make enabling environment for scientific management decision.

*. Make fertile ground for regional government to make policies and strategies, and further investigation.

*. Enhance the Research and Development program of the enterprises.

1.6. Limitation of the study

*. The study does not cover the towns administered by rural woredas.

*. Since the study focuses only on micro and small enterprises, it is not possible to compare them with the large scale ones.

*. As there was no previous, direct related research studied about impact of BDS both in the region and at national level, the literature review focuses on the problems and impacts of micro and small enterprises.

*. The study considers only the opinion of BDS operators, non-business persons and other government bodies rather than BDS providers and facilitators.

Chapter Two

General Literature

2.1. Literature Review on Public Business Advise

If we had seen the case of UK in 1990's, the government developed Business Links that provided a one-stop-shop for small business advices. The new Business Link's Personal Business Adviser service (PBA) compared to private sector business advice aimed to assist growth companies (DTI, 1996; Hutchinson, Foley and Oztel, 1996). Growth companies are companies that include young (but not startups) or well established enterprises (Smallbone and North, 1985). PBAs were to 'facilitate' and assign their SME clients to bespoke business advice. The core areas of PBAs role were to analyze needs, and to manage relationships between third parties and a portfolio of clients (Agar and Moran, 1995). Bryson, Churchward and Daniels (1997) suggest that PBAs are crucial for Business Link's to success. In an evaluation of micro business advisers, Devins (1999) argues the relationship between the owner manager and adviser depends on their similar personality and shared ambitions. Dalley and Hamilton (2000) suggest that external advisers need to share 'contextual compatibility' for the effective development of knowledge within the firm. In particular, small businesses are subjective, emotional and non-rational entities, which may challenge advisers trained in the rational application of generic analytical methods. Owners strongly believe that their business is unique, which makes them very sceptical about new advice (Dalley and Hamilton, 2000).

Recently, the Small Business Service has re-emphasized the ongoing aspect of the PBA client relationship (SBS, 2001). PBAs found difficulty, however, in finding the time to develop their 'ongoing business friend' role (Sears and Agar, 1996a). In a study of knowledge transfer within technology-based firms, Major and Cordey-Hayes (2000) found that those SMEs that build long-term relationships do so with consultants and universities rather than signposting organizations such as Business Link.

2.1.1. The Role of the PBA

In a policy to boost firm enhancement through PBAs, the type of advice given to firms is crucial. Personal Business Advisers (PBAs) diagnose firms ill and refer them to consultants who bring their special knowledge to the firm. Presumably, the bespoke advice would enable the firm to be more successful, which in the government's eyes, equated with growth. Therefore, the PBA intervenes to improve the firm's growth prospects. Phillips and Kirchoff (1988) suggest that firms that grow and take on employees are more likely to survive. Moreover, Audretsch (1995) argued that, to survive, small firms must grow to their minimum efficient size (MES). Yet growing to their MES requires firms to use capital and risk over trading. Growth requires the entrepreneur to risk more capital. Birley (1986) found that firms in growing markets showed high rates of 'churning' as many entrants presaged many exits. In a study into business growth strategies in Ireland, Roper (1997) found that introducing new or improved products increased turnover and employment but reduced profit margins.

In Finland, most business advisers come to their posts with business experience that would lead them inevitably to generalize about success and failure in business (Mole and Hassall, 2000). In addition, PBAs have been provided with professional development and continued professional development from a minimum 60 hours per year (Bushell, 1995). Moreover, the networking opportunity for PBAs to exchange experiences and techniques contributes to their development as a by-product of participating on such courses (Agar and Moran, 1995, 5). If PBAs are chasing business then they will have less time to devote and improve their existing client businesses. In terms of the optimal number of clients, Agar (1994) argued that 40 are sufficient; more clients can undermine the program. Sear and Agar (1996a) found 62 businesses per PBA, although the number must be treated with caution.

2.1.2. Impact of Business Advice

In a study of business advice to establish SME's, Bennett and Robson (1999) found that 95% of firms in Britain used at least one source of external advice and the fastest growing firms used more'. As Gibb (2000) notes, although accountants, bank managers, customer and suppliers are all within the nexus of relationships surrounding the owner-manager, their role is to provide services. Any advisory role is incidental and may be biased towards the use of

their services. For example, a bank manager is likely to promote risk-averse advice that will protect the banks exposure. Gibb (2000) points out that bankers' advice may be less than holistic! In Germany, small firm policy advice is communicated via bank staff, although the German context is very different. Policy advice to small firms is discussed at the annual conference within the Industrie-und-Handelskammern (IHK), where manufacturing SMEs are obliged to join and find the bank staff that attends them in their business activities (Deakins and Philpott, 1985).

The real purpose of the PBA is to develop the capability and sustain any improvement (Sears and Agar, 1996b), for the accountant, say, advice might be an added extra service. The relationship between PBA and their clients are more like a master, apprentice than professional, and layperson. For an apprentice to accept the master's word means that they have to accept the greater knowledge on behalf of the master. Thus, the generic nature of the PBA's role is highly significant for their attempts to establish credibility. On the other hand, SME owner managers testify that the advice they get from PBAs is much better than that they get from accountants and bank managers (Smallbone, North and Leigh, 1993; Worrall 1996). Furthermore, the SBS believes that public and private business advice should cohere (SBS, 2001: 1). Business friends and informal sources of advice are more important as sources of advice to smaller firms. Robson and Bennett (2000) found that as firm size increased, firms reduced their dependence on business friends for advice. The result of a study emphases the bespoke nature of clients needs and the necessity of face-to-face contact. Indeed, the finding could pick up a greater impact by the PBA service, which routinely visits client's premises. On a similar theme of Business Link take-up in Britain, Curran and Blackburn (2000) evaluate five reasons to explain low decision for Link services: (1) that SMEs are unaware of the service (2) that services are over-priced (3) that services are delivered poorly (4) that consumers distrust suppliers (5) and that government agencies do not meet SMEs' needs. Like Curran and Blackburn, let us look at each of these explanations in turn. Research suggests that SMEs are aware of Business Links. (Fitchew and Blackburn, 1998; Robson and Bennett, 1999). Secondly, Curran and Blackburn (2000) suggest that the prices could not be prohibitively high since many services were free! The third explanation

that business owners do not use support services because of poor delivery appears contradicted by client numbers reporting satisfaction with services (Bennett and Robson, 1999). However, satisfaction may not be the best way to assess PBA effectiveness. For example, Sear and Agar (1996b) noted that one Business Link framed satisfaction survey to encourage a positive response. Others suggest that businesses are unlikely to express dissatisfaction in a survey (Devins, 1999). Therefore, poor delivery remains as a possible explanation for poor take up, though it might relate to a lack of re-contracting. The fourth explanation concerns the distrust of the supplier. Many studies suggest that small business owners distrust government (MacMillan et al, 1989). Small business owners assert that government has neither the experience nor the skills to advise small business owners on running their business (Curran and Blackburn, 2000). In the same vein, small business owners often declare that outside agencies fail to understand their business (Lightfoot, 1998; Curran and Blackburn, 2000).

2.2. Literature Review on the impact of the policy Environment on the creation and improvement of Jobs within Micro and Small Enterprises

A conducive policy environment is increasingly seen as an important factor in enabling small enterprises to create more and better jobs. This paper summarizes available literature on the quantity and quality of employment in small enterprises and, the policy and regulatory environment that faces the enterprises in their activities. It also deals with the limited available evidence on the impact of the policy and regulatory environment on employment in small enterprises. Small enterprises make undoubtedly a huge contribution to employment, especially in the developing world. The available data and studies show that in many countries, the share of small enterprises in total employment has been growing over the last decades. Despite small enterprise support policies in many countries, the overall economic policies are still often biased in favor of larger enterprises. Even though small enterprises may often lower their costs by evading tax and labor obligations more easily than larger ones, this may imply constraints on the access to markets, credit and services.

2.2.1. Employment by enterprise size class

A first approach to the measurement of the importance of small enterprises is to consider the employment shares of enterprises of different size classes in total employment. In order to obtain such data, two broad types of data sources can be used:

• **Establishment-level sources** (establishment surveys, economic censuses or administrative registers). This type of source is used for most analyses of the situation in industrialized countries. Their advantage is that the unit of analysis (plant, establishment or enterprise) can be defined in a precise manner and that the information with regard to size is likely to be reasonably accurate. Moreover, employment data can be combined with other data on the enterprises' economic performance, such as turnover, value-added or productivity.

• **Household level sources** (household surveys, labor force surveys, population censuses). The advantage of this kind of information is that it is in principle likely to cover the population working as own-account workers or in very small enterprises as well as those working in larger enterprises. It also includes non-manufacturing sectors. Good household level sources often permit to relate individual worker characteristics with information on income and employment quality. In many OECD countries, the share of small enterprises in total employment (and GDP) has increased since the 1980s. This reverses the previous tendency up to the 1970s, when the small enterprise share in total employment tended to decrease in industrialized countries (OECD, 1998; Hughes, 1999; Oveman and Sengenberger, 1990). In many developing countries for which data are available, the share of employment in small enterprises has increased, too. For example, in Latin America, the employment share of micro and small enterprises with up to 20 workers and self-employment in total urban employment increased from 48 per cent in 1990 to 51 per cent in 1998 (ILO, 1999). Small enterprises account for a larger share of total non-agricultural employment in poorer countries than in richer ones (Snodgrass and Biggs, 1996). Although most comprehensive data collections for developing countries are badly outdated, they permit to conclude that in most of these countries, more than half of the manufacturing employment is located in small enterprises with less than 50 workers (Haggblade, et al, 1990). Hughes (1999) finds that among a sample of EU countries and some non-EU countries, the lower GDP per capita, the higher the share of the smallest (1-9 workers) and the larger enterprises (50 and more workers), but the lower the share of enterprises with 10 to 49 workers. This is consistent with the finding for most developing countries and especially for Africa that the size distribution of employment in these countries is characterized by a "missing middle" (employment being concentrated in micro enterprises and in large enterprises, with little in between). This literature is interesting because it suggests that the "missing middle" by itself

may be an aspect of deficient labor market performance and industrial organizations as very small enterprises face obstacles that keep them from growing into larger small or medium-sized enterprises. Indeed, an increase of the small enterprise share in total employment could stem from the downsizing of larger enterprises (causing them to migrate into the small enterprise size class), rather than from booming small enterprises (Haltiwanger, 1995; Davis, et al, 1996). In sum, employment data by enterprise size class are not sufficient to identify patterns of successful small enterprise development.

2.2.2. Employment dynamics by enterprise size class

In order to analyze the employment *creation* (rather than just the employment share) of small enterprises, it is necessary to have longitudinal data sets. This allows capturing enterprise births and deaths and comparing the employment levels of existing enterprises at different points in time. The overall net employment variation over time can thus be disaggregated into its components, which have to be assigned to the different enterprise size classes:

• The net employment variation in existing enterprises (gross employment

creation minus gross employment destruction) and

• The net employment variation from enterprise births and deaths.

When gross flows are considered, the smallest enterprises invariably account for the vast majority of new jobs through enterprise births and for the vast majority of gross job destruction through enterprise deaths. When net employment creation over a period is attributed to the opening size class of enterprises, the result is that, in those OECD countries for which longitudinal data sets are available, the smallest size classes have the highest net job creation rate (Hughes, 1999: 10). This confirms the opinion that small enterprises are the main source of employment creation. Unlike in the United States, small enterprises appear to be the main source of job creation in Taiwan. In Russia and in several OECD countries, net job creation rates also appear to be higher in smaller than in larger enterprises (Brown and Earle, 2001; OECD, 1996).The longitudinal data sets, which are used for the analysis of employment dynamics are often based on administrative records or industrial censuses. However, such a procedure is unsuitable for small enterprises in most developing countries because many small enterprises are characterized precisely by the fact that they are not (or

only partly) registered with government offices. Data sets, in most developing countries are thus quite incomplete and do not give a comprehensive picture of the small enterprise sector.

Several specific surveys address this problem of coverage by using a mixed approach, identifying enterprises from large household samples. Mead and Liedholm (Mead, 1994a; Mead and Liedholm, 1998; Liedholm and Mead, 1999) summarize the results of surveys for the early 1990s (mostly undertaken within the USAID Gemini project) in a number of African and Latin American countries. More recent follow up studies have been carried out in Zimbabwe in 1998 and Kenya in 1999 (McPherson, 1998; Central Bureau of Statistics et al., 1999). These surveys are designed in a way that permits to capture the employment volume in the surveyed enterprises at different points in time using at least one of the following research methods: panel surveys (returning to particular enterprises or locations to follow the evolution of the sample of enterprises over time) and tracer survey (search out and re-interview MSEs covered in earlier studies); surveys of MSEs that had previously been operated by members of a household but are no longer in operation and modified baseline surveys, using one-shot surveys to provide retrospective information concerning past patterns of growth of currently existing enterprises since their start-up (Mead and Liedholm, 1998: 61). The advantage of this type of survey is that it includes even the smallest production units; the main disadvantage is that it does not cover larger enterprises. The data thus permit to compare different types of small enterprises (according to size, age, economic sector and owner characteristics), but not between small and large enterprises.

The main conclusions from these surveys regarding the employment dynamics of small enterprises can be summarized as follows:

• There does not seem to be a scarcity of enterprise start-ups in developing countries. Start-up rates are roughly twice as high as in industrialized countries (Mead and Liedholm, 1998: 64).

• The majority of new jobs in small enterprises in Southern Africa have come from new start-ups. 75 to 80 per cent of all current jobs came into being when the enterprise itself was started.

• Younger firms grow faster than older ones, and the very smallest grow faster than the rest. However, only about 1 per cent among those enterprises that started with less than five workers “graduated” and ended up with more than ten workers. The small enterprises that were smaller at start-up tended to grow more rapidly than those that started larger (Mead, 1994a; Mead and Liedholm, 1998: 68, 73).

• Many newly created enterprises have a very short life. The survival likelihood of enterprises is correlated with a number of factors, among which gender is a particularly relevant one: female-headed enterprises are less likely to survive than male-headed ones (Mead/Liedholm,1998; Central Bureau of Statistics et al.,1999: 63). However, a relatively high share of closings of female-headed enterprises is due to personal and other non-business failure factors. With regard to closings exclusively due to business failure, Mead and Liedholm (1998: 66) did not find any significant gender differential in the countries under study.

In times of rapid economic growth, a significant number of newly created jobs come from the expansion of existing enterprises. In this case, small enterprises grow as entrepreneurs identify and respond to market opportunities, and the incomes obtained through such activity are typically relatively high and possibly rising. In times of recession or crisis, by contrast, existing small enterprises tend to contract while a number of new enterprises are being started as a “labor force supply-driven” survival strategy, often in activities that yield only low returns. For Zimbabwe, McPherson (1998) provides some evidence that most small enterprise births are due to excess labor supply rather than to demand factors. Over the 1988 to 1997 period, economic growth was negatively correlated to the small enterprise birth rate: every one percent increase in the GDP growth rate statistically decreased the small enterprise birth rate by 0.6 percent. This is consistent with the increase of enterprise set-up rates in low profit sectors with low barriers to entry during economic downturns. However, these low profit sectors are also characterized by high enterprise death rates.

To sum up, the available data sources on developing countries give rich insight into the processes of employment creation and destruction by small enterprises:

• Virtually all studies find that gross job creation and destruction rates are higher in small enterprises than in larger ones.

• The picture is less clear with regard to net employment flows. According to the available studies, in Taiwan (1986-1991), Russia (1985-1999) and several OECD countries, small enterprises had higher net employment creation rates than larger ones, while the opposite was true in Chile (1979-1986) and no clear association between enterprise size and net employment creation was found in the United States (1973-1988).

• The literature helps to distinguish desirable patterns of small enterprise growth from less desirable ones, where enterprise set-ups are essentially a survival strategy due to a lack of alternatives and the activities tend to generate volatile jobs with low incomes.

2.3. Assessing the policy environment for small enterprises and its employment impact

As many countries have recognized the contribution of small enterprises to employment, the issue of conducive policy environment for small enterprises has received increased attention. Unfortunately, the knowledge on the impact of the policy environment on small enterprises and on their employment performance is still very limited (Berry, 1995). This section reviews the available literature on the impact of the policy environment on small enterprises, considering the main conclusions with regard to the impact of policy environments on the performance and employment creation of small enterprises. In many countries, specific small enterprise policies have been designed and implemented in order to help small enterprises improve their performance. However, despite the small enterprise promotion programs offered, most small enterprises never obtain the information on these programs. For example, in a survey among small enterprises in Bangladesh, the Philippines and Nepal, more than 70 per cent of the surveyed entrepreneurs did not know about any public agency in their country giving assistance to small enterprises (Meier and Pilgrim, 1994: 37). Moreover, many countries have support programs for small enterprises while the overall economic policies are biased in favor of large enterprises.

In sum, while only a limited number of policies may be designed specifically for small enterprises, virtually all economic policies have an intended or unintended impact on small

enterprises. Analysis of the policy environment can be carried out qualitatively in order to assess how conducive these policies are to small enterprise growth. Nevertheless, there are also some studies, which have attempted to quantify policy-induced cost differentials between small and larger enterprises in accessing resources as well as the cost for enterprises to comply with laws and regulations. Such analysis would ideally permit to quantify the small enterprise bias of the policy and regulatory environment. While the access to resources and markets is extremely important, this is not the whole story. Other, "soft" factors such as information and networking with other enterprises are also important ingredients of an enabling policy environment for enterprises. The kind of institutions at the label that foster the exchange of information and networking are especially important for small enterprises, which are generally unable to generate the required information on their own.

2.3.1 Qualitative policy assessments

The rich literature of qualitative assessments of policy environments generally reviews different areas of policies, which are relevant to small enterprises, using interviews with key informants and official documents as main sources of information .

There has been a lot of discussion on the extent to which government regulations and registration requirements constitute an obstacle to new business start-ups or the formalization of existing informal enterprises. One reform approach is to replace demanding license requirements, which exist in some countries by a simple registration procedure: "for many economic activities there is the question of whether it is desirable to require the enterprises to obtain a license at all, as opposed to just requiring the enterprise to register. There is a sharp difference between obtaining a license, which requires approval from a government office, and registering, which requires no approval" (Rice, 2000: 20). Moreover, in order to facilitate registration, several countries have set up centralized centers or "one-stop shops", allowing potential and existing enterprises to obtain all necessary information about existing regulations from one single administrative entity (OECD, 1999: 7).

Trade policies are another important policy area as they have an impact on the access to imported material inputs as well as the price of the enterprise's final products. Under import-substitution schemes, imported inputs have been licensed or directly allocated by

governments. This favors large enterprises, which are more likely to gain access to import quota than smaller ones, often granted industrial investment incentives that enable them to import their capital goods duty-free for a certain time span (Berry, 1995: 16; Haggblade, et al, 1990: 72-76). Import tariffs (as opposed to import quota or other non-tariff barriers) as such do not have a differential impact on small versus large enterprises, as their application is uniform. Moreover, new export incentives that have been introduced to facilitate the shift towards more outward-oriented enterprise strategies sometimes repeat the experience of discrimination against small enterprises by establishing minimum export volumes for the incentive schemes. Finally, the trade liberalization process in many developing countries has also led to increased competition which, given the traditionally low import content of small enterprise production, may in the short term outweigh the advantage of cheaper imported inputs.

In many developing countries, **pricing policies** have been unfavorable to agriculture. Since most small enterprises are located in rural areas, policies that restrained agricultural incomes limited the demand base for small non-agricultural enterprises (Steel, 1994: 6). Another important topic is **taxation policies**. In many cases, small enterprises may pay no or few taxes, either because they are formally exempted or because they successfully evade taxes. On the other hand, tax evasion can make enterprises vulnerable to administrative interference, and the threat of high taxes may keep growth-oriented enterprises from growing, as this would increase their visibility.

Tax exemptions are often given to large enterprises and foreign investors. This can have a direct negative impact on small enterprises when subsidies are channeled towards large-scale producers of goods that compete directly with small-scale production (Steel and Takagi, 1983: 438). In some countries, tax exemptions are granted to small and medium-sized enterprises (for example in Mauritius, SMEs are entitled to a lower corporate tax rate of 15 per cent instead of 35 per cent), but this depends on certification as a registered SME with the government's small enterprise authority (Pochun, 1998: 26).

Credit policies in many countries make it very difficult for small enterprises to obtain formal loans. This is partly compensated by specific small enterprise programs with subsidized

credits, but these generally do not have a sufficiently large coverage. Most analyses agree that the lack of *access* to formal credit is a more important obstacle for small enterprises than its *cost*. The policy emphasis should thus be on establishing mechanisms to allow small enterprises to credit at normal market rates, rather than providing cheap credit to a small number of enterprises.

A crosscutting issue in the quality of the policy environment is its **transparency**. Small enterprises are likely to suffer most from a lack of transparency as they have less resource to obtain information or to protect themselves against arbitrary administrative decisions.

Most of the studies on the policy environment assume that a favorable policy environment will contribute to more employment creation, but this effect is rarely analyzed more thoroughly. Research on the causal relationship between different policy frameworks and employment outcomes is inherently difficult because of the multitude of factors involved and the methodological problems for measuring them.

2.3.2. Quantitative estimates of policy biases in favor and against small enterprises

The last subsection mentioned the problems of policy bias against small enterprises.

The interpretation of such biases is often difficult because some policies may be biased against small enterprises, others may on the contrary favor small enterprises relative to larger ones. A systematic examination of the nature and extent of these policy biases is needed. Quantitative data on the differential impact of policies and regulations by size class is scarce, making it virtually impossible to specify the net impact of such regulations. The main conclusions of the study by Haggblade, Liedholm and Mead (1990) regarding quantitative estimates of such differentials for labor and capital costs based on a sample of developing countries are as follows:

• Measuring policy-induced price differentials involves a lot of methodological difficulties. Not all price differentials are policy-induced; they may be due to quality differences (for labor or for finished products) or to differences in risks or administrative costs (for capital). Price differences may also arise from private-sector habits or strategies rather than policies.

• Small enterprises face lower labor costs but higher capital costs than larger ones. The difference in labor costs is generally less important than the one in capital costs, resulting in a negative bias against small enterprises when these two areas are considered together.

In sum, although some general recommendations on which policies not to choose may be derived from the literature, there is no uniform best practice for all policy areas. Rather, a general framework could be conceived as a list of general principles and questions to look into when the issue of conducive policies for small enterprise development is discussed. Most of the studies on the policy environment assume that a favorable policy environment will contribute to more employment creation, but this effect is rarely analyzed more thoroughly.

2.3.3. Assessments based on entrepreneur surveys on their perception of the policy environment

Another approach to gather the impact of the policy environment on small enterprises more systematically than a qualitative assessment is through surveys of small entrepreneurs, and the main obstacles to their entrepreneurial activity. This approach has its own advantage. The main disadvantage of this method is that the perception of owners and managers may not always capture the underlying mechanisms by which government policies affect the performance of small enterprises, especially in the case of policies which have largely indirect effects (e.g. trade policy). On the other hand, perceptions are clearly relevant because they have an influence on what economic actors do. In most countries where surveys using this methodology have been carried out, only a small share of enterprises reported taxes and government regulations as a serious problem (both at set-up and at the moment of the survey) (Liedholm and Mead, 1999; Morrisson, et al, 1994; Liedholm and Mead, 1992; Central Bureau of Statistics et al., 1999). In some countries, however, government regulations are perceived as important constraints. In Tanzania, regulatory and tax constraints were important even for the smallest enterprises (Levy, 1993). In South Africa, taxes and regulations were mentioned a little more frequently as a problem for newly starting enterprises, due to the fact that the previous Apartheid governments had an extremely restrictive policy aiming at curbing Blacks' economic activity (Mead, 1994b). In Russia, small entrepreneurs during the 1990s constantly mentioned taxes and harassment by government officials as a key constraint (Polishchuk, 2001). Overall, these research results

do not support de Soto's (1989) conclusions, according to which government regulations are the major obstacle for small enterprises. Several caveats, however, must be made. First, the research methodology introduces a bias as only existing enterprises are included, whereas would-be entrepreneurs who failed to cope with regulations or those who did not even try in the face of the regulatory burden are excluded from the survey. Moreover, many micro enterprises may not perceive government regulations as a serious obstacle simply because they comply not or only partly with them. A study among a sample of growth-oriented small enterprises in Tanzania, Uganda and Zimbabwe (Trulsson, 2000) showed that most enterprises did perceive negative aspects in the policy environment, among which taxation was most frequently mentioned in two of the three countries (Tanzania and Uganda). While regulations as such are not seen as an important obstacle by most enterprises, the main perceived obstacles to small enterprise development such as access to credits and markets are in fact related to the policy environment. It is thus necessary to take a more comprehensive perspective on the policy environment that goes beyond removing regulatory constraints.

In sum, much of the recent discussions on regulatory and policy reforms for small enterprises have focused on the degree to which the policy environment is appropriate for persons who are willing to set up a new business. The access to capital, markets, inputs and information is also dependent on the policy environment and discrimination against small enterprises increases their costs relative to larger enterprises or simply does not permit access for small enterprises at all.

2.4. Review of the training-performance relationship

The Labor Market Survey (2001) in Britain showed a clear relationship between business failure and a lack of planning or training by SMEs. Lack of management skills and inappropriate training provision have been highlighted as particular problem (DTI/DfES, 2002). Research has also shown that because of the habit of promoting informal training over formal training, small firms operating in the manufacturing sector are in a relatively disadvantaged position. Thus, both demand and supply factors provide explanations as to why small firms are reluctant to invest in training (Centre for Enterprise, 1999). From the demand side, it is believed that one of the difficulties is the lack of quantifiable evidence that shows a link between training and performance (Marshall et al, 1993, 1995; Patton et al,

2000). In addition, the organizational character of business and characteristics such as age, size, and ownership form may determine openness to new practices and main industrial activities ultimately determine the nature and extent of training demand (Hendry, 1991). By making such a link more explicit and informing managers of the benefits, demand and interest for training and management development within SMEs could be improved. After assessing the market for training and expected benefits, small firm managers are deciding not to invest in what is currently available. In this instance, to provide tangible benefits, training policy and delivery systems need to promote targeted efforts with increasing relevance based on the firm conditions (Perren, et al, 1999). That is, a company will find training a useful investment as long as they see its contribution in relation to its management structures, staff numbers, operating rules, and management conditions. Whether the problem is in either supply or demand, it is clearly important to understand the links between training and performance. Those researchers who have failed to identify a positive impact of training on performance point out the difficulties in demonstrating such a link. In particular, there is a multitude of other external and internal variables that put weight into this relationships.

We note that the contribution of different approaches to training may be particularly relevant, given the fact that small firms are considered to invest in informal rather than formal training approaches. Thereafter, using multivariate factor analysis, chi-square, regression analysis and then ANOVA, we explore whether the incidence, intensity and approach to training are linked to the performance of the small business, and how contingent variables might influence the approach taken. Building on previous studies, this study seeks to provide both theoretical and practical contributions to the subject of small firm training and development.

2.5. Literature review on Ethiopia

In Ethiopia there is no literature with direct relevance to BDS; some literature on micro and small enterprises is available. The impact assessment of micro finance is also very limited. Since the inception of micro finance scheme in the country, different researchers are recording some positive results. Mengistu Bediye (1997) noted the achievement of some positive results considering the increase in the number of program beneficiaries. He argues that the increase in the number of program beneficiaries is one indicator of the contribution of the assistance program to employment creation and income generation. In addition, he

mentioned the increased level of credit ceiling (from Birr 100 to 500) as well as the use of saving account as indicator of the growth of MSEs towards the formal sector.

Kassa Weldesenbet (1998) considered the impact of micro finance under micro enterprise project scheme in South Ethiopia in the area of education, consumption expenditure, medical expenditure, family assistance, employment creation, income generation, saving and input use. Before the credit scheme 1584 program beneficiaries were able to send 5504 children to school, while after the scheme (in the first credit cycle) 1680 program beneficiaries sent 5952 children. It should be noted that such educational enrollment outcomes could not totally be ascribed to the credit scheme because of the existence of growth trend. In addition, Kassa (1998) reported a 30.82%, 10.5% and 19.7% annual growth in consumption expenditure of the first, second and third credit cycle beneficiaries, respectively. With respect to medical expenditure, he reported a 38.55%. About 7% and 2.07% growth in first, second and third loan cycle beneficiaries' case, respectively. He also mentioned the creation of 4187 employment opportunities as additional benefit. With respect to income generation, a 52.6% income growth was recorded in the first credit cycle, while a 24.35% and 14.4% growth was recorded in the second and third credit cycle beneficiaries case. Using Wilcoxon matched pairs nonparametric test, he rejected the null hypothesis of average income before and after loan are the same at 5% level of significance implying that the average income after loan is greater than before loan in the first, second and third credit cycle. Mention is also made with respect to the contribution of micro finance to the development of saving culture and increased input use. In relation to this, Tamiru Tessema (1998), using descriptive analysis , reported a positive impact of the micro finance under micro enterprise project schemes to employment creation, production growth, skill development and avoidance of backward cultural practices facing women.

With respect to loan repayment rate, researchers report some positive and encouraging results. As reported by Tamiru Tessema (1998) and Mengistu Bediye (1997) loan repayment rate under micro enterprise project micro financing scheme, is 92%. In the case of Debrebirhan micro financing, Solomon (1996) reported an average recovery rate of 93%. Seifu Belay (1998) noted 97.76% average repayment rate in the Tigray micro enterprise.

Mengistu Bediye (1997) provided a study on the determinant of loan repayment performance in Bahirdar and Awassa, under the micro enterprise project scheme. Using a binomial probability model, he pointed the positive impact of the number of workers employed by beneficiary, education and weekly repayment period variables on loan repayment performance in Awassa while showing negative impact of loan diversion. In the case of Bahirdar, he noted, expectation of getting another loan and number of workers employed by beneficiaries to be positively related to the full loan repayment performance, while loan diversion and availability of other sources of credit are reported to be negatively related.

As there are no studies about government's and donors' non-financial services program for micro and small operators in Ethiopia, this study is believed to contribute some information to fill this gap.

Chapter Three

3. Research Methodology

3.1. Data Type and Source

The data used in this study are mainly primary and are cross-sectional. Secondary data are also used to give background (overview), which are instrumental for micro and small enterprises business development service under the study. The data are a mix of qualitative and quantitative. BDS beneficiaries who are supported for more than two years are selected as the effectiveness of the output is observed beyond this years.

3.2. Sample design and Procedure

This study covers micro and small enterprises BDS operators in 12 towns of the Amhara Region. A stratified sampling procedure was adopted. The list of operators was selected under proportional allocation based on the total sample size. Individual beneficiaries for filling the questionnaire were selected using systematic random sampling technique. Furthermore, the sample selection for second and third stakeholders is drawn with simple random sampling technique.

The main focus of the questionnaire consists of 10 components of poverty reduction variables in which business operators, non-business stakeholders and government bodies are asked to rate on a scale of 0 to 5. Biographical information on the respondents (usually the owner) was also sought in order to contextualize the operators attitude.

Lastly, a survey is conducted by employing a structured questionnaire. After the sample is drawn systematically, the data are obtained under the aegis of experienced BDS extension workers of the town after orientation.

Table 3.1: Layout of stratum for sample and population

Stratum(Town)												
population	N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	N_{11}	N_{12}
sample	n_1	n_2	n_3	n_4	n_5	n_6	n_7	n_8	n_9	n_{10}	n_{11}	n_{12}
Average($\bar{x}$)	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_4$	$\bar{x}_5$	$\bar{x}_6$	$\bar{x}_7$	$\bar{x}_8$	$\bar{x}_9$	$\bar{x}_{10}$	$\bar{x}_{11}$	$\bar{x}_{12}$
Sample variance	S^2_1	S^2_2	S^2_3	S^2_4	S^2_5	S^2_6	S^2_7	S^2_8	S^2_9	S^2_{10}	S^2_{11}	S^2_{12}

In Table 3.1, X_i 's represent number of employees.

Table 3.2: Table of designation for sample and population size

Population size (N_i)	Sample size (n_i)	Designation
N_1	n_1	Bahirdar
N_2	n_2	Injibara
N_3	n_3	Finoteselam
N_4	n_4	Deberemarkos
N_5	n_5	Gondar
N_6	n_6	Debretabor
N_7	n_7	Sekota
N_8	n_8	Woldia
N_9	n_9	Dessie
N_{10}	n_{10}	Kombolcha
N_{11}	n_{11}	Kemissie
N_{12}	n_{12}	Debrebirhan

With the above sample size allocation, we have

$$\text{Var}(\bar{x}_{st}) = \sum_{h=1}^{12} w^2_h[(1-f_h)s^2_h]/n_h$$

Since we use proportional allocation sample, $w_h = n_h/n = N_h/N$, w_h stands for stratum weight, $N=N_1+N_2+\ldots+N_{12}$ and $f_h=n_h/N_h$ is population correction factor of stratum h.

From 6895 BDS operators that are counseled by BDS advisors, 29% (2000) of them were supported before two years by BDS advisors. It was not possible to evaluate 71 % of the BDS operators because they were not matured enough to be included in this study.

There is no pervious research that specified the standard error of the variables of BDS that helps to determine the sample size. Another method that can be used to determine sample size is a pilot survey. A pilot survey was not affordable because of cost and time constraints. Since the size of population stratum, N_h, is the only available information and it differs in size, the number of units drawn is proportional to the size of strata, that is $n_h \propto N_h$.

A similar study undertaken by the Graduate School of Business at Manchester University with the title of "Empirical assessment of Management Development Needs in Manufacturing SMEs" in 2003 with a sample size of 198 is taken as a reference for the purpose of fixing the standard deviation. One of the explanatory variables used in that study is customer service with a standard deviation of 1.2 and sample mean 5.84. This helps us to determine the sample size to represent the population by calculating the acceptable absolute error, d. If we adopt a significance level α=.05, then the calculated d from the above information is 0.16. Thus, the sample size is

$$n_o=\left[\frac{Z_{\alpha/2}}{d}S\right]^2=\left[\frac{1.96\times 1.2}{.16}\right]^2=216$$

where S is standard deviation of customer service. Then, the representative sample size is

$$n=\left[\frac{n_0}{1+\frac{n_o}{N}}\right]=\left[\frac{216}{1+\frac{216}{2000}}\right]=194.94\approx 195$$

which is nearly 10% of the population size which N= 2000.

To compare and check whether our sample size is nearly representative or not, we must find the standard error and acceptable absolute error of the appropriate variables in the study. From our analysis part, we identified that the size of enterprises (number of employees) and life length of trade are approximately normal in distribution without any modification. Therefore, the acceptable absolute error d can be estimated using sample size n and the standard error of trade size or life length of trade. That is

$$n=\left[\frac{n_0}{1+\frac{n_o}{N}}\right]$$

$$d= \sqrt{\frac{[Z_{\alpha/2}S]^2}{n}}$$

A. **Using size of trade (number of employees)**

The standard deviation of sample trade size (s) = 0 .20 (Appendix A, Table A.9) with mean sample of trade size ($\bar{x}$)= 2.23

Assuming acceptable significance level α=.05, we can calculate acceptable absolute error

$$d= \sqrt{\frac{[Z_{\alpha/2}S]^2}{n}} = \sqrt{\frac{[1.96\times.2]^2}{195}} = 0.03$$

B. Using life length of trade

The standard deviation of life length of trade sample (s)=0.41, with mean sample of life length of trade ($\bar{x}$)=5.78 and α=.05, we get

$$d= \sqrt{\frac{[Z_{\alpha/2}S]^2}{n}} = \sqrt{\frac{[1.96\times.41]^2}{195}} = 0.06$$

If we take some of the explanatory variables like A and B in the above cases, the result shows that the acceptable absolute error of individual variable is less than that of the variables taken in Manchester University study paper. Furthermore, if we take customer service which is one of the modified rating scale development component of this study, its sample mean is 3.84 and standard deviation is 1.16.Then the accepted absolute error is found to be

$$d= \sqrt{\frac{[1.96\times1.16]^2}{195}} =0.11$$

This value is minimum when it is compared to the calculated value of absolute error from previous research. Therefore, it is possible to say the sample size is the best representative of the population.

In order to check the gap analysis of the result, it is advisable to study the problems using other samples selected from the opinion of different population of indirect beneficiaries

(secondary stakeholders) of non-business urban dwellers and government bodies selected by simple random sampling technique.

The number of samples for non-business urban dwellers are equivalent to the sample size of BDS operators. From government bodies 3 individuals are selected from each town. Samples are selected from 12 towns, and also from each stratum, we take a systematic random sample after assigning numbers corresponding to individual BDS operators from the list as follows.

Table 3.3: Selected samples

S.No	Name of town	Pop. size	Sample size	Selected numbers
1	Bahirdar	205	20	1,11,21,31,41,51,61,71,81,91,101,111,121,131,141,151,161,171,181,191
2	Injibara	154	15	2,12,22,32,42,52,62,72,82,92,102,112,122,132,142
3	Finoteselam	123	12	5,10,15,20,25,30,35,40,45,50,55,60
4	Debremarkos	185	18	3,13,23,33,43,53,63,73,83,93,103,113,123,133,143,153,163,173
5	Debretabor	154	15	4,14,24,34,44,54,64,74,84,94,104,114,124,134,144
6	Gondar	205	20	5,15,25,35,45,55,65,75,85,95,105,115,125,135,145,155,165,175,185,195
7	Woldia	154	15	6,16,26,36,46,56,66,76,86,96,106,116,126,136,146
8	Sekota	123	12	2,7,12,17,22,27,32,37,42,47,52,57
9	Dessie	205	20	7,17,27,37,47,57,67,77,87,97,107,117,127,137,147,157,167,177,187,197
10	Kombolcha	184	18	8,18,28,38,48,58,68,78,88,98,108,118,128,138,148,158,168,178
11	Kemissie	123	12	3,8,13,18,23,28,33,38,43,48,53,58
12	Debirebirhan	185	18	9,19,29,39,49,59,69,79,89,99,109,119,129,139,149,159,169,179

3.3. Methodology

The methodology employed in this study for assessing the impact of BDS on business success of micro and small enterprises, and economic growth of the region is discussed below. Statistical software such as SPSS and S-PLUS were employed. Moreover, statistical techniques such as multivariate factor analysis, chi-square, and nonparametric techniques of Wilcoxon Signed Rank Test were used in the analysis.

3.3.1. Impact Assessment

All BDS programs are undertaken based on the assumption that intervention will change human behavior and practices in a way that raises the possibility of achieving the desired outcome. This is to say, intervention will bring a change in the value of key variables which have experienced an intervention against variables that would have occurred without intervention. However, in the case of United Kingdom the main problem is that, no experienced business advisors intervened to change the human behavior and resulting methodological problems Hunte (1996).

Different statistical methods have been used in different studies to assess the impact of intervention. One of these methods is multiple regression analysis. This is used to analyze the change in a specific dependent variable (say, poverty) produced by changes in specific independent variables (say, micro finance project) holding other specific influences (say, weather, output price, political conditions, etc.) constant. However, this method has rarely been used in micro finance impact assessment because of its enormous demands for data on other possible causal factors and its assumption (Hunte, 1996).

The other method is control group method. This method requires a ‘before’ and ‘after’ comparison of population that received a specific treatment such as BDS provision. However, control group method confronts a range of difficulties to the practical implementation of impact evaluation. The main difficulties are sample selection bias associated with control group , misspecification of the underlying relationship and motivational problem which can arise if an individual in either the target or control group becomes reluctant to respond or unable to reach due to death or migration. However, it is

possible to tackle sample selection bias problem through more careful selection of control group. Although this approach is feasible on rare occasions, misspecification of model may arise due to motivational problem with replacing dropouts with individuals sampled at random from the original population.

The other method of impact assessment is the 'before' versus 'after' comparison demonstrating program in time trend of specified indicators. However, this methodology too does not escape the limitation faced by others. Accordingly, Johnson and Rogaly (1997) indicated the limitation that respondents may give false information if they are not ready or willing to keep written accounts/documents. As it demands knowledge on all sources and uses of funds , they added the difficulties in establishing a causal relationship to the actual business development service in question. Mosley (1997) also elaborated the limitation in this approach by indicating the possibility of achieving the desired outcomes without information. He exemplified this expression in that poverty reduction can be achieved through many factors other than intervention such as low price of consumption goods, change in government policy, improved infrastructure or simply due to better weather.

3.4. Description of the explanatory Variables

The Amhara National Regional State Micro and Small Enterprise Development Agency identified the problems of micro and small enterprises' operators in situation analysis with the involvement of individual owners. Then action plan was scheduled with full participation of operators to address the problems. To tackle such problems, the agency recruited and trained BDS delivery workers who make spot advice to the operators. All that had been done for more than two years. Therefore, this study attempts to identify the impact of BDS outputs and their contribution to poverty reduction and business development.

The variables included are:

- **Biographical variables**: These include age and sex of the enterprise owners and life length of the enterprises.
- **The size and capacity of the enterprise**: These also include employment creation (the number of employees), capital accumulation, income generated, turnover, taxation, legality, cost effectiveness, price stability and information system.

From experience, it can be anticipated that the enterprise owners are not willing to give information concerning income, profit and saving of their enterprises. Therefore, it is necessary to split the questionnaire into two parts. Firstly, the variables expected as criteria in BDS augmentation like age and sex of owners, size, premise, life length, capital, annual cost, annual profit and credit of enterprise are included. On the other hand, business success indicator components of ten item variables rating from 0 to 5 are designed in the questionnaire.

Table 3.4: Description of variables

Type of variables	Variable designation	Definition	Unit of measurement
Independent variables	X_1	Age of owners	years
	X_2	Size of enterprise	number
	X_3	Life length of enterprise	years
	X_4	Premises of the enterprise /rented or own/	Birr
	X_5	Capital of enterprise	Birr
	X_6	Annual cost	Birr
	X_7	Gender of owners	male/female
	X_8	Credit taken	Birr
Dependent variable	Y	Turnover (business success) of the enterprise	Birr
Performance indicator component of Business success (turnover)	Y_1	Cost effectiveness	rating from 0 - 5
	Y_2	Strong recording system	rate
	Y_3	Good customer service	Rate
	Y_4	Price stability	rate
	Y_5	contribution to the increase in government revenue	rate
	Y_6	Growth of enterprise income	rate
	Y_7	Participate in local development	rate
	Y_8	Job opportunity	rate
	Y_9	abide to/governed by law	rate
	Y_{10}	Develop saving culture	rate

3.5 Statistical Procedures Used

3.5.1. Multivariate Analysis

3.5.1.1. Principal Components Analysis

Principal Components Analysis (PCA) is a technique concerned with explaining the variance-covariance structure through a few linear combinations of the original variables. The maximum number of new variables that can be formed is equal to the number of original variables, and the new variables are uncorrelated among themselves. PCA is done either using the theoretical covariance matrix Σ, or theoretical correlation matrix **ρ** of X, where X is a random vector with p dimensions. Since the unit of measurements of the variables in this study are different , the PCA is based on the correlation matrix **ρ** of X. Thus, the i^{th} principal component (PC) of the standardized variables $Z^T=(Z_1, Z_2,\ldots,Z_p)$ of the original variable X is given by

$$\mathbf{Y}_i=e_i^TZ=e_{i1}Z_1+e_{i2}Z_2+\ldots+e_{ip}Z_p, \qquad (3.5.1)$$

with $E(Z)=0$ and $E(ZZ^T)=\rho$, where, $e_i^T=(e_{i1},e_{i2},\ldots,e_{ip})$ for i=1, 2, . . .p and $\lambda_1\geq\lambda_2\geq\ldots\geq\lambda_p\geq0$ are eigenvalues of the correlation matrix, **ρ** and e_i are the associated eigenvectors normalized by $e^Te=1$. Thus, the eigenvectors give the weights that are used in the equation to compute the new variables. That is the PC analysis attempts to reduce the number of components in order to find the equivalent eigenstructure of the correlation matrix of the original data.

Since, $E(Y)=E(e^TZ)=e^TE(Z)=0$, the variance of the new variable (Y) is given by

$$E(YY^T)=E(e^TZZ^Te)=e^TE(ZZ^T)e=e^T\boldsymbol{\rho}e \qquad (3.5.2)$$

The problem now reduces to finding the weight vector, e^T, such that the variance, $e^T\boldsymbol{\rho}e$, of the new variable is maximum over the class of linear combinations that can be formed subject to the constraint $e^Te=1$.The solution to the maximization problem can be obtained as follows:

Let $\Phi=e^T\boldsymbol{\rho}e-\lambda(e^Te-1)$ (3.5.3)

where, λ is the Lagrange multiplier. The p-component vector of the partial derivative is given by $\partial\Phi/\partial e=2e(\boldsymbol{\rho}-\lambda I)$ (3.5.4)

Setting the above vector of partial derivative to zero results in the final solution of

$$(\boldsymbol{\rho}-\lambda I) = 0 \qquad (3.5.5)$$

For such system of homogeneous equations to have a trivial solution , the determinant of $(\boldsymbol{\rho}-\lambda I)$ should be zero, that is

$$|\boldsymbol{\rho}-\lambda I| = 0 \qquad (3.5.6)$$

Equation (3.5.6) is a polynomial in λ of order p, and therefore, has at most p roots.

Let $\lambda_1 \geq \lambda_2 \geq \ldots \geq \lambda_{p>0}$ be the roots , that is equation (3.5.5) results in p values for λ, and each value is called the eigenvalue or root of the ρ matrix. Each value of λ results in a set of weights given by the p-component vector e by solving the equation (3.5.6) above and

$$e^T e = 1 \qquad (3.5.7)$$

where λ is scalar and ρ is matrix**.**

Therefore, the first eigenvector, e_1, corresponding to the first eigenvalue λ_1, is obtained by solving equations:

$$(\boldsymbol{\rho}-\lambda_1 I)e_1 = 0 \qquad (3.5.8)$$

Subjected to $e_1^T e_1 = 1$ **(**3.5.9)

Pre-multiplying equation (3.5.8) by e_1^T gives $e_1^T (\boldsymbol{\rho}-\lambda_1 I)e_1 = 0$

$$e_1^T \boldsymbol{\rho}\, e_{1=}\, \lambda_1 \qquad (3.5.10)$$

As $e_1^T e_1 = \lambda_{1,}$ the left hand side of equation (3.5.10) is the variance of the new variable, Y_1 which is equal to the eigenvalue, $\lambda_{1.}$

Let e_2 be the second p-component vector of weights to form another linear combination , then the linear combination can be found such that the variance of $e_2^T Z$ is the maximum subject to the constraints $e_1^T e_2 = 0$ and $e_1^T e_1 = 1$. It can be shown that e_2^T is the eigenvector of λ_2, the second largest eigenvalue of **ρ**, and so on.

3.5.1.2. The number of principal components

As a rule of thumb suggests, retaining only those components whose variance λ are greater than unity or equivalently only those components, which individually explain at least a proportion 1/p of the total variance is recommended. And another useful visual aid determining an appropriate number of PCs is the scree plot. It is a plot of λ_i versus i, with eigenvalues ordered from largest to smallest (the magnitude of eigenvalues versus its number). Then, to determine the appropriate number of components, we look for elbows

(bends) in the scree plot. The number of components is taken to be the point at which the remaining eigenvalues are relatively small and all are about the same size.

3.5.1.3. Factor Analysis

This analysis describes the covariance relationships among many variables in terms of a few underlying and unobservable random quantities.

3.5.1.4. The Orthogonal factor model

The observable random vector X with P components has mean μ and covariance $\sum$. The factor model postulates that X is linearly dependent upon a few unobservable random variables F_1, F_2, …, F_m called common factors, $m < p$ and p additional source of variation ε_1, ε_2, ε_3, …, ε_p called specific factors.

The factor analysis model is given by

$$X = LF + \varepsilon \qquad (3.5.11)$$

where $\mathbf{L}_{pxm}$ is a matrix of unknown constants called factor loading

$$\mathbf{L}_{pxm} = \begin{pmatrix} \ell_{11} & \ell_{12} \ldots & \ell_{1m} \\ \ell_{21} & \ell_{22} \ldots & \ell_{21} \\ \ldots\ldots\ldots\ldots\ldots\ldots \\ \ell_{p1} & \ell_{p2} \cdots & \ell_{pm} \end{pmatrix}$$

$\mathbf{F}=[F_1,\ldots,F_m]$ and $\mathbf{\varepsilon}=[\varepsilon_1,\ldots,\varepsilon_p]$

The coefficient ℓ_{ij} is the loading of the i^{th} variable on the j^{th} factor.

3.5.1.4.1. Assumptions of factor model:

1. $E(F) = \mathbf{0} = (0, 0, \ldots, 0)^T$
2. $\text{cov}(F) = E(FF^T) = I_m$
3. $E(\varepsilon) = \mathbf{0} = (0,0,\ldots,0)^T$
4. $\text{Cov}(\varepsilon) = E(\varepsilon\,\varepsilon^T) = \Psi_{pxp,}$ Ψ is a diagonal matrix
5. $\text{Cov}(\varepsilon, F) = E(\varepsilon, F^T) = \mathbf{0} = (0,0,\ldots,0)^T$

3.5.1.4.2. Covariance structure for orthogonal Factor model

1. Cov (X) = $LL^T+\Psi$

2. Var (X_i)= $\ell_{i1}^2 + \ell_{i2}^2 + \ldots + \ell_{im}^2 + \Psi_i$, where Ψ_i is the i^{th} specific factor.

3. E (X_i, X_k) = $\ell_{i1}\ell_{k1} + \ell_{i2}\ell_{k2} + \ldots + \ell_{im}\ell_{km}$

4. Cov (X_i, F_j) = ℓ_{ij}

5. Cov (X,F)=L, loading matrix.

Communality is defined by

$$h_i^2 = \ell_{i1}^2 + \ell_{i2}^2 + \ldots + \ell_{im}^2 \qquad (3.5.12)$$

The factor model assumes that $p + \frac{p(p-1)}{2} = \frac{p(p+1)}{2}$ variables and covariance for X can be reproduced from *pm* factor loading ℓ_{ij} and p specific variables ε_i.

The factor model provides a simple explanation of the covariation in X with parameters (*p*+*pm*) which are fewer than $p(p+1)/2$ parameters in $\sum$.

3.5.1.5. Methods of estimation of loading

If the off diagonal elements of sample covariance S are small or those of the sample correlation matrix R essentially zero, the variables are not related. This implies that a factor analysis will not prove useful and in these circumstances, the specific factor plays a dominant role. If covariance matrix appears to deviate significantly from a diagonal matrix, then a factor model can be entertained and the initial problem is one of estimating the factor loading ℓ_{ij} and specific variance Ψ_i.

There are two popular methods of parameter estimation. However, for this study, we consider the principal component method.

3..5.1.6. The Principal Component Method

The spectral decomposition of covariance $\sum$ having eigenvalue-eigenvector pairs (λ_i, e_i) with $\lambda_1 > \ldots > \lambda_m > 0$ is given as

$$\sum = \lambda_1 e_1 e_1^T + \lambda_2 e_2 e_2^T + \ldots + \lambda_p e_p e_p^T \qquad (3.5.13)$$

From above equation, we can obtain the loading, $L = \left[\sqrt{\lambda_1}\, e_1, \sqrt{\lambda_2}\, e_2, \ldots, \sqrt{\lambda_p}\, e_p\right]$

3.5.1.7. The Contribution to the Total Sample Variances

In applying the principal component to perform factor analysis, we have use, the sample covariance matrix S. Observe that $S_{11}+S_{22}+\ldots+S_{pp}$= tr(S)=trace of sample covariance matrix and $\hat{\lambda}_1+\hat{\lambda}_2+\ldots+\hat{\lambda}_p$= p= trace of sample correlation matrix, where, $\hat{\lambda}_i$'s, i=1,…, p are the estimated eigevalues of S.

$$\left[\begin{array}{l}\text{The proportion of total sample} \\ \text{Variance due to j}^{\text{th}}\text{ factor}\end{array}\right] = \frac{\hat{\lambda}_j}{tr(S)} \text{ for factor analysis of sample covariance}$$

$$\left[\begin{array}{l}\text{The proportion of total sample} \\ \text{Variance due to j}^{\text{th}}\text{ factor}\end{array}\right] = \frac{\hat{\lambda}_j}{P} \text{ for factor analysis of correlation}$$

3.5.1.8. Rule of Thumb (Convention)

1.Choose it number of positive eigenvalues of sample covariance matrix S,

$\hat{\lambda}_1 \geq \hat{\lambda}_2 \geq \ldots \geq \hat{\lambda}_m \geq 0$ and

2. Choose it number of eigenvalues of sample correlation matrix R which are larger than 1.

3.5.1.9. Factor rotation

Factor rotations are an orthogonal transformation of the factor loadings, as well as the implied orthogonal transformations of the factors. If $\hat{L}$ is the $p \times m$ matrix of estimated factor loadings obtained by any method, then $\hat{L}^* = \hat{L}\,\mathrm{T}$, where $TT^T=T^TT=$ I, is a $p \times m$ matrix of 'rotated' loadings, where I is the identity matrix. This shows that the estimated covariance (correlations) matrix remains unchanged since $\hat{L}\,\hat{L}^T+\hat{\Psi} = \hat{L}\,TT^T\,\hat{L}^T+\hat{\Psi} = \hat{L}^*\,\hat{L}^{*T}+\hat{\Psi}$

3.5.2. Analysis based on Nonparametric Method

3.5.2.1. Paired Replicates Analysis By way of Signed Ranks

The discussion of this section is based on Hollander and Wolfe (2000).

3.5.2.1.1. Assumptions:

1. Let $Z_i=Y_i-X_i$, for i=1, 2,…, n, where X_i are capital or cost incurred before the intervention of BDS and Y_i are capital or cost incurred after the intervention of BDS. The differences $Z_1,Z_2,\ldots,Z_n$ are mutually independent.

2. Each Z_i, i=1,2,…, comes from a continuous population (not necessarily the same one) that

is symmetric about a common median θ. If F_i represents the distribution function for Z_i, i=1,2,…,n, this assumption requires that $F_i(\theta)+F_i(\theta-t)=1$, for every t and i=1,2,…,n. The parameter θ is referred to as the treatment effect.

3.5.2.1.2. A Distribution- Free Signed Rank Test (Wilcoxon)

1. Hypothesis:

The null hypothesis of interest here is that of zero shift in location due to the treatment

$$\mathcal{H}_0: \theta=0 \qquad (3.5.14)$$

This null hypothesis asserts that each of the distributions for the differences (post BDS support minus pre BDS support observation) is symmetrically distributed about zero, corresponding to no shift in location due to the support of BDS.

2. **Procedure**:

To compute the Wilcoxon signed ranks statistic T^+, form the absolute $|Z_1|,\ldots,|Z_n|$ of the differences and order them from least to greatest. Define indicator variables Ψ_i, i=1,…,n, where, $\Psi_i =$ 1 if Zi>0 and 0 if Zi<0 and obtain the n products $R_1\Psi_1,\ldots,R_n\Psi_n$, where R_i is the rank of $|Zi|$. The product $R_i\Psi i$ is known as the positive sign rank of Z_i. It takes on the value zero if Z_i is negative and is equal to the rank of $|Z_i|$ when Z_i is positive. The Wilcoxon signed rank statistic T^+ is then the sum of positive signed ranks.

Since we analyze whether there is progressive change on MSEs operators or not, it is sufficient to test the hypothesis by one-sided upper-tail Test the appropriate test will be $\mathcal{H}_0$ versus $\mathcal{H}_1$ at α level of significance, where

$$\mathcal{H}_0: \theta= 0$$

$$\mathcal{H}_1: \theta>0$$

The null hypothesis will be rejected if the computed value of $T^+ \geq t_\alpha$; otherwise we do not reject $\mathcal{H}_0$. The constant t_α is chosen to make the type I error probability equal to α. Selected values of t_α can be obtained from tables, see for example Hollander and Wolfe (2000). This applies only to small sizes, but in this study, we considered large-sample approximation.

The large-sample size approximation is based on the asymptotic normality of T^+, suitably standardized. The expected value and variance of T^+ are

$$E_0(T^+) = \frac{n(n+1)}{4} \quad (3.5.15)$$

and

$$Var_0(T^+) = \frac{n(n+1)(2n+1)}{24} \quad (3.5.16)$$

The standardized version of T^+ is

$$T^* = \frac{T^+ - E_o(T^+)}{Var_o(T^+)}$$

When $\mathcal{H}_o$ is true, T^+ has, as it tends to infinity, an asymptotic N (0,1) distribution.

In this case reject the null if $T^+ \geq z_{\alpha;}$ otherwise do not reject.

3.5.3. Logistic Regression Analysis

For a binary response variable, the logistic transformation of success probability, p_i of the i^{th} individual can be modeled as a linear combination of k explanatory variablesX_{1i}, X_{2i},…, X_{ki}, so that:

$$\text{Logit}(p_i) = \log\left[\frac{p_i}{1-p_i}\right] = \beta o + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots + \beta_k X_{ki}$$

where, βo, $\beta_{1,\ldots,} \beta_k$ are the model parameters**.**

The explanatory variables in this study are Age of the enterprise owner (A), Gender of the enterprise owner (G), capital (K), Cost (C), enterprise size (E), Trade life (T),Credit (Cr) and Premise (B), that is, k=8 in this study.

To facilitate the analysis, each of these variables is categorized and coded as follows.

Age (≤20 years=1, 20-40 years=2, 40 years and above=3)

Gender (male=1, female=2)

Trade life (2 years=1, 3-5 years=2, 6-10 years=3, 11-20 years=4 and >20 years=5)

Enterprise size (number of employees) (<2=1, 2-5=2, 6-10=3 and >10=4)

Capital (<3000 birr=1, 3000-20000 birr=2, 20001-50000 birr=3, 50001-100000 birr=4)

Credit (taken=1 and not taken=2)

Premise (private=1, rented=2 and temporary leased=3)

Cost (3000 birr=1, 3000-20000 birr=2, 20001-50000 birr=3, 50001-100000 birr=4)

Using the above 8 explanatory variables the logistic regression of success (having a profit in business) becomes

Logit (p_i)= βo +β_1A+β_2G+β_3K+β_4C+β_5E+β_6T+β_7Cr+β_8B

3.5.3.1. Test of Goodness Fit

The goodness of fit of the model in this study has to be tested in one of the following three approaches.

3.5.3.1.1. Deviance Analysis

Deviance can be used to compare two nested models for grouped as well as un grouped binary data. When one model contains terms that are additional to those in another, the two models are said to be nested. The difference in the deviances of two nested models measure the extent to which the additional terms improve the fit of the model to the observed response variable. If we compare the two nested models:

Model (1): logit (p)= βo +β_1X_1+β_2X_2+. . . +β_hX_h

Model (2): logit (p)= βo +β_1X_1+β_2X_2+. . . +β_hX_h+$\beta_{h+1}X_{h+1}$+. . . +β_kX_k

Let the deviance under each model be D_1 and D_2 with degree of freedom μ_1=(n-h-1) and μ_2=(n-k-1) respectively, where n is the number of binomial observasions. Model (1) is nested within Model (2) since Model (2) contains more terms than Model (1). The difference in deviance D_1- D_2 will reflect the combined effect of the variables $X_{h+1,}$. . .,X_k after $X_{1,}$ X_2. . ., X_h have already been included in the model. This difference is described as the deviance of fitting $X_{h+1,}$. . .,X_k adjusted for elliminating $X_{1,}$ X_2. . ., X_h. Since the deviance for each model has an approximate χ^2 distribution, then the difference between two deviances also be approximated as χ^2. D_1 has a χ^2 distribution with degree of freedom $\mu_{1,}$ D_2 has χ^2 distribution with degree of freedom μ_2 and D_1- D_2 has χ^2 distribution with degree of freedom μ_1- μ_2. This is based on the likelihood function of the observed $\hat{p}_i$ for the fitted model ($\hat{L}_c$), and the likelihood function for the true success probability under the assumption of perfect model like ($\hat{L}_f$). The deviance denoted by D_1 is given by:

D_1= -2[log $\hat{L}c_1$-log $\hat{L}_f$] ~$\chi^2(\mu_1)$ and

$$\mathbf{D_2 = -2[\log \hat{L}c_2 - \log \hat{L}_f] \sim \chi^2(\mu_2)}$$

However, the deviance for individual binary data cannot be approximated by χ^2 distribution. This is because of the inclusion of the likelihood ratio under the full model. But when comparing two deviances, the term involving $\hat{L}_f$ is disappeared and

$$\mathbf{D_1 - D_2 = -2[\log \hat{L}c_1 - \log \hat{L}c_2] \sim \chi^2(\mu_1 - \mu_2)}$$

This is the usual likelihood ratio test for comparing two models.

Larger value of D are encountered when $\hat{L}_c$ is small relative to $\hat{L}_f$, indicating that the current model is poor.

3.5.3.1.2. Pearson X^2-statistics

An alternative approach to test goodness of fit is to use Pearson's X^2-statistic defined by

$$X^2 = \sum_{i=1}^{k} \frac{(y_i - n_i \hat{p}_i)}{n_i \hat{p}_i (1 - \hat{p}_i)} \sim \chi^2(\text{k-1})$$ where k is the number of categories.

where y_i= number of successes in the i^{th} category, n_i= number of individuals in the i^{th} category, and $\hat{p}_i$ =success of probability in the i^{th} category. The analysis in this study were done using SPSS package.

3.5.3.1.3. Hosmer-Lemeshow Test

In such approach, data are divided into roughly g (often 10) groups. The groups are formed by ordering the existing data with the level of their predicted probabilities. From each of such group, the observed and expected number of events will be computed. Then, the Hosmer-Lemeshow test statistics is given by

$\hat{C} = \sum_{i=1}^{10} \frac{(O_k - E_k)^2}{V_k}$ where O_k is observed number of events in the k^{th} group, E_k is expected number of events in k^{th} group, and V_k is a variance correction factor for the k^{th} group. The Hosmer-Lemeshow statistic evaluates the goodness-of-fit by creating 10 ordered groups of subjects and then compares the number actually in the each group (observed) to the number predicted by the logistic regression model (predicted).

Test of Goodness of Fit of the Final Model

The test statistic is a chi-square statistic with a desirable outcome of non-significance, indicating that the model prediction does not significantly differ from the observed.

The hypothesis to be tested as

$\mathcal{H}_0$: $\beta_j = 0$ versus

$\mathcal{H}_A$: $\beta_j \neq 0$ at α level of significance.

The Wald test statistic, W, for this hypothesis is

. $\mathbf{Z^2} = \dfrac{\hat{\beta}_j^{\,2}}{\text{var}(\hat{\beta}_j)} \sim \chi^2(1)$

$\beta_j^{\,2}$ is the square of the estimated regression coefficient and var (β_j) is the variance of the estimated regression coefficient.

Chapter Four

4. Data Analysis

4.1. Assessment of Normality

Statistical analysis of real world like the one discussed here is simplified if we begin by verifying whether the data come from a normal distribution, i.e., assessing normality. If a variable in the data set does not come from a normal distribution, then a transformation, such as taking the log of that variable, is necessary. As we will show, the precision and accuracy of the statistical results depend significantly on how strongly we can assert that the data set

Comes from the multivariate normal distribution.

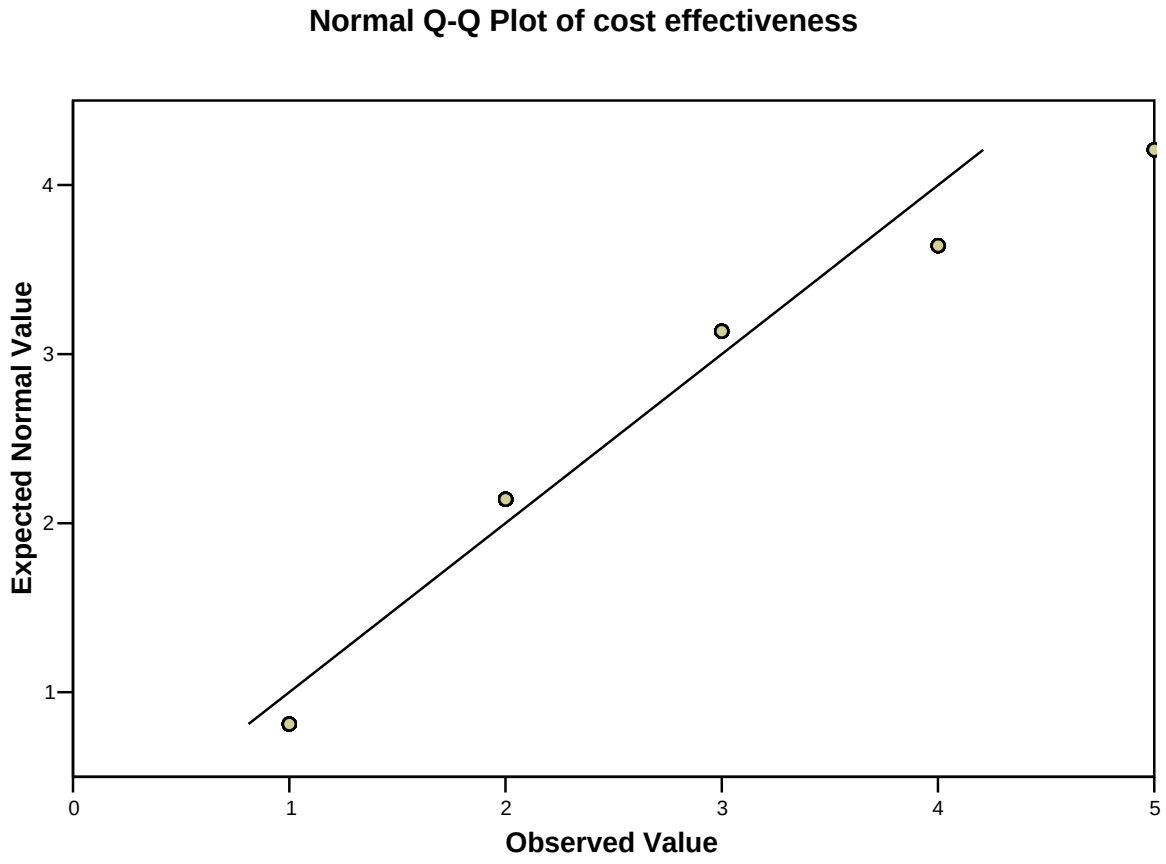


Fig.4.1: Normal Q-Q plot of cost effectiveness perceived by MSE operators.

A commonly used test to assess normality of an individual variable is the quantile-quantile plot, also known as the Q-Q plot. The Q-Q plot displays the ordered data of the X quantiles

versus normal quantiles in order to observe whether the data are normally distributed or not. We accept the assumption of normality if this plot illustrates a linear relationship. Figure 4.1 is a Q-Q plot of cost effectiveness that resembles normal. Similarly, the other indicator components of development are nearly normal.

Actually, most of the variables like capital, cost, turnover and the biographical variables are not normally distributed. The 10 business development indicator components rating from 0 to 5 are approximately normal. The other indicator components of development are nearly normal.

4.1.1. Factor Analysis Application

The questionnaire data were analyzed using SPSS. Factor analysis, Logistic binary linear regression, Chi-Square, Nonparametric and Simple descriptive Statistics formed the major part of quantitative data analysis. Firstly, descriptive statistics were used to study the sample profile. The ten variables which are used to measure the success of business were analyzed to abstract the contribution of business performance using factor analysis. Factors having an eigenvalue greater than one were recorded. Regression analysis was then performed to see the relationship between performance indicator components and the success of business (turnover of the enterprises).

4.2. Result findings and Discussions

4.2.1. Sample profile

The sample was classified by firm size, age, life length of trade, turnover, cost and capital of enterprises.

Table 4.1: Comparison of enterprises by size

Category by size	Frequency	Percent	Cumulative Percent
1	131	67.2	67.2
2-5	51	26.2	93.3
6-10	7	3.6	96.9
11-20	6	3.1	100.0
Total	195	100.0	

Table 4.2: Comparison of enterprises by capital generated

Category by capital (Birr)	Frequency	Percent	Cumulative Percent
<3, 000	52	26.7	26.7
3,000-20,000	113	57.9	84.6
20,001-50,000	25	12.8	97.4
50,001-100,000	4	2.1	99.5
>100,000	1	.5	100.0
Total	195	100.0	

From the data presented in Tables 4.1 and 4.2, we can observe that the sample is predominantly a sample of micro enterprises employing only one individual and between 3000 and 20000 birr in capital. This sample distribution also indicates about 84.6% of the total micro enterprise operating in Amhara Region engage more than 58.85% of the employed people in micro and small enterprises (Appendix A and table 4.2).

Table 4.3: Comparison of enterprises in life length of Trade

Category	Frequency	Percent	Cumulative Percent
2 years	80	41.0	41.0
3-5 years	49	25.1	66.2
6-10 years	40	20.5	86.7
11-20 years	18	9.2	95.9
>21 years	8	4.1	100.0
Total	195	100.0	

Table 4.3 shows that 59% of the sample enterprises involved in BDS were trading slightly more than three or more years. About 49% of those micro and small enterprises whose life length is 2 years involved in BDS are profitable and 75% of MSE operators engaged more than 20 years in trade activities are successful (Appendix A). This shows that new entrants of MSE businesses are less experienced to be compatible in business. Therefore, a special counseling must be designed for new start-ups businesspersons.

Table 4.4: Comparison of enterprises by their annual profit

Category	Frequency	Percent	Cumulative Percent
≤ 1800	81	41.5	41.5
>1800 birr	114	58.5	100.0
Total	195	100.0	

In this study a successful business is defined, following the official government version, as one with annual turnover in excess of Birr 1800. Accordingly, the turnover profiles of the sample enterprises further show that 58.5% of them are successful in their business.

Table 4.5: Comparison of enterprises by owners'/heads gender

Category	Frequency	Percent	Cumulative Percent
Female	61	31.3	31.3
male	134	68.7	100.0
Total	195	100.0	

From Table 4.5 it is shown that 31.3% of the enterprises are headed by females and from this figure 54% of them are successful in their business(Appendix).

Table 4.6: Comparison of enterprises by owners' age

Category	Frequency	Percent	Cumulative Percent
<20 years	1	.5	.5
21-40 years	170	87.2	87.7
> 40 years	24	12.3	100.0
Total	195	100.0	

The study shows that 87.2% of MSE operators accommodated by BDS scheme are between the age of 21 and 40, but only 43% of them are successful in their business activity(Appendix A).

We conclude that introducing credit scheme alone could not make enterprises profitable. From those enterprises that are included in BDS program and taking credit, only 51% of them are successful, while from enterprises which do not take credit in the same program 59%, of them are successful in their business.

This paper seeks to analyze the contribution of business development services in improving economic growth and reduction of poverty in different urban administrations of Amhara Region using statistical techniques - principal components and factor analysis. We examine ten characteristics in the general areas of laws and regulation which includes legality and contribution to government revenue; contribution in local economic development, creation of job opportunity and growth of enterprise income; and transparency includes customer care (promotion), cost effectiveness, saving and recording system development. Factor analysis

reduces the dimensionality of the data set from ten variables to four using the respondents' perception of business development service operators and three using the perception of the non-business and government bodies. This technique allows us to group variables into a small set of underlying factors.

Data have been collected on 10 items each having three components. The opinion of respondents were measured on 5-point rating scale with 0 being no 'importance' (not clear), 1 being 'little importance',2 being fair,3 being good, 4 being high and 5 being 'extreme vital importance'.

Table (4.7) provides a summary of respondents opinion on business development service outcomes indicators.

It is immediately noticeable that the business operators opinion on customer service, contribution on government revenue, participation in local development and governed to law are some of the indicators of MSE operators success in business.

Cost effectiveness, well-organized recording system, price stability, growth of enterprises income, job creation and saving custom are recognized as indicators of success by the perception of non-business persons (indirect beneficiaries of BDS).

To sum up the study shows that both MSE operators and other non-business stakeholders have a better understanding of the importance of BDS than the government bodies.

Table 4.7: Business development indicator components comparison

Business development indicator component	Contribution of BDS perceived by beneficiaries		Contribution of BDS perceived by non business (indirect beneficiaries)		Contribution of BDS perceived by government bodies	
	proportion	Std. dev.	proportion	Std. dev.	proportion	Std. dev.
Cost effectiveness	3.38	.95	2.71	1.25	1.72	1.17
Organized recording	2.34	1.01	2.71	1.25	1.58	1.09
Customer service	3.84	1.16	1.66	1.21	2.08	1.23
Price stability	2.63	1.16	3.22	1.17	1.78	1.25
Increase/growth of government revenue	3.36	1.41	2.10	1.03	2.33	1.13
Growth of enterprises income	2.49	1.06	3.21	1.27	2.11	1.058
Role of local development	3.57	3.77	2.84	1.21	2.5	.96
Creation of job opportunity	2.65	1.46	3.16	1.33	2.83	1.07
Legal business person	4.29	.98	2.38	1.37	2.81	1.20
Saving	2.06	1.17	2.56	1.31	1.86	1.25

The values of Table (4.7) can be obtained as Mean $(\bar{X}) = \sum_{i=0}^{5} \frac{fi\ X_i}{f_i}$ and

Var$(\bar{X}) = \frac{\sum_{i=0}^{5} f_i (X_i - \bar{X})^2}{n-1}$

4.2.2. Output of Factor Analysis and Principal Components

The composite reliability for the ten measures of business development indicators perceived by three stakeholders accounted for .43, .72 and .86 for business operators, non-business persons and government bodies, respectively. Further reduction in the number of the

variables was found to have a tendency to improve the overall reliability of the measures. Multivariate analysis in the form of factor (principal components) was therefore conducted on all business development indicator variables. This had three objectives. Firstly, it helped to identify interdependencies among those variables; secondly, to derive a limited number of manageable and meaningful constructs with a minimum loss of information and thirdly, it enabled reliable indicator of those interdependent constructs that formed the key outcomes. Orthogonal factors were obtained using varimax rotation. This eliminated problems of multicolinearity. Only those factors with an eigenvalue greater than 1 and high Cronbach α coefficients are considered. Cronbach's α is the most common form of internal consistency reliability coefficient based on the average inter-item correlation. Cronbach's α can be interpreted as the percentage of variance the observed scale would explain in the hypothetical true scale composed of all possible items in the universe. A factor loading of .45 has been used to screen out variables that are weak indicator components of business success. The composite reliabilities of the factors were checked against the Nunnally's recommended standards (Cronbach $\alpha \geq .7$) mainly to ensure that they are reliable indicators of the constructs (Nunnally, 1967). Reliability is the correlation of an item, scale, or instrument with a hypothetical one which truly measures what it is supposed.

4.2.2.1. Enterprise Owners Opinion on Performance indicators components contribution for Success of Business

In varimax rotation factor solution for the original 10 items, 60.7% of the total variance was explained by the first 4 factors with eigenvalues greater than 1 (see Table 4.8). These factors account for 22.4%, 15.2%, 12.8% and 10.3% of the variation.

The first factor that is comprised of five items is the most significant (accounting for 22.4% of the variance of the original items). This is largely loaded with measure of internal capacity and stability factor items. Two items in the second factor deal with customer service improvement, abide to/governed by law related outcomes, and therefore labeled as entrepreneurial skill development or factor of attitudinal change. The third factor relates to cost efficiency, while the fourth one deals with participation in community development.

The four business development indicators delivered are consistent with dimensions that are identified by scree plots (see Figure 4.2). From this analysis, the Cronbach's α is 0.43, which is less than 0.7 and indicates that the items are inadequate scale that means both the inter and intra items correlation become low and, consequently, the items coefficient of determination becomes small to explain the variance of the model.

Table 4.8: Results of factor analysis using varimax factor rotation (n=195) development indicator that are important component of business success.

Reliability of factor (Cronbach α=.43)

Item	$Factor_1$	$Factor_2$	$Factor_3$	$Factor_4$
Variance accounted for	22.4%	15.2%	12.8%	10.3%
Eigenvalue	2.24	1.52	1.28	1.03
- job creation - saving custom - enterprise income - recording system - price stability	.69 .68 .64 .62 .49			
-customer service -governed to law		.87 .68		
-Government revenue -cost effectiveness			.78 .69	
Local development				.89

Using SPSS package a low item to total correlation occurs between customer service and total item (Appendix A, Table A.7), but deleting this item has no influence to improve the reliability model. By dropping the local development item, the reliability of consistency improves from Cronbach's α value of .43 to .56. Therefore, except for local development, the MSE operators treated by BDS have moderate opinions for other items. It is also noticeable from the study that the association between job creation and item total is relatively better.

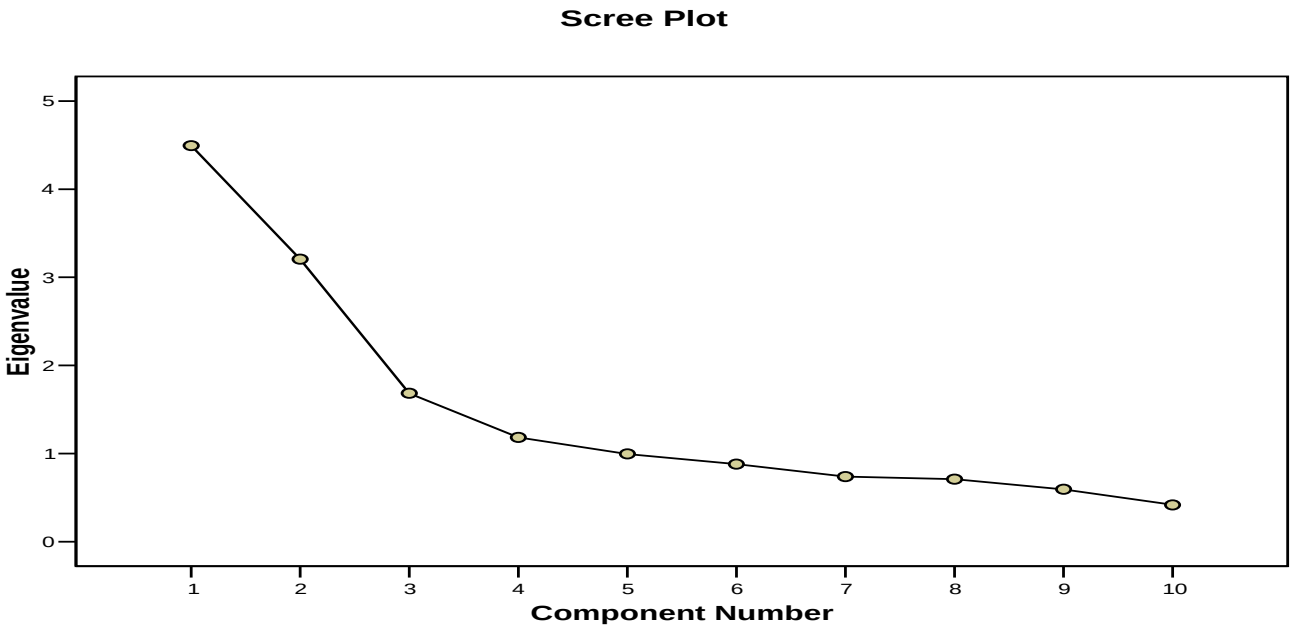


Figure 4.2 Scree plot of development indicator component of business success.

4.2.2.2. Non-business (Secondary stakeholders) Opinion on business development indicator components contribute for business success

The same procedure was followed for the original 10 items used to identify those development indicators using business owners. After varimax rotation, the first three components exhausted 64.9% of the total variance, with variance being more skewed towards to the first two factors (variance accounted to 31.8%, 22.06% and 11.02%, respectively).

Job creation has a relative low correlation with item totals (Appendix, Table B.6). Deleting this item increases the Cronbach's α to .73 and it implies that the non-business person judgments for BDS contribution on the items of development become more consistent than the business operators' opinion.

The first factor comprises four items and accounted for 31.8% of the original items, which is largely loaded with and labeled as ethics and community interaction factor. The other three items of the second factor accounted for 22.06% can be labeled as internal factor and the third factor could be considered community contribution.

Table 4.9: Result of factor analysis using varimax factor rotation of development component perceived by secondary stakeholders.

Reliability (Cronbach α=.72)

Item	$Factor_1$	$Factor_2$	$Factor_3$
Variance accounted for	31.8%	22.06%	11.02%
Eigenvalues	3.18	2.21	1.10
- Local development - Governed to law - Customer service - Government revenue	.85 .83 .68 .68		
- Cost effectiveness - Enterprise revenue - Saving culture		.87 .78 .49	
- Job creation - Recording system - Price stability			.95 .53 .44

4.2.2.3. Government Bodies Opinion on Development Indicator Components Contributed To Business Success

The procedure is similar to the above opinions. Using varimax rotation 10 components are reduced to three and accounted for 77.4% of the total variance.

The opinion of government bodies, other than that of Micro and Small Enterprises Development Agency workers, has relatively high consistent judgments about contribution of BDS in business development components**.** There is relatively a low correlation between saving custom and total items but deleting this items does not improve the total reliability. This does not mean that higher reliability implies higher validity. Even though government bodies give the more consistent judgments, their understanding about the importance of BDS is lower than the MSE and non-business persons.

Table 4.10 rotated Component matrix

Reliability (Cronbach α=.86)

Remark	Item	$Factor_1$	$Factor_2$	$Factor_3$
	Variance accounted for	44.5%	17.4%	15.55%
	Eigenvalue	4.45	1.74	1.55
.Community interaction factor	.local development .price stability .government revenue .customer service	.86 .85 .80 .70		
.both internal and external influential factor	.job creation .enterprise revenue .saving custom .governed to law		.81 .74 .65 .78	
.efficient management factor	.cost effectiveness .recording system			.81 .92

4.2.3. Analysis on Relationship between Development Indicator Components With Business Success

Four performance indicators perceived by the respondents of business owners and three perceived by government and non-business stakeholders were used to check the relevance of performance indicators and enterprises success. Factor scores were calculated from the relevant variables to provide the estimates for each of the four constructs for the first respondents and three for both the 2^{nd} and 3^{rd} respondents. These scores were used as independent variables in a stepwise multiple regression analysis. The turnover of the business was used as the dependent variable in the regression analysis. When the performance indicator components were tested for their collective impact on organization performance, the results revealed strongly significant association between the understanding of these development measurements and enterprises success (high R^2 and $P<.001$ indicate a

substantial contribution by the factors to explain the variance in performance across the sample enterprises).

To clarify the perception of the respondents on the most influential individual development indicator, a stepwise regression analysis was performed taking enterprises turnover as the dependent variables and 10 individual development indicator components as independent variables. Each development indicator was tested separately using an automatic stepping procedure to iteratively develop a rational subset of independent variables from the list of potential component of development indicators that could explain the performance of the enterprises. Starting with all the variables in the equation and sequentially removing insignificant ones, this method allows the most relevant subsets of variables to be included in the equation. Four variables remained in the regression equation. R^2 = .279, F=5.058, sig. F =.026 indicate the resulting regression equation with 4 remaining development indicator components explain 27.9% of the variance in MSE operators turnover. Table (4.11) shows the result of this analysis. Indicators related to governed to law has significant but negative association to business performance. This negative association does not necessarily mean that development indicator components in this area could result in poorer performance.

Table 4.11: Result of stepwise multiple regression analysis data taken from the opinion of MSE operators with turnover as dependent variable and p <.10 as the removal criterion.

model		Original Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Partial
1	(Constant) job creation	1.567 .291	.143 .047	.404	10.932 6.142	.000 .000	.404	.404	.404
2	(Constant) job creation enterprise revenue	1.064 .232 .265	.186 .048 .066	.322 .267	5.706 4.832 4.008	.000 .000 .000	.404 .366	.329 .278	.306 .254
3	(Constant) job creation enterprise revenue governed to law	1.884 .246 .251 -.192	.341 .047 .065 .067	.342 .253 -.179	5.532 5.201 3.848 -2.855	.000 .000 .000 .005	.404 .366 -.160	.352 .268 -.202	.324 .240 -.178
4	(Constant) job creation enterprise revenue governed to law recording	1.581 .221 .226 -.175 .153	.363 .048 .065 .067 .068	.307 .228 -.163 .148	4.355 4.586 3.460 -2.614 2.249	000 .000 .001 .010 .026	.404 .366 -.160 .305	.316 .243 -.186 .161	.283 .213 -.161 .139

4.3. A Distribution- Free Signed Rank Test

In order to compare effective utilization of capital before and after BDS program is delivered, the Wilcoxon matched pairs nonparametric test is employed in the study. In applying this test, we first find the difference between each of values and assign rank to the differences from the smallest to largest without regard to sign. If a difference appears to be zero (in the case of tied pairs), the observation will be dropped and the sample size will be reduce accordingly. The actual signs of each differences are then put to the corresponding ranks and the sum of the positive ranks, symbolized by T^+, or the sum of negative ranks , T^- are computed. Since the number of observation, n >20 (n=195 is large), the distribution of the standardized T^+ can be considered normal with mean μ_T and standard deviation σ_T as

shown in Chapter three. Denoting the average annual cost expenditure and capital generated by MSE operators 'before' and 'after' BDS scheme AX_b and AX_a respectively, the null and alternative hypothesis can be specified as:

4.3.1. Capital generated

$\mathcal{H}_0$: $AX_b = AX_a$, average annual capital before and after BDS is the same.

$\mathcal{H}_1$: $AX_a > AX_b$, average annual capital after BDS is greater than before.

From SPSS, the following result is obtained

Table 4.12 : Descriptive Statistics for capital

		n	Mean	Std. Deviation	Minimum	Maximum
Capital	before	195	8292.8205	14415.12843	200.00	80000.00
Capital	after	195	11664.6154	18212.70173	200.00	110000.00

Table 4.13: Wilcoxon Signed ranks Test results for Capital

	capital after – capital before
Z	-11.841(a)
Asymp. Sig. (2-tailed)	.000

a Based on negative ranks.
b Wilcoxon Signed Ranks Test

The above test result leads to the rejection of null at 1% significant level indicating that the average annual individuals capital after BDS scheme is significantly increased.

4.3.2. Cost expenditure.

$\mathcal{H}_0$: $AX_b = AX_a$, average annual cost expenditure before and after BDS is the same.

$\mathcal{H}_1$: $AX_a < AX_b$, average annual cost expenditure after BDS is less than before.

Table 4.14: Wilcoxon Signed Rank Test

		n	Mean Rank	Sum of Ranks
Cost after – cost before	Negative Ranks	121(a)	86.16	10425.00
	Positive Ranks	60(b)	100.77	6046.00
	Ties	14(c)		
	Total	195		

a cost after < cost before
b cost after > cost before
c cost after = cost before

Table 4.15: Test results for Cost

	Cost after – cost before
Z	-3.104(a)
Asymp. Sig. (2-tailed)	.002

a Based on positive ranks.
b Wilcoxon Signed Ranks Test

This result leads to the rejection of null at 1% significant level indicating that the average annual cost expenditure of enterprises after BDS is significantly less than before. Generally, we can safely say that BDS scheme has a positive impact on micro and small enterprise operators' capital generation and cost utilization.

4.4. Logistic Regression Analysis

All enterprise owners included in this study are accommodated in business development service advisors. The MSE operators (owners) are different in age, sex, income level (profit), capital, trade activities, employment size, expenditure, credit and premises. To study the effect of those 8 explanatory variables on binary response variable, namely turnover (business success), having two outcomes (≤1800 birr = 0, or >1800 birr = 1), the logistic regression is used. As mentioned earlier in the study 'success' stands for annual turnover greater than Birr 1800. Then log odd of matching turnover is to be expressed as a linear combination of those selected explanatory variables. To compute odds of matching for any category, we always need to have a reference category. The SPSS software package takes automatically either the last or the first category. Then the odd of success for any category will be interpreted in relation to the reference category selected.

Based on this coding scheme, the logistic regression coefficients can be estimated using the maximum likelihood estimation method. This is done using SPSS software package. Not all the estimated coefficients for a model may be significant indicating that some of the explanatory variables may be insignificant and irrelevant to explain the response variable. Therefore, we need to select the most appropriate model. In examining the effect of including or excluding terms from a model, we consider the change in Deviance. The change in deviances of two nested models measures the extent to which the additional explanatory variables improve the fit of the model to the observed response.

Table 4.16: Categorical Variables Codings

		Frequency	Parameter coding			
			(1)	(2)	(3)	(4)
categorized capital	<3000 birr	52	1.000	.000	.000	.000
	3000-20000 birr	113	.000	1.000	.000	.000
	20001-50000 birr	25	.000	.000	1.000	.000
	50001-100000 birr	4	.000	.000	.000	1.000
	>100000 birr	1	.000	.000	.000	.000
categorized trade life	2-5 years	80	1.000	.000	.000	.000
	6-10 year	49	.000	1.000	.000	.000
	11-20 years	40	.000	.000	1.000	.000
	21-40 years	18	.000	.000	.000	1.000
	>40 years	8	.000	.000	.000	.000
categorized cost	<3000 birr	97	1.000	.000	.000	
	3000-20000 birr	80	.000	1.000	.000	
	20001-50000 birr	17	.000	.000	1.000	
	50001-100000 birr	1	.000	.000	.000	
categorized employment size	<2	131	1.000	.000	.000	
	2-5	51	.000	1.000	.000	
	6-10	7	.000	.000	1.000	
	>10	6	.000	.000	.000	
categorized age	<20 years	1	1.000	.000		
	21-40 years	170	.000	1.000		
	41-60 years	24	.000	.000		
premise	Private	34	1.000	.000		
	Rent	83	.000	1.000		
	Temporary leased	78	.000	.000		
credit	not taking	43	1.000			
	taking	152	.000			
gender	female	61	1.000			
	male	134	.000			

The SPSS outputs based on the first four significant variables with various levels and the corresponding statistical tests is given in Table (4.17) below.

Table 4.17: Estimates for the final logistic regression model

Variable with levels	B	S.E	Wald	d.f	Sig.	Exp(B)
Premise			6.458	2	.04	
Premise (0) Ref.	-	-	-	-	-	-
Premise(1)	-1.538	6.71	5.258	1	.022	.215
Premise(2)	-.898	.480	3.493	1	.062	.407
Employment size			25.858	3	.000	
Employment size(1)	-1.608	1.169	2	1	.169	.200
Employment size(2)	.908	1.208	1.892	1	.452	2.479
Employment size(3)	8.271	31.094	.565	1	.790	3908.567
Employment size (4)Ref.	-	-	.071	-	-	-
			-			
Trade life			13.377	4	.010	
Trade life(1)	-1.895	.968	3.833	1	.050	.150
Trade life(2)	-1.531	.987	2.406	1	.121	.216
Trade life(3)	-1.034	1.003	1.064	1	.302	.356
Trade life(4)	.718	1.066	.454	1	.501	2.051
Trade life (5) Ref.	-	-	-	-	-	-
Cost expenditure			8.684	3	.034	
Cost expenditure(1)	-8.755	99.633	.008	1	.930	.000
Cost expenditure(2)	-7.477	99.633	.006	1	.940	.001
Cost expenditure(3)	.926	101.859	.000	1	.993	2.524
Cost expenditure (4) Ref.	-	-	-	-	-	-
Constant	10.226	99.646	.011	1	.916	27623.834

1. From the result of the above test, we can observe that a remarkable change occur in employment size.

- When the employment size is increased by one unit of category (from category 1 to 2 or adding 3 employees) profitability increases by a factor of 2.5.
- We observe that from category 2 to 3 (adding 5 employees) profitability increases by a factor of 3908. This result agrees with Phillips and Kirchoff (1988) suggest that firms that grow and take on employees are more likely to survive.

- As the size of enterprises increase, profitability increases. This study also emphasis that the introduction of BDS for enterprises having more than 10 employees are more likely to improves their business.

2. Enterprises that are long staying in trade activities are more profitable than those of the start-ups.
3. The study underscores that the introduction of BDS are important for enterprises that execute a big amount of operating cost.
4. It was also noted that business profitability is not associated with the age as well as gender of owners.
5. The criteria that uses annual turnover greater than 1800 birr as a success line is not strong enough to associate with the amount of capital.

4.4.1. Test of Goodness of Fit of the Final Model

The hypothesis to be tested is

$\mathcal{H}_0$: $\beta_j = 0$ versus

$\mathcal{H}_A$: $\beta_j \neq 0$ at α level of significance.

Table 4.18:Contingency Table for Hosmer and Lemeshow Test

		business = failure		business =success		Total
		Observed	Expected	Observed	Expected	
Step 1	1	21	20.211	0	.789	21
	2	19	17.741	0	1.259	19
	3	18	18.086	2	1.914	20
	4	17	17.019	3	2.981	20
	5	13	14.304	7	5.696	20
	6	12	11.724	8	8.276	20
	7	9	8.662	10	10.338	19
	8	3	5.317	17	14.683	20
	9	2	.938	18	19.062	20
	10	0	.001	16	15.999	16

Table 4.19 :Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.268	8	.729

The best fit of the data is as follows

$$\log\left[\frac{p_i}{1-p_i}\right] = 10.226 + \beta_b{}^{*}B_i + \beta_e{}^{*}E_i + \beta_t{}^{*}T_i + \beta_c{}^{*}C_i$$

P_i= The probability that the i^{th} individual opportunity of business success under given levels of the explanatory variables.

β_b^*=Coefficients of b^{th} category of premise .

B_i=The type of of premise.

β_e^*=Coefficient of e^{th} category of enterprise size.

E_i =Size of enterprise.

β_t^* =Coefficient of t^{th} category of trade life.

T_i =Trade life of i^{th} enterprise.

β_c^*= Coefficient of c^{th} category of cost expenditure

C_i =Cost expenditure of i^{th} enterprise.

The Homer-Lemeshow Test for goodness of fit assumes the adequacy of the final model. The computed Test statistic is 5.28 with P-value .729 indicating that there is no lack of fit. That means the model seems to fit the data very well.

Chapter Five

Conclusions and Recommendations

The study has given an insight into the business development component indicator by introducing BDS program on micro and small enterprise operators. From factor analysis, it has further highlighted the complexity of the variables that contribute and demonstrate possible leverage points of specific inputs for business success. The study also reveals four groups of performance indicators of business success from the opinion of BDS beneficiaries; both non-business persons and government bodies identify three groups of factors. This indicates that there is a big analysis of gap among business owners, non-business persons and government bodies concerning the importance of BDS program. The business operators perceived that BDS program enables them to be self employed, governed to law, and contribute for local developments. However, they do not understand the interaction of these components with their enterprise income and related components. On the other hand, the government bodies perceived that BDS scheme helps the business operators to speed up their growth and become profitable. However, they did not mention their contribution to local development and government revenue. Neutral opinions are expected from non-business persons. The result of the study showed that the introduction of BDS program in to MSE operators enables them to be effective in internal organized information system, creation of job opportunity and harmonizing of regulation . From these results, the local government and any other non-government bodies or concerned stakeholders could improve their service and develop better strategies to fill the gaps created here.

Using Wilcoxon matched pair Nonparametric Test, it was shown that the introduction of BDS program has contributed towards a rise in capital and effective reduction of operation cost of the enterprises.

Logistic regression analysis indicates that business success is associated with the size of enterprises (number of employees). As the size of enterprises increase, profitability also increases. This implies that the introduction of BDS for enterprises having more than 10 employees are more likely to improve their business.

One important point observation made in this study is that only easily accessible working places cannot be considered as a guarantee for MSEs business success unless they are closely related with appropriate advisors. Business activities that are undertaken by renting houses are not as such highly successful than businesses in private houses. Enterprises whose life of trading activities is larger are more profitable than those with short life. The study also underscores that, the introduction of BDS are highly important in order to be successful in business for enterprises that execute a big amount of operating cost. It was also noted that business profitability is not associated with the age as well as gender of owners and the amount of credit obtained. The criteria that uses annual turnover greater than 1800 birr as a success line is not strong enough to associate with the amount of capital. According to this study, business providers need not consider these variables as criteria for including of enterprises in BDS.

The results of the study show MSE's supported by BDS

1. are governed by law, this means, they pay taxes, are licensed in trade and their activities are in the frame of national and local regulation.

2. contribute to reduce unemployment by creating job opportunities.

3. develop information and organized documents that enable them to evaluate their performance.

From the opinion of three types of respondents, the assessment made by government bodies are highly consistent than the judgment of business operators. Since the government executives have almost similar level of background relative to the business operators to understand, their judgments are expected to be consistent from time to time. In the case of this study, the Cronbach's α indicates that the idea of agreement between government bodies for development indicator items after the introduction of BDS would be 86%, while the agreement between business operators are 43%. Even though, it is a crude measure, it does give an idea of how much agreement exists.

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Appendix A: Data output collected from business operators.

Table A.1: Comparison of enterprises by their annual profit

Trade length of life	Number of success	Number of failure	Total	Success ratio	Failure Ratio
2years	39.00	41.00	80.00	0.49	0.51
3 to 5	23.00	26.00	49.00	0.47	0.53
6to 10	28.00	12.00	40.00	0.70	0.30
11 to 20	16.00	2.00	18.00	0.89	0.11
>20	6.00	2.00	8.00	0.75	0.25
Total	112.00	83.00	195.00	0.57	0.43

Employment size	Number of success	Number of failure	Total	Success ratio	Failure Ratio
<2	53.00	78.00	131.00	0.40	0.60
2 to 5	38.00	13.00	51.00	0.75	0.25
6to 10	7.00	0.00	7.00	1.00	0.00
>10	6.00	0.00	6.00	1.00	0.00
Total	104.00	81.00	195.00	0.53	0.47

Premise	Number of success	Number of failure	Total	Success ratio	Failure Ratio
Rented	48.00	35.00	83.00	0.58	0.42
Temporarily leased	42.00	36.00	78.00	0.54	0.46
Private	22.00	12.00	34.00	0.65	0.35
Total	112.00	83.00	195.00	0.57	0.43

gender	Number of success	Number of failure	Total	Success ratio	Failure Ratio
female	33.00	28.00	61.00	0.54	0.46
male	79.00	55.00	134.00	0.59	0.41
total	112.00	83.00	195.00	0.57	0.43

age	Number of success	Number of failure	Total	Success ratio	Failure Ratio
<20	1.00	0.00	1.00	1.00	0.00
21-40	73.00	85.00	170	0.43	0.50
>40	20.00	4.00	24.00	0.83	0.17
Total	94.00	89.00	195.00		0.46

Capital	Employment size	percent
<20000	256.00	58.85
20000-500000	179.00	41.15
	435.00	100.00

Table A.2: Factor Analysis for business operators

Descriptive Statistics

	Mean	Std. Deviation	Analysis n
Cost effective	2.3744	.94616	195
recording	2.3385	1.00939	195
Customer service	3.8410	1.15783	195
Price stability	2.6256	1.15694	195
Government revenue	3.3641	1.41266	195
Enterprise income	2.4872	1.05693	195
Local development	3.5744	3.76752	195
Job creation	2.6513	1.45780	195
legalized	4.2872	.97895	195
Saving custom	2.0615	1.17373	195

Table A.3: Total Variance Explained using Principal Component Analysis

Component	Initial eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.240	22.403	22.403	2.240	22.403	22.403	2.056	20.556	20.556
2	1.522	15.216	37.619	1.522	15.216	37.619	1.396	13.963	34.520
3	1.281	12.812	50.431	1.281	12.812	50.431	1.368	13.685	48.205
4	1.027	10.274	60.705	1.027	10.274	60.705	1.250	12.500	60.705
5	.939	9.391	70.096						
6	.918	9.181	79.277						
7	.624	6.238	85.516						
8	.590	5.900	91.415						
9	.470	4.704	96.119						
10	.388	3.881	100.000						

Table A.4: Extraction of a 4 component Matrix(a)

	Component			
	1	2	3	4
Enterprise revenue	.692	-.201	.046	.038
Job creation	.630	.226	-.561	-.094
recording	.620	.047	.070	-.235
Saving custom	.566	-.219	-.058	-.367
Price stability	.554	-.064	-.069	.129
Cost effective	.481	.032	.435	.369
legalized	-.041	.807	.100	.052
Customer service	-.013	.676	.052	-.560
Government revenue	.308	.276	.716	.135
Local development	.155	.438	-.486	.583

TableA.5: Rotated Component Matrix(a): Varimax with Kaiser Normalization

	Component			
	1	2	3	4
Job creation	.690	.170	-.220	.468
Saving custom	.678	-.030	-.041	-.208
Enterprise income	.636	-.212	.267	.038
Recording system	.623	.143	.188	-.060
Price stability	.485	-.145	.190	.199
Customer service	.071	.867	-.080	-.100
legalized	-.183	.678	.239	.339
Government revenue	.054	.221	.797	-.123
Cost effectiveness	.225	-.136	.690	.111
Local development	-.011	.036	.002	.889

Table A.6: Reliability Statistics for business operators' opinion

Cronbach's α	Cronbach's α Based on Standardized Items	N of Items
.430	.553	10

Table A.7:Item-Total Statistics for business operators opinion

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's α if Item Deleted
Cost effective	27.2308	39.426	.225	.158	.398
recording	27.2667	38.279	.296	.216	.380
Customer service	25.7641	40.810	.057	.190	.435
Price stability	26.9795	38.515	.219	.166	.394
Government revenue	26.2410	38.349	.151	.221	.410
Enterprise revenue	27.1179	38.620	.248	.282	.390
Local development	26.0308	24.133	.126	.165	.558
Job creation	26.9538	33.220	.455	.375	.304
legalized	25.3179	39.764	.184	.242	.406
Saving custom	27.5436	39.188	.165	.243	.408

Table A.8:Intra class Correlation Coefficient for business operators opinion

	Intra class Correlation(a)	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.070(b)	.042	.106	1.754	194	1746	.000
Average Measures	.430	.303	.542	1.754	194	1746	.000

Table A.9: Stratified random sample versus Simple random.

			Variance		
stratum	N	n	Life length of trade	Employment size	Customer service
Bahirdar	205	20	4.84	10.69	1.63
Debirebirhan	185	18	118.26	2.14	.61
Dessie	205	20	4.83	10.59	1.31
Debiremarkos	185	18	30.38	3.16	1.28
Debiretabor	154	15	13.03	23.11	1.32
Enjibara	154	15	14.89	15.12	1.41
Finoteselam	123	12	151.69	.67	.85
Gondar	205	20	18.14	1.11	.66
Kessie	123	12	56.45	4.52	.88
Kombolcha	184	18	12.92	2.62	1.68
Sekota	123	12	13.54	30.45	1.48
Woldia	154	15	34.21	1.10	1.98
Variance SRS(S^2)			37.56	8.48	1.34
Variance of Stratified($V\,\bar{x}_{st}$)			.17	.04	.01

Appendix B: Analysis of data collected from non-business Person

Table B.1: Inter-Item covariance and Correlations matrix.

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Covariance	.282	-.332	1.039	1.371	-3.124	.089	10
Inter-Item Correlations	.190	-.206	.598	.805	-2.899	.036	10

Table B.2:ANOVA(a)

		Sum of Squares	df	Mean Square	F	Sig
Between People		770.167	191	4.032		
Within People	Between Items	743.865	9	82.652	68.401	.000
	Residual	2077.135	1719	1.208		
	Total	2821.000	1728	1.633		
Total		3591.167	1919	1.871		

Grand Mean = 2.6458

.

Table B.3: Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
521.818	55.551	9	183	.000

Table B.4: Communalities

	Raw		Rescaled	
	Initial	Extraction	Initial	Extraction
Cost effective	1.561	1.178	1.000	.755
Recording	1.436	.571	1.000	.398
Customer service	1.371	.769	1.000	.561
Price stability	1.068	.333	1.000	.312
Government revenue	1.632	1.057	1.000	.648
Enterprise income	1.469	.956	1.000	.651
Local development	1.766	1.312	1.000	.743
Job creation	1.875	1.572	1.000	.838
legalized	1.706	1.199	1.000	.703
Saving custom	1.023	.437	1.000	.427

Table B.5: Reliability Statistics for non-businessperson opinion

Cronbach's α	Cronbach's α Based on Standardized Items	N of Items
.723	.723	10

Table B.6: Item-Total Statistics non-businessperson opinion

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's α if Item Deleted
Cost effective	23.8256	35.083	.513	.	.679
recording	23.8256	35.083	.513	.	.679
customer	24.8769	37.572	.350	.	.706
Price stability	23.3179	39.166	.255	.	.720
Government revenue	24.4359	39.154	.312	.	.711
Enterprise revenue	23.3282	35.758	.453	.	.689
Local development	23.6974	36.717	.416	.	.696
Job creation	23.3692	39.945	.152	.	.739
legalized	24.1538	36.337	.366	.	.704
Saving custom	23.9692	34.741	.506	.	.679

Appendix C: Analysis of data collected from Government bodies.

Table C.1: Descriptive Statistics

	Mean	Std. Deviation(a)	Analysis n(a)
Cost effectiveness	1.7222	1.1693	36
Recording system	1.5833	1.0897	36
Customer Service	2.0833	1.2332	36
Price stability	1.7778	1.2497	36
Government revenue	2.3333	1.1304	36
Enterprise income	2.1111	1.0482	36
Local development	2.5000	.9574	36
Job creation	2.8333	1.0672	36
legalized	2.8056	1.1977	36
profit	1.8889	1.2862	36
saving	1.8611	1.2506	36

Table C.2: ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		205.656	35	5.876		
Within People	Between Items	64.211	9	7.135	8.487	.000
	Residual	264.789	315	.841		
	Total	329.000	324	1.015		
Total		534.656	359	1.489		

Grand Mean = 2.1611

Table C.3: Hotelling's T-Squared Test

Hotelling's T-Squared	F	df1	df2	Sig
94.051	8.061	9	27	.000

Table C.4: Extraction Method: Principal Component Analysis

Component	Initial eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.449	44.493	44.493	4.449	44.493	44.493	2.953	29.528	29.528
2	1.738	17.380	61.874	1.738	17.380	61.874	2.422	24.216	53.745
3	1.551	15.506	77.380	1.551	15.506	77.380	2.363	23.635	77.380
4	.724	7.243	84.622						
5	.398	3.983	88.606						
6	.341	3.407	92.013						
7	.294	2.943	94.956						
8	.211	2.108	97.064						
9	.181	1.811	98.875						
10	.112	1.125	100.000						

Table C.5: Rotated Component Matrix(a)

	Component		
	1	2	3
Local development	.858	.197	.023
Price stability	.849	.335	.027
Government revenue	.803	.072	.272
Customer service	.699	.175	.455
Job creation	.254	.811	-.229
legalized	.209	.778	.367
Enterprise revenue	.292	.738	.069
Saving custom	-.209	.651	.626
recording	.149	.010	.921
Cost effective	.322	.060	.805

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

Table C.6:Reliability Statistics for government bodies judgment

Cronbach's α	Cronbach's α Based on Standardized Items	N of Items
.857	.857	10

Table C.7: Item-Total Statistics for government bodies judgment

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's α if Item Deleted
Cost effective	19.8889	48.273	.551	.728	.845
recording	20.0278	50.142	.472	.760	.851
Customer service	19.5278	45.456	.696	.714	.831
Price stability	19.8333	45.914	.654	.740	.835
Government revenue	19.2778	47.921	.600	.605	.840
Enterprise income	19.5000	49.457	.546	.562	.845
Local development	19.1111	49.816	.584	.629	.843
Job creation	18.7778	51.321	.404	.594	.856
legalize	18.8056	45.990	.686	.654	.832
Saving custom	19.7500	49.221	.445	.642	.855

Table C.8: Intra class Correlation Coefficient for government bodies judgment

	Intra class Correlation(a)	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.375(b)	.257	.527	6.990	35.0	315	.000
Average Measures	.857(c)	.776	.918	6.990	35.0	315	.000

Appendix D: Questionnaire

Questionnaire For The Survey On Empirical Impact Assessment Of Business Development Service For Micro Enterprises Operators In The Case Of Amhara National Regional State

Section A: - Primary Beneficiaries (MSEs Operators)

1. Name of respondents_____
   Sex_____
   Age_____
2. Address of Enterprise
   Zone_____
   Town_____
   Kebele_____
   Tel._____
3. Time of establishment of business organization (Ethiopian calendar)
   Month_____
   Year_____
4. Did you borrow money from a microfinance institution? _____

If the answer is yes, how much?_____
From which microfinance institution_____
Frequency of loan_____

5. The premises to undertake your business is

Owner house ☐
Rented house ☐
Temporary leasing (Pocket house) ☐

6. Your long term vision for sustainability of current business sector is :-

very high ☐

medium ☐

low ☐

cannot continue ☐

7. The Impact of Business Development Service given by Agency and Donors on your business success

No	Components of Impact	Extremely very high(5)	Very high (4)	High (3)	Fair (2)	Low (10	Not clear (0)
1	Cost effectiveness						
2	recording						
3	Customer service						
4	Price stability						
5	Raising government revenue						
6	Growth of enterprises income						
7	Role of local development						
8	Creation of job opportunity						
9	Governed to law						
10	profitability						
11	Saving custom						

8. Your operating cost

Current	Before BDS given
Monthly_____	_____
Annually_____	_____

9. Your current number of employees_____

Previous (before BDS given) _____

10. Your capital

Current	Before BDS given
Monthly_____	_____
Annually_____	_____

11. Your profit

Current	Before BDS given
Monthly_____	_____
Annually_____	_____

12. Your saving

Current	Before BDS given
Monthly_____	_____
Annually_____	_____

Section B: - Secondary Stakeholders (non business indirect Beneficiaries)

1. Your opinion about the Impact of BDS given by Agency and Donors on Micro and Small Enterprises

No	Components of Impact	Extremely very high(5)	Very high(4)	High(3)	Fair(2)	Low(1)	Not clear(0)
1	Cost effectiveness						
2	recording						
3	Customer service						
4	Price stability						
5	Raising government revenue						
6	Growth of enterprises income						
7	Role of local development						
8	Creation of job opportunity						
9	Governed to law						
10	profitability						
11	Saving custom						

Section C: - Tertiary Stakeholders (non business government executives)

1.Your opinion about the Impact of business development service given by Agency and Donors on Micro and Small Enterprises

No	Components of Impact	Extremely very high(5)	Very high(4)	High(3)	Fair(2)	Low(1)	Not clear(0)
1	Cost effectiveness						
2	recording						
3	Customer service						
4	Price stability						
5	Raising government revenue						
6	Growth of enterprises income						
7	Role of local development						
8	Creation of job opportunity						
9	Governed to law						
10	profitability						
11	Saving custom						

Declaration

I, the undersigned, declare that the thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

Declared by

Name----------

Signature----------

Date----------

Confirmed by the Advisor

Name----------

Signature----------

Date----------