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**MICRO AND SMALL ENTERPRISES INVOLVEMENT IN
SOLID WASTE MANAGEMENT IN ADDIS ABABA: THE
CASE OF NEFAS SILK LAFTO SUB CITY**

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JULY 2010

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AMHA ERMIAS
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ABSTRACT

This paper examined whether factors like infrastructure, training and advice, willingness to pay, attitude of members of Micro and Small Enterprises (MSEs) towards their work, leadership competence and gender difference resulted in performance difference of MSEs engaged in solid waste management service. A sample of eight MSEs with a focus group of 72 respondents in Nifas Silk Lafto Sub City, Addis Ababa was used purposely. The selected MSEs were divided into best and least performing based on the criteria developed by Addis Ababa Sanitation Administration Agency; and Nifas Silk Lafto Sub City and Kebeles Offices. The criteria included amount of solid waste collected, income, efficient coverage of zones, motivation to work, proper use of equipment and customer satisfaction. The results from the whole membership data and interview indicated that gender difference in each MSE had its own effect on their performance difference because women had additional reproductive and social roles unlike their men counterparts. The results also indicated that the existed performance differences of the MSEs were due to difference in the condition of infrastructure, provision of technical support, relationship with customers, and provision of proper waste collection service. The paper advocates for application of gender based affirmative action for improved solid waste management system through proper monitoring of the service. Finally, the research suggests appropriate lines of action on the provision of technical support, increase in public awareness and provision of facilities and ensures sustainability of MSEs driven solid waste management scheme in the sub city and Addis Ababa.

Acronyms

AACA	Addis Ababa City Administration
AAEPA	Addis Ababa Environmental Protection Agency
BPCADA	Beautification Parking Cemetery Administration and Development Agency
CBO	Community-Based Organization
CSA	Central Statistics Agency
EC	Ethiopian Calendar
FDRE	Federal Democratic Republic of Ethiopia
MSEs	Micro and Small Enterprises
NGOs	Non-Governmental Organization
ORAAMP	Office for the Revision of Addis Ababa Master Plan
PSP	Private Sectors' Participation
SBPDA	Sanitation Beautification and Parks Development Agency
SMA	Sanitation Management Agency
SWM	Solid Waste Management
UNCHS	United Nations Center for Human Settlement
UNDFW	United Nations Development Fund for Women
UDCBO	Urban Development and Capacity Building Office
WB	World Bank

CHAPTER ONE

1. INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Solid waste management (SWM) refers to the collection, transfer, treatment, recycling, resource recovery and disposal of solid waste in urban areas (Schübeler, 1996). Porteous, (1998) defined solid waste as any refuse, certain sludges and other discarded materials, including solid and semi-solid materials resulting from industrial, commercial, mining, agricultural operations and domestic activities for which there is no economic demand and which must be disposed off. Municipal solid waste refers to solid wastes generated by households, shops, markets, offices, schools and other institutions, street sweepings and non-hazardous waste from industries (Schübeler, 1996).

Management of solid waste and other infrastructures is a major problem facing countries (UNCHS, 1991). That is why there is a growing concern manifested in Millennium Development Goals calling to address environmental infrastructure in developing countries by 2015. The problem of managing solid waste is caused by poor waste collection, storage and disposal leading to subsequent pollution and environmental degradation (Ramachandra and Shruthi, 2007). Moningka (2000) also argued that solid waste management is one of the most important urban services provided under a municipal responsibility nearly in all developing countries. Moningka also stated that in urban areas, especially in the rapidly urbanizing cities of the developing world, problems and issues of municipal solid waste management are of immediate importance. Hence, solid waste generated in urban areas needs to be managed properly in such a way that it minimizes risk to the environment and human health. Waste management is an essential task which has important consequences for public health and well-being, the quality and sustainability of the urban environment (Schubeler, 1995).

Solid waste management is a complex task which depends upon the organization and cooperation between households, communities, private enterprises particularly the involvement of micro and small enterprises (MSEs) and municipal authorities in order to have appropriate waste collection, transfer,

recycling and disposal. Haan et al (1996) explained that compared to conventional contractors, MSEs bring the additional advantage that their appropriate technologies allow them provide low-cost services to those residential areas where larger scale operations either are too expensive or make use of inappropriate equipment. They added that a further significant benefit is that MSEs can contribute to the creation of jobs and incomes and there are good reasons for considering this option. Examples of existing waste services delivered by MSEs include primary collection (especially in unplanned residential areas), street sweeping, park cleaning, and recycling.

Since February 2003 the city government of Addis Ababa is performing solid waste management activity under the Addis Ababa Sanitation, Beautification and Parks Development Agency (SBPDA). This task was previously carried out by Addis Ababa Health Bureau before the city administration gave the mandate to SBPDA (Solomon, 2006). According to Addis Ababa City Administration Proclamation No. 15/2009, three different bodies are legally operating recently: Solid Waste Management Agency (now changed into Sanitation Management Agency), Beautification Parking Cemetery Administration and Development Agency (BPCADA) and Solid Waste Recycling and Incineration Project. Out of the three, Sanitation Management Agency is in charge of managing solid waste collection and transfer services while BPCADA, as its name indicates, is responsible for the beautification, parking and cemetery of the city. The project, on the other hand, is in charge of preparing, developing and managing transfer stations and landfills.

Solid waste management is a real challenge in Addis Ababa “with deep rooted and diversified problem as well as poor service” (Report of the Sanitation Management Core Processor, 2009). In order to address this critical problem, Addis Ababa City Administration has been developing and implementing different modalities. These included awareness creation through electronics media, involving stakeholders in the program, establishing new structures up to Kebele level, recognizing and sensitizing solid waste management as the main agenda of the city and engaging Micro and Small Scale Enterprises in Solid Waste Management. After the restructuring of private enterprises engaged in solid waste management in May 2009, Micro and Small Scale Enterprises have been largely engaged in solid waste management with support from Micro and Small Enterprises and Sanitation Management Agency including their respective offices at sub city and Kebele levels.

Environmental Protection Agency (2004) stated that many Micro enterprises [in Addis Ababa] have been set up to carry out waste pre collection services, receiving payments from households to collect waste and transport it to the municipal waste containers. These micro-enterprises have taken the initiative to start these services, receiving payments from households to collect waste and transport it to the municipal waste containers. These micro enterprises have taken the initiative to start these services, recognizing the previous shortfall in this step of the system. There are clear successes in this part of the system and it represents a good starting point for building private sector participation and realizing the associated benefits.

In Ethiopia, the involvement of Micro and Small Enterprises (MSEs) in solid waste management does not seem essential in earlier days. Few studies were conducted to study the involvement of MSEs in waste management in Addis Ababa. The study by Abebe (2006) emphasized on the management and job creation roles of MSEs. He indicated that over three fourth of the MSEs participated in primary solid waste collection used hand push carts up to the municipal transfer points in the door to door collection system. Abebe further stated that lack of working tools, absence of trainings and shortage of finance are the major constraints for the operation and growth of MSEs.

Solomon (2006), on the other hand, studied the performance of Arada sub-city urban service delivery programme and its impact on household solid-waste management. His findings indicated that even though household solid-waste service is given to the population in the sub-city, the service is considered to be poor by service users because of inadequate facilities for the collection and transportation of solid wastes, dissatisfaction of the workers with incentives, unfair distribution and placement of waste containers, improper use of containers and illegal ways of disposing wastes, insignificant participation of the community in waste management.

A variety of conferences, panel discussions and talk shows organized by Addis Ababa City Administration have made issues of solid waste management as the top of the city agenda. The efficiency of house to house solid waste collection, possibility of scaling up best practices, community and stakeholders participation were the main outline of discussions. Inefficiency of solid waste collection services were also raised and discussed. MSEs involved in solid waste management were also rated according to their performance. Best performing MSEs were awarded for their efficient solid

waste management practices from each sub city. Nonetheless, most of the studies and discussions did not try to address the reasons for difference in performance levels of MSEs.

The study dealt with how and why infrastructure, training and advice, gender difference, willingness to pay, attitude of members of Micro and Small Enterprises (MSEs) towards their work, business skills and gender difference affect performance of MSEs engaged in solid waste management.

1.2 STATEMENT OF THE PROBLEM

Addis Ababa experiences serious problems related to solid waste management. Reports reveal that the recent waste collection rate is about 65 per cent of the waste generated in the city. Moreover, about 10 per cent of the waste is believed to be recycled and composted. The rest 25 per cent of the uncollected waste ends up in unauthorized dumping areas such as ditches, sewers, valleys, river courses, streets and other open spaces (ORAAMP, 2002; Tadesse, 2004, AAEPΛ, 2006). According to Report of the Sanitation Management Core Processor (2009) service users in Addis Ababa faced the following problems in relation to solid waste collection services: ineffective and inefficient collection services, inaccessibility of waste collection containers, increasing cost of the waste collection services and prevalence of illegal dumping practices. Consequently, one of the major problems, which is commonly observed, is that collection services are often inefficient and do not cover all areas. The number of collection vehicles in operation is insufficient and municipal waste storage skips are often full and overflowing for several days before being emptied. Illegal dumping practices coupled with low level of education and public awareness exacerbate the situation.

Sanitation Management Agency and its respective offices of Sub Cities and Kebeles ranked and selected best performing MSEs in terms of their performance for the year 2009 in house to house solid waste collection services (Appendix 1). Accordingly, twenty best performing MSEs were selected from the 521 MSEs in Addis Ababa where two best performing MSEs were selected from each sub city. The criteria for selection were developed at two levels. Firstly, Sanitary Agency first developed and sent initial draft guidelines for Sub Cities Sanitation Management Offices.

Secondly, based on these directives from the Agency, Kebele Sanitation Management Offices with technical assistance from Sub Cities Sanitation Management Offices ranked MSEs depending on their performance. The criteria included: amount of solid waste collected, income, efficient coverage of zones, motivation to work, proper use of equipment and customer satisfaction. Therefore, it is relevant and appropriate to analyze which factors led to performance difference among MSEs.

Accordingly, this paper examined whether infrastructure, training and advice, willingness to pay, attitude of members of MSEs towards their work, leadership competence and gender difference have any relationship with the performance of MSEs in solid waste management.

Based on this assumption, the research attempts to answer the following main questions:

- Do infrastructure, training and advice, willingness to pay, gender difference and leadership competence have any relationship with the performance difference of MSEs engaged in solid waste collection?
- How do members of MSEs' attitude on their solid waste collection efforts affect their performance?

The study attempted to answer the following specific research questions:

- Is there any association between infrastructure and performance difference of MSEs?
- Is there any association between training and advice and performance difference of MSEs?
- Is there any association between willingness to pay and performance difference of MSEs?
- Is there any association between leadership competence and performance difference of MSEs?
- Is there any association between gender difference and performance difference of MSEs?
- How do members of MSEs' attitude on their solid waste collection efforts affect their performance?

1.3 SIGNIFICANCE OF THE STUDY

The findings of this research would:

- Support MSEs, policy makers, local government bodies and other stakeholders with information about the factors behind the performance difference of MSEs engaged in solid waste management.

- Create awareness to readers on the current status of best and least performing MSEs engaged in solid waste management.
- Provide information about the specific roles played by MSEs in solid waste management in Addis Ababa and
- Serve as a reference material for other researchers.

1.4 SCOPE AND LIMITATION OF THE STUDY

There are about 521 MSEs engaged in Solid Waste Management in all ten sub cities in Addis Ababa. However, eight out of 70 MSEs in Nifas Silk Lafto Sub City were included in the study. Hence, the samples may be less representative to whole population of the city MSEs. In addition, the views of the households are not incorporated due to time and financial constraints.

1.5 RESEARCH METHODOLOGY

1.5.1 Research Area

Addis Ababa was chosen as the study area largely because it is the only primate city of Ethiopia having more than 500 MSEs engaged in solid waste management. Consequently, Nifas Silk Lafto Sub City was chosen because it has both urban and peri-urban settings with high, medium and low income dwellers. Addis Ababa City Administration officially announced in 2009 and 2010 that Nifas Silk Lafto Sub City has been taking the lead in its solid waste management program. Solid waste management activities are usually carried out by MSEs and the efficiency of the sub city has a lot to do with the performance of MSEs. Even considering the amount of solid waste collection carried out by MSEs, there were both best and least performing MSEs in Nifas Silk Sub City. For example, one best performing MSE collected up to 226 meter cube solid waste per month whereas one least performing MSE with equal number of members collected 78.88 meter cube (Table 1) Survey results reflected that Nifas Silk Lafto Sub City and the selected four best and four least MSEs represent the situations in most other best and least MSEs in Nifas Silk Lafto Sub City.

1.5.2 Selection of Respondents

The study included MSEs organized under the umbrella of Addis Ababa City Administration Micro and Small Enterprises Development Agency and was operating in house to house solid waste collection. Respondents were selected from the list of MSEs working in solid waste management in Nifas Silk Lafto Sub City. Based on the available list from Nifas Silk Lafto Sanitation Management Office, four best and four least performing MSEs were selected using purposive sampling method. Specifically, the four best performing MSEs included Yiseresh, Abenezzer, Ediget Bebudin and Tesfa Leediget while the least performing ones included Ediget Fire, Mulu Akababi, Selam (Kebele 06/08) and Selam (Kebele 09/11). Performance ranking was done by Kebele Sanitation Management Offices with technical support from the sub city and the agency and it was based on the achievements of MSEs for the period from June 2009 – February 2010 (Table 1). The criteria for selection included amount of solid waste collected, income, efficient coverage of zones, motivation to work, proper use of equipment and customer satisfaction. Since the number of members of sample MSEs is manageable all 41 members from best performing MSEs and 40 from least performing MSEs were taken as subjects of the study. Finally, 37 from best and 35 from least performing MSEs filled and returned the questionnaire.

1.5.3 Method of Data Collection

Data were collected through personal observation, interview and questionnaire. This triangulation method was important to get information from various data sources for the purpose of improving the quality of the research. The information provided in questionnaires was verified through cross checking with verbal interview transcripts and observation notes which were made during field trips. The data collection methods used is described as follows:

1.5.3.1 Personal Observation

Personal observation was carried out on purposefully selected places and settings such as while they were in door-to-door collection, transporting and disposing into garbage bins. Information was

gathered when members of MSEs were interacting with their customers and each other; by comparing the nature of the roads and location of garbage bins, materials used during collection; and where and how they disposed the collected wastes. Notes were taken concerning what was observed immediately after each session. The observation was supported with pictures taken with the cooperation of staff members of Sanitation Management Offices of Kebeles and the Sub City. Photography was not openly accepted by some informants especially in the very beginning. However, confidence building methods like friendly communications and explaining the reasons helped get permission of taking some photographs.

1.5.3.2 Interviews

Interviews were used as one of the main method of data collection for the study. The interviews were used to gain in-depth insights into the rationale behind the performance of MSEs in solid waste collection services.

Two separate interview questions were prepared for two groups of interviewees: leaders of MSEs and representatives from Addis Ababa Sanitation Management and MSEs Agencies, Nifas Silk Lafto Sub City Sanitation Management Office and Kebeles Sanitation Management and MSEs Offices. Both interviews questions were structured in the form of check lists. This was done to make sure that the same questions were posed to members of the respective groups. The questions were framed to attract open responses in a flexible order to allow for a natural interaction between interviewer and interviewees. The full interview sheets are attached in Appendix 2 and 3.

Each MSE has three leaders: chair person, secretary and accountant. They are management team of the MSE. The first targets for interview were one chair person and one cashier from each of the four sample MSEs: Yeshisera, Abenezzer, Mulu Akababi and Selam (06/08). The first two were from best while the other two were from least performing MSEs. Therefore, a total of eight leaders were interviewed. The second targets were five officials and four experts of government at Kebele, Sub City and Agency level.

In both cases the interviews were held in places and time preferred and set by the consensus between the investigator and interviewees. During the interview, the interviewees were briefly introduced about the aim and purpose of the study. Although voice recording was in most cases difficult, short notes were properly taken during the interviews.

1.5.3.3 Questionnaire

Questionnaire was prepared for target MSEs involved in solid waste management. The targets were divided into two: best and least performing MSEs. Same questions were asked to both groups to identify quantitatively factors affecting the performance of MSEs in their solid waste collection practices. The questionnaire included questions related to various factors affecting the performance of MSEs involvement in solid waste management. The questionnaire specifically included questions related to background and experience of members of MSEs; infrastructure, training and advice, willingness to pay, attitude of members of MSEs towards their work, business skills and gender difference. Out of 81 questionnaires distributed to members of target MSEs, 72 were completed and collected. Thirty seven of the them were from best performing MSEs; namely, Yiseresh, Abenezet, Ediget Bebudin and Tesfa Leediget while 35 of them were from least performing MSEs, which included from Ediget Fire, Mulu Akababi, Selam (06/08) and Selam (09/11). (See appendix 4)

1.5.4 Method of Data Analysis

The questionnaire was designed to cover the demographic characteristics of the respondents: age and gender. Basically, questions related to how factors like infrastructure, business skills, and willingness to pay and training and advice affect MSEs performance were included. The analysis of the data was based on both simple descriptive statistics (frequency and percentage) and elaborate associative techniques. The simple statistics were restricted to the frequency in which the interviewees responded to the questions. The associative techniques applied Chi-Square test (χ^2 -test) to investigate such factors affect performance of MSEs in solid waste management.

The questionnaire also covered respondents' attitude towards their solid waste management work. This part of the questionnaire was prepared according to the Likert Scale in order to measure the strength of the respondents' opinion towards their solid waste collection work (Isa *et al.* 2005; Uebersax, 2006). The respondents were provided with several statement options such as strongly disagree, disagree, neutral, agree, and strongly agree. By Likert's method, a person's attitude is measured by combining (adding or averaging) their responses across all items. All data collected was then analyzed using statistical tools for simple percentages, frequency analysis and severity index calculations. The answers to questions were displayed on a 0 to 4 point Likert Scale while the severity index (SI) was calculated using the equation after Al-Hammed & Assaff (1996).

The basic analysis of the collected data involved the descriptive analysis of

- the existing guidelines and reports regarding solid waste management service in terms of their implementation;
- the findings of the field survey and the information obtained from the interview, observation and the informal discussions held with the informants;
- finally, from the finding, conclusions and possible recommendations were made

1.7 ORGANIZATION OF THE STUDY

The paper has four stages and is presented in the following manner.

- *Chapter one* introduces the background information of the research. It contains research background, problem description, research questions, and various methods used for data collection and analysis.
- *Chapter two* is the literature part of the study. It explains about solid waste management, MSEs, the link between MSEs and solid waste management, the experience of developing countries including Ethiopia and conceptual framework.
- *Chapter three* presents data analysis and findings.
- *Chapter four* presents the summary, conclusion and recommendations of the research.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. OVERVIEW OF MICRO AND SMALL SCALE ENTERPRISES AND SOLID WASTE MANAGEMENT

Depending on socio-economic and political factors, the definition of Micro and small enterprises can vary. (Haan et al. 1998) defined micro and small enterprise as a group of people working together for financial gain, subject to the following limits on numbers of workers and capital: size: microenterprises from 1 to 10 workers, and small enterprises from 11 to 20 and capital: capital investments - mostly from own savings and informal loans (coming mainly from family and friends) - ranging from US\$ 100 to US\$ 10,000 (microenterprises) and from US\$5,000 to US\$ 50,000 for small enterprises. The actual amounts must be varied according to local economic conditions, and so these ranges should be taken as examples rather than as an absolute definition. The definition in Ethiopia case is different. Accordingly, Addis Ababa Trade and Industry Development Bureau, (1996) defines MSEs as follows:

- Micro – Enterprises: are those enterprises with a paid up capital of not exceeding birr 20,000 (which is about \$2326), and excluding high tech consultancy firms and other high establishments.
- Small Enterprises: are those enterprises with a paid up capital of above birr 20,000 and not exceeding birr 500,000 (which is about \$ 58140), and excluding high-tech Consultancy firms and other high tech establishments

Compared to conventional contractors, micro and small enterprises bring the additional advantage that their appropriate technologies allow them provide low-cost services to those residential areas where larger scale operations either are too expensive or make use of inappropriate equipment (Haan et al., 1998). They further explained that a significant benefit is that micro and small enterprises can contribute to the creation of jobs and incomes.

Solid waste is defined as non-liquid, non-gaseous disposed of matter created by human activities (Miller in Girma, 2004). This type of waste includes residential, commercial, institutional, street, industrial, construction and agricultural solid wastes. Similarly, Tchonobanglous (1993) defined solid waste as all waste arising from human and animal activities that are normally solid and are discarded as useless or unwanted. Residential solid waste contains rapidly decomposing animal and vegetable matters which are the bi-products of the handling, preparing cooking and consumption of food, paper, cardboard, textile, ash, wood, old furniture, old household utensil and so on. The composition of solid wastes depends on the economic activities and life style of the society producing it. For instance, the types of solid waste in urban areas are different in amount and composition as compared to the waste generated in rural areas. Similarly, the average income level of society affects the composition (both physical and chemical) of solid waste generated. Typically, individual components (items) of municipal solid wastes include food (putrescible) wastes, paper, plastics and rubber, textiles, leather, cardboard, wood, bones and straw, metals, glass and ceramics, ashes, etc. that remain the most affected group of the population (Sarageldin, 1995).

2.1.1 Solid Waste Management System

Solid waste management system encompasses all the activities ranging from the point of generation to disposal. Classifying these activities would help to identify and understand the problems associated with solid waste management system and give proper responses to improve the service. The functional element in solid waste management includes waste generation, waste collection, waste transportation, waste processing and recycling and finally disposal. An understanding of the rate of generation would help those who administer waste management to identify the type and number of containers, collection method and frequency of disposal of the waste. In addition, it also helps to identify the sources and types of solid waste and the factors that influence them. The activities of waste generation are highly dependent upon the individual preferences. Thus, to avoid, minimize, or sort out waste materials as its source requires, active participation of the waste generating households, commercial and industrial companies, and their employees (Harrison, 1996). The processing of solid wastes specifically at their sources may involve reducing the volume of the solid waste that is ready for collection and disposal, altering physical form of the solid wastes to reduce the size of the individual items or/and recovering usable materials from solid wastes.

Waste generators or private firms may carry out such kind of process. Next solid waste collection service could be provided by different agents. It could be provided by the municipality, private companies under contract or private enterprises. Even though each of these agencies has certain pros and cons, the waste collection service in a city could be performed either by the three agencies simultaneously, by two of them or by only one agency (Hagerty, 1973, International City Manager Association, 1957). Solid waste collection system practiced in developing countries is carried out in four ways: communal collection, block collection, curbside collection and door-to-door collection (UNCHS, 1996). The collection system varies from community to community. Therefore, waste managers have to recognize the best way of collection method by considering the existing equipment. Wastes that are collected from different areas have to be transported either to recycling sites or disposal areas. To perform this task, waste collecting trucks are of great importance. Waste transfer activity is conducted through large trucks that are especially suited for the long-haul operations to dispose of wastes (Hagerty, 1973).

The final process in the solid waste management system is waste disposal. Disposal is the ultimate stage of solid wastes collected from residential areas, residues from various processing plants that have no further use to society (Tehobanoglous, 1977). Currently the two most common methods used for waste disposal are open dumping and land filling. Open dumping is the widely practised method of disposal in many countries. Selection of disposal site has to be an important concern of municipal authorities because using open dumping system is hazardous for health and the environment and is also a generator of ill health (Stirrup, 1969, and Rushbrook, 1999).

2.1.2 The Problem of Solid Waste Management in Developing Countries

Solid wastes are greatly the products of human activities. It might be almost normal to come across some form of wastes from almost all types of human activities. It might also be difficult and even a futile attempt to completely avoid the creation of wastes. This implies that the production of wastes is inevitable and its disposal is necessary.

Therefore, it is almost unlikely to secure clean and healthy living conditions in cities and villages without reliable and regular waste collection and disposal services. Obviously, the dramatic increase in the quantities, and compositions of the constituent of solid waste generated, coupled with the rapid urbanization and population growth, has made the establishment and development of an efficient and economical system of solid waste management necessary.

Solid waste management, according to Tchobanoglous (1997) is that discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of wastes in a manner that is in accord with the best principles of public, health, economics, engineering, conservation, aesthetic, and other environmental conditions, and that also is responsive to public attitudes. The service of collection, transfer and disposals of solid-wastes in the urban areas of developing countries are either sparse or ineffective and/or the wastes are often improperly disposed of. About 30 to 50 percent of the solid waste produced in urban areas in the lower-income countries as well as poorest parts of middle-income countries is estimated to be left uncollected (Sarageldin, 1995, and Rushbrook, 1999).

The uncollected millions of tons of solid waste generated in low-income countries had caused the death of millions of people. Besides, the uncollected solid waste that has been dumped in drainage canals created many problems such as releasing of odors and toxic gases, blocking of drains and spreading of contaminated diseases. Waste problems worsen as the urban areas grow faster. This exacerbates the impact on health. But with urban growth, all sections of the population are not equally affected but a particular group is the one that is relatively affected more. Whenever there is inefficient management system in solid waste, it is generally the urban poor that remain the most affected group of the population (Sarageldin, 1995).

2.2 THE INVOLVEMENT OF MSEs IN SOLID WASTE MANAGMENT

Sustainable solid waste management services should not be achieved through isolated or sectoral approaches but it can be attained through the participation of different stakeholders (actors) such as local authorities, NGOs and CBOs, service users, private formal and informal sectors (MSEs) and donor agencies (Schubeler, 1996). The involvement of MSEs in waste services is not new. The oldest garbage collection MSEs have been found in Latin America (e.g. Guatemala and Costa Rica) since early 1950s.

These MSEs were set up without any specific stimulus from public or private agencies, but began as business opportunity. The greatest obstacle has been the reluctance to hire the sanitary services offered by MSEs, the municipalities' lack of confidence in establishing contacts with the MSEs and in most cases officials in charge prefer companies with large capital investments and advanced technology even though this technology was not adequate for cities in developing countries and can not be afforded by them (Querubin, 1996 as cited in Haan et al, 1998). It was in the last two decades that MSEs have come in to focus as an important economic sector, providing employment and incomes to a large section of the population of low income countries (Ibid, 1998). In the literature two types of enterprises in the private sector (formal and informal) are involved in solid waste management services.

The formal private sector refers to private sector corporations, institutions, firms and individuals, operating as registered and/or incorporated businesses with official business licenses. It has an organized labor force governed by labor laws, some degree of capital investment, and generally modern technology (Furedy, 1990 cited in Klundert and Lardinois, 1995). The formal private sector includes a wide range of enterprise types including large business establishments. As potential service suppliers, private enterprises are primarily interested in earning a return on their investment by selling waste collection, transfer, treatment, recycling and/or disposal services (Schubeler, 1996). As Klundert and Lardinois (1995) argued, they may involve in the waste management system in a number of ways: entering into contracts paid by the municipality or with individuals or businesses, purchasing the right to perform services and keep (all or part of) the income generated and functioning as a purchaser of recovered materials from the municipality or the collector.

Private sector waste collectors, therefore, may be contracted directly by individual households, neighborhood associations or business establishments. More often, they operate under contractual agreement with municipal authorities (Schubeler, 1996). The informal private sector comprises unregistered, unregulated activities carried out by individuals, families, groups, or small enterprises. The basic motivation is revenue generation. Informal waste workers are often driven to work as waste collectors or scavengers by poverty and the absence of more attractive employment possibilities (Schubeler, 1996 and Klundert and Lardinois, 1995).

As Klundert and Lardinois (1995) indicated informal activities are initiated personally and spontaneously (haphazardly) in the struggle for survival although some enterprises, especially the ones engaged in recycling activities manage to make considerable profits. In general waste work is done by religious, caste or ethnic minorities or rural immigrants who are looking for a way to generate subsistence income in an urban context.

2.2.1 The Methods of MSEs Participation in Solid Waste Management

The participation of the private sector which is common to all solid waste management services are put into four different ways by Cointreau (1994). They include contracting, concession, zonal arrangement and open competition. Cointreau gave definitions and explanations to each type. Contracting refers to the system in which the government awards a finite-term contract to a private firm for the delivery of solid waste collection service, street sweeping service, the collection of recyclables, transfer station operation, disposal site operation, or fleet maintenance. Concession, on the other hand, is when government awards a concession to a private firm to set up a facility that utilizes the government owned resources refuse. This system may enable the private firm to recycle materials (paper, plastic, metal and glass) from refuse. Zonal Arrangement, on the other hand, refers to the system in which the government awards a finite term of zonal monopoly to a private firm for the delivery of solid waste collection service. In open competition, the government freely allows qualified private firms to compete for refuse collection, recycling, or disposal services. In open competition individual households and establishments make private arrangements with individual firms for refuse collection, recycling, or disposal services.

Depending on socio economic and political factors different one or two of the above types can be employed by cities. The bottomline is selecting the one which is cost effective, and efficient in solid waste management system.

2.2.2. Rationale for Private Sector Participation in Waste Management Systems

Klundert and Lardinois (1995) have identified potential benefits of formal and informal private sector in the waste management system, local economy and social and environmental benefits in the following ways. Formal Private Sector has the potential benefits to the waste management system because it is largely characterized by greater efficiency and enhanced performance, better management and accountability,

faster response, higher service ethics, greater flexibility, greater access to experience and technology and risk reduction by transferring unpredictable costs. In addition the sector also has potential benefits on local economy and environment. Informal Private-Sector also has potential benefits to the waste management system. The major ones include successful recovery and return of waste, handling large volumes of materials, reduction of the amount of waste, risk reduction by transferring marginal activities and provision of waste removal and sanitary services to un-served sectors with no cost to the municipality (Ibid:1995).

2.2.3 Types of MSEs in Solid Waste Collection

Scholars divide MSEs engaged in solid waste management into different types. The first type is called service based MSEs. According to Scheinberg (2000) service-based MSEs are enterprises which get their income from performing a service paid by clients, beneficiaries or a combination. The unit of payment is done by the hour, day and month; by district or street or by the quantity of waste. The major services done by these MSEs are waste collections, park maintenance, street sweeping and industrial or commercial cleaning. Commodity-based MSEs are the second type and according to Haan et al (1998) they are set up by local entrepreneurs (or small businessmen) who perceive the delivery of waste services as a business opportunity. These enterprises are entirely 'demand-led', seeking to fill a gap and generate income. Value-based MSEs are the third type which serve a social, religious, environmental, or cultural purpose, whose primary goal is some form of social or cultural change or strengthening or environmental protection, and who see involvement in urban waste management as either an economic activity to support their promotion of values, or as a means to raise awareness and consciousness in their chosen areas of focus (Scheinberg, 2000).

A private MSE type is basically a small private company, in which an owner or entrepreneur organizes employees and resources to generate a profit from waste activity. The owner chooses to work in the field of waste management because he sees an opportunity in this form of work or because he has particular resources, skills, experience or contacts in the field (Haan et al, 1998). As type of MSEs, co-operatives have many forms which contain an element of 'collective' action.

One model in this in which self-employed waste workers, previously working independently, decide to work together (e.g. in Brazil and Colombia). Workers are often motivated to join together because of outside threats such as from government or “middlemen” dealers (Ibid: 1998). Therefore, the types of MSEs engaged in solid waste management are many and their rational for establishment also varies. Having different options for municipalities to engage MSEs is essential.

2.2.4 Factors Affecting the Performance of MSEs Involvement in Solid Waste Management

In general terms, basic factors for effective solid waste management includes technical advice and support, socio-cultural, institutional, political, financial and environmental (Scheinberg, 2001; Haan *et al.*, 1998; Schübeler, 1996). These factors have a lot to do with active participation of a variety of stakeholders. Schübeler explained that a wide range of individuals, groups and organisations are concerned with municipal solid waste management as service users, service providers, intermediaries and/or regulators. The interests, agendas and roles of these actors have a lot to do with the efficiency of the services. The effectiveness and sustainability of MSWM systems depend upon their adaptation to the prevailing context of the city and/or country in which they operate. The most important aspects in this respect have to be perceived from the political, socio-cultural, economic and environmental levels.

Schübeler, (1996) said that besides solid waste management, municipal governments are also responsible for the provision of the entire range of infrastructure and social services. Needs and demands for MSWM must therefore be weighed and addressed in the context of the needs and relative priorities in all sectors and services. This shows that availability and quality of infrastructure can affect the efficiency of solid waste collection service. Willingness to pay is another factor affecting performance of MSEs engaged in solid waste management. (Coad, 2005) stated that willingness to pay is linked to level of service. Some may be willing to pay for a high level of service, such as a daily collection from the door of each apartment. Others, concerned to minimize costs, may prefer a much less convenient service – for example, communal collection which involves carrying waste to a street container (Ibid: 2005).

Business skill is another important factor for the effective performance of MSEs. According to Haan *et al.*, (1998) is that it is crucial that ventures of MSEs in solid waste services are based on solid business

considerations. Only with an appropriate business perspective can the services be efficient and sustainable. They added that the involvement of MSEs in waste management has some significant advantages, but much depends on the owner of the business.

To be effective MSEs need training and advice from specialists with expertise in areas such as entrepreneurship development, training, and marketing (Schübeler, 1996). Training could include instruction and practice in the preparation of a business plan, and determination of waste collection fees. In addition, the perception of one's capability is said to set a limit to what to do and ultimately what can be achieved (Holland and Rosenberg, 1996). The influence of perception which describes how a person views himself and the world around him and how it tends to govern behaviour is explained by Anomie theory (Merton, 1968) which explains that deviance can arise by accepting culturally determined goals without the acceptability of cultural means. In this case it translates to either paying for SWM services or the total rejection of its cost recovery methods.

One of the critical areas that need to be addressed when reviewing the impact of social factors on service delivery is the gender issue. In all societies, women have a different role from that of men. As mothers and homemakers as well as educators, entrepreneurs and producers, women more than men, have to play multiple roles. The demands of these multiple roles in poorer countries place women, particularly the non-elite ones, at a special disadvantage (United Nations Development Fund for Women (UNDFW, 1998). This problem is huge considering the fact that women constitute 60% of the world's one billion poor and out of 1/3 billion people living in absolute poverty, over 70% are women. Research according to Scheinberg *et al.* (1998) has shown that across many cultures, women handle waste in their homes although the richer women delegate this task to servants. In general, women are not paid to handle waste, while men only do so when they are to be paid. Due to their less mobility and access to public spaces, some women, who cannot leave their homes for cultural or religious reasons, will find it difficult to deliver waste to a neighbourhood collection point. Therefore, in orientating and directing policies, is important to take into account the specific needs of women to ensure that they can have equitable and affordable access to facilities and services (UNDFW, 1998). All these are issues that need to be addressed when planning waste management systems.

Women in most societies are responsible for the domestic work, which include many tasks including childcare, shopping, cooking, cleaning and wellbeing of their husbands (World bank, 1999). This obviously affects their mobility and suggests a convenient waste disposal method.

Specifically, training and advice, willingness to pay, infrastructure, business skills, gender difference and attitude of MSEs towards their job are considered as contextual factors affecting performance of MSEs engaged in solid waste management in developing countries.

2.3 EMPIRICAL LITERATURE

2.3.1. The Experience of Latin America

A study of private sector participation in Latin America shows that most of the firms were small to medium-sized indicating that there were no barriers to entry (Cointreau, 1994). As Haan et al, (1998) indicated, all technical tasks are handled by MSEs, but the majority of small contractors are involved in cleaning of public areas, collection and waste recovery such as recycling and composting. The principal activities/services provided by MSE in different Latin American countries seems that collection is the most important service offered by many MSEs. Recovery is also undertaken especially by MSEs in Costa Rica and Guatemala.

Haan et al (1998) mentioned that there are four basic types of solid waste MSEs in Latin America. These are: private MSEs, working to make a profit; cooperatives, providing mutual support for their workers; community-based enterprises, established to meet a local need and labor contracted by individual or local organization, again to meet a local need.

Micro and small enterprises in Latin America are found to have significant employment contributions. It was learned that about 10,000 jobs were created in Guatemala, Columbia and Peru out of the total of 500 enterprises. A significant aspect of MSEs involved in waste collection is their gender participation. It is evident that the street sweeping private enterprises and cooperatives prefer to contract women because they consider them to be more efficient at this work than men. This decision is based on the gender stereotype which views women to clean the home, feel comfortable with this type of work, and can transfer their domestic cleaning experience to the public arena (Ibid: 1998).

2.3.2 The Experience of Asian Countries

In 1987, Bangkok contracted for services three districts. The cost for the contract service appears to have been lower for each ton than the costs for public services. The private service was also considered to be of adequate quality. In 1988 Jakarta began to experiment with the private contracting for collection in 261 sub districts (10 percent of the city's waste generating 24 area), which were comprised of middle-to high-income residents in relatively laid out developments (Cointreau, 1994). Two types of enterprises participate in solid waste management activities in South Asia. These are: community- based enterprises and labor contracted by community leaders or social organization.

Community participation is supported by an international NGO. For instance, Excellent Novel and Radical (EXNORA) is an international NGO which is active in many Indian cities such as Chennai (Madras). This NGO seeks to act as a catalyst to create local 'Civic EXNORAS' which are street-level community-based associations of some 75 to 100 local households that organize waste services. They contract local waste pickers (who are renamed 'street beautifiers') for waste collection and street cleaning. They are provided with a small loan (about US 165 dollars) for the purchase of a waste cart (often a specially designed tricycle) and working capital, and collect waste management fees (approximately 0.30 US dollars per family per month) (Haan et al, 1998) . In areas excluded from regular solid waste collection, residents may decide to organize such services themselves in order to ensure cleaner urban environment. Labor contracted by community leaders or social organizations in South Asia mainly refers to the provision of waste services by direct labor contracting by a group of residents, community leaders, CBOs, NGOs or another organization (Ibid, 1998). In Indonesia, for instance, many local leaders, especially of low-income neighborhoods, organize the community to deliver household refuse to a communal depot, or hire and manage workers from the neighborhood for door to- door waste collection using handcarts (Cointreau, 1994). In Seoul (Korea), approximately 35 percent of the solid waste is collected by 85 private contractors, each of which is a relatively small firm with an average of 6 vehicles (Ibid. 1994). The informal waste collectors in South East Asia participate in different ways. For example, Jakarta had a daily waste production of over 21,000m³, 25 percent of which was recovered by an estimated 37,000 scavengers. These activities save the city about 270,000 to 300,000 US dollars per month. The recycling rates for glass and paper are as high as 60 to 80 percent. The waste paper collected by scavengers comprises 90 percent of the secondary raw material

in this sector. By delivering 378,000 tons of waste paper per year to paper factories for recycling purposes, the scavengers save 6 million trees from being cut down (Klundert and Lardinois, 1995).[[[

2.3.3 The Experience of Some African Countries

Private solid waste entrepreneurs are spread all over the city of Dares Salaam. Most of their activity is concentrated in residential neighborhoods and is biased towards the middle and higher income areas. There is absolutely no private sector solid waste collection activity in low-income areas. In a recent survey about 70 percent of the small firms mainly serve middle-income and some lower-middle income areas. On average each of these small firms serves about 500 clients (Van de Klundert, A & Lardinois, I., 2000). In Cairo, an informal sector solid waste collection system involving 12,000 workers has existed for the past century (Cointreau, 1994). In Nairobi in 1988 organized commercial private sector companies such as Bins and Disposal Services Limited is registered to manage, collect and dispose solid waste from industries, institutions, commercial establishments and high-income residential areas. By 1996 the combined daily collection capacity of the two private companies was 400 and 100 tons respectively (Van de Klundert, A & Lardinois, I., 2000). In Lagos (Nigeria), there are nearly 100 private contractors, most with only 1 or 2 vehicles and less than 10 with more than 5 vehicles (Ibid, 2000). In Lagos the younger workers are considered to be less motivated to work in solid waste MSEs, while the older workers are considered to be more hardworking and reliable. This is because younger workers are better educated than the older workers and view their job in sanitation as temporary employment, where as the older workers view it as life-long career (Cointreau, 1994).

2.3.4 Solid Waste Management in Ethiopia: The Experience of Addis Ababa

The first known legal document regarding solid waste management services was the Public Notice 25/1944. This Public Notice among other public hygienic concerns prohibited the burning and disposal of any type of wastes at public places and in streets. It also obliged the removal of animal carcass from public places within twenty four hours. Later in 1954, with its reestablishment, the City Municipality was given the responsibilities for controlling the hygiene conditions and providing waste management services based on the General Notice No.172/1954. Sanitation service was introduced for the first time

in Public Notice No. 148/1958 by The Ministry of Health. This Notice identified sanitation services as the surveillance of food stuffs, beverages, buildings, factories. It also provided guidelines which had to be employed for the construction and use of water wells, drainages, garbage and sewerage systems. Solid waste management experience in Ethiopia is largely limited to Addis Ababa because it is the only primate city getting more attention by most governments of the country.

Addis Ababa city government has an open dump site covering 37 Hectares of land with a waste amount 14.56 million m³. This dump site has served for the past 42 years without any treatment of solid waste and leach ate water. The waste dumped in this site is not sorted. All house hold, industrial and hospital waste were damped here (<http://www.addisababacity.gov.et>). In the website, the city government has advertised for international companies to engage in converting this amount of waste into energy.

Gradually, the attention given for solid waste management seems getting more concern when the solid waste management responsibilities were transferred to the newly established Sanitation Service Team under the City Administration Health Bureau in 1994. The other significant change was the elevation of the services from Sanitation Service Team to Sanitation Service Department in 2001 under the same Bureau. The reorganization of the City in 2003 by the Proclamation Number 2/2003 has brought a major change in status of the solid waste management services. This Proclamation decentralized the solid waste services to the local authorities at the Sub-City and Kebele levels. In addition, it allowed the establishment of the Sanitation, Beautification and Park Development Agency which is responsible to design policies and regulations for solid waste management services.

The former Sanitation Beautification and Parking Development Agency was restructured into three separate offices having their own independent functions. Specifically, Addis Ababa City Administration Proclamation Number 15/ 2001 E.C indicated the establishment of the three organs as Addis Ababa City Administration 1) Sanitation Agency, 2) Solid Waste Recycling, Reuse and Disposal Project Office and 3) Beautification, Parking, Cemetery Development Administration Agency. Sanitation Agency is solely responsible for the proper collections of solid wastes of the city and transporting them to transfer stations. The project office is in charge of preparing transfer stations, purchasing of machines, recycling and preparation of landfill sites while the last one as its name indicates is responsible for the development and follow up of beautifying and greening road sides,

managing parks and green areas and administering cemeteries including the proper registration and recording of all. The power and responsibilities of the three layers of government in Addis Ababa in solid waste management is attached in Appendix 1.

2.4 Conclusion

Solid waste management is a critical problem in developing countries. Because of its challenging nature and diversified characteristics, different stakeholders have been involved in the process. The main ones include civil society organizations, NGOs, MSEs, community and government. Among others, the involvement of MSEs in solid waste management is not a new development. The oldest garbage collection MSEs have been found in Latin America (e.g. Guatemala and Costa Rica) since early 1950s (Querubin, 1996). These MSEs were set up without any specific stimulus from public or private agencies, but began as business opportunity. In general terms, basic factors for effective solid waste management includes support, technical advice, socio-cultural, institutional, political, financial and environmental (Scheinberg, 2001; Haan *et al.* 1998; Schübeler, 1996). These factors have a lot to with active participation of a variety of stakeholders

Specifically, training and advice, willingness to pay, infrastructure, business skills, gender difference and attitude of MSEs towards their job are considered as contextual factors affecting performance of MSEs engaged in solid waste management in developing countries.

2.5 CONCEPTUAL FRAMEWORK

The conceptual framework of this paper is framed based on the works and findings of different scholars in the area of micro and small enterprises involvement in solid waste management. There are different factors that are considered important for the success of MSEs involved in solid waste collection. Basic factors for effective solid waste management includes support, technical advice, socio-cultural, institutional, political, financial and environmental (Scheinberg, 2001; Haan *et al.* 1998; Schübeler, 1996). Specifically, training and advice, willingness to pay, infrastructure, business skills and attitude of MSEs towards their job are considered as contextual factors affecting performance of MSEs engaged in solid waste management in Addis Ababa.

The Conceptual Framework provides brief definitions of the main concepts of MSEs' participation in solid waste management and identifies key issues that normally guide MSEs' performance in solid waste management. The main concepts are explained below:

Socio – economic factors: Mayet (1993) has provided a comprehensive description of socio-economic factors. These factors relate to the state of infrastructural development in a residential area, lifestyle and value systems, aspirations and attitudes, migratory patterns, levels of education and a willingness to recycle or reduce waste output. This includes the ability of people to pay for services based on income and willingness to pay (Sadler, 1997). Women in most societies are responsible for the domestic work, which include many tasks including childcare, shopping, cooking, cleaning and wellbeing of their husbands (World bank, 1999). This obviously affects their mobility and suggests a convenient waste disposal method.

Infrastructure: It is the most commonly used term which usually refers to the large-scale public systems, services, and facilities of a country or region that are necessary for economic activity, including power and water supplies, public transportation, telecommunications, roads, and schools. In this paper, the term is used to indicate availability and nature of roads and relative location of services (garbage bins). Besides the physical constraints of dense, low-income settlement, the inadequacies of other infrastructure services such as roads, drains and sanitary facilities often exacerbate waste management problems. The access of collection vehicles or push carts may be difficult where roads and foot-paths are unpaved (Schübeler, 1996). Solid waste disposal practices are influenced by the supply of waste disposal services and other infrastructures (Cointreau, 1982). Therefore, the nature of infrastructure in a certain community can have its own positive or negative effect on the performance of solid waste collectors, in my case MSEs. Schübeler, (1996) further said that besides solid waste management, municipal governments are also responsible for the provision of the entire range of infrastructure and social services. Needs and demands for MSWM must therefore be weighed and addressed in the context of the needs and relative priorities in all sectors and services.

Meanwhile, the absence of waste services can jeopardize other infrastructure services such as roads and storm water drains, UNCHS (1992) for example, by blocking storm water channels and encouraging flash floods and flood pondages, which often occur in the city. This inadequate municipal

waste service in Benin is typical not only of Nigerian cities Sule, R (1988), but also of many cities in Africa, South America and South-East Asia (Hamza, A, 1989).

Willingness to pay: This signifies that an individual or community is prepared to contribute regularly a specified sum of money for a particular benefit. It is different from *ability to pay* in that a citizen may be unwilling to pay a required fee (even if able to do so) if (s) he feels that the organization to be paid should not be supported because it is inadequate (for example, unreliable or corrupt) or that the service to be provided is unnecessary or unsuitable (Haan *et al.* 1998). In support of this idea, (Coad, 2005) stated that willingness to pay is linked to level of service. Some may be willing to pay for a high level of service, such as a daily collection from the door of each apartment. Others, concerned to minimize costs, may prefer a much less convenient service – for example, communal collection which involves carrying waste to a street container (Coad, 2005). The willingness to pay fees for waste management services depends upon a number of factors, and not just income and expenditures. Satisfaction with the service and perceptions of the person or organisation to which payments are made are also important (Haan *et al.* 1998). The willingness to or not to pay could have direct impact (positive or negative) on the reliability and success of any solid waste management strategy (Epp and Mauger, 1989, Rahman *et al.* 2005). This fact also corroborates with the findings of Salequezzaman *et al.* (2001), in their study of the willingness to pay for community-based solid waste management and its sustainability in Bangladesh.

Business Skills: Haan *et al.* (1998) stated that the main message with regard to efforts to involve MSEs in solid waste services is that it is crucial that these ventures are based on solid business considerations. Only with an appropriate business perspective can the services be efficient and sustainable. They added that the involvement of MSEs in waste management has some significant advantages, but much depends on the owner of the business. He/she should have distinct business skills (Haan *et al.* 1998). It may be appropriate to provide, for a limited period of time, some organizational and financial support for the establishment of the necessary structures – such as the non bureaucratic extension of micro-credits to small and medium enterprises, equipping young entrepreneurs with basic business skills or equipping informal waste collectors with adequate working tools. In many cases, there are already surprisingly efficient networks, whose performance might be increased even further with the appropriate support (Coad, 2005). Solid waste collectors are engaged in risky business skills in; as to working tools Delgado *et al.* (2007) argued that household waste could contain hazardous and

toxic waste such as expired drugs, dried cells, broken glass, syringes and thus constitute serious environmental and health hazards.

The first years of a new MSE operation present many challenges. Experiences from numerous MSE development programmes have made it abundantly clear that it is easier to work with enterprises which have been in existence for some time, rather than with new ones. MSEs often have a low survival rate; on average two of every 3 new firms disappear during the first year of operation. After MSEs have gone through their initial teething problems they are a much more worthwhile subject for MSE support services, in comparison with inexperienced entrepreneurs. The best enterprise is one which is strong and experienced (Haan *et al.* 1998).

MSEs should be self-sufficient, meaning that they need to be profitable, as this will stimulate the entrepreneurs concerned to invest in their firms and steadily improve their services. They should therefore be able to procure the inputs they require, including capital, at market rates. Their waste collection charges or contract prices should be based on real costs, and also allow for adequate pay for their workers. Even though the resulting profit margin may not be high, in this way they do not require any subsidy or special tax benefit. Such enterprises have the best chances of sustainability and survival (Ibid, 1998). This argument is partly supported by Scheinber. Micro and small enterprises do not have the problem of adapting to the local circumstances. They arise out of these circumstances and they are mostly working with equipment, technology and approaches that fit the local condition perfectly. This is not to say that they cannot use help. One of the UWEP programme's central purposes has been to facilitate South-South technology transfer and capacity building (Scheinberg, 2001).

Training and advice: Setting up business ventures, even community-based enterprises, needs training and advice from specialists with expertise in areas such as entrepreneurship development, training, and marketing. Training could include instruction and practice in the preparation of a business plan, and determination of waste collection fees. Because of the specialised nature of such support, it is definitely not recommended that municipalities attempt to undertake such tasks; rather it should be left to organisations that have experience in this area (Schübeler, 1996). Manpower development would be supported through guidelines, training programmes and technical assistance, including support for the establishment of institutional capacity for training and human resource development (Ibid. 1998). Haan *et al.* (1998) also explained that MSEs may need support in a number of fields; a recommended policy

for a municipality is that it should provide some technical advice and encourage regular communication with MSEs on operational issues.

Attitude of MSEs towards their Solid Waste Management Work: Coad (2005) stated that the recognition of the importance of the work being done by this segment contributed to improving the waste pickers' self-esteem, and developed a sense of social solidarity within the city's population, resulting in a more positive public attitude towards them and their work. Waste generation patterns are determined by people's attitudes as well as their socio-economic characteristics. Attitudes towards waste may be positively influenced by awareness-building campaigns and educational measures.

People's attitudes influence not only the characteristics of waste generation, but also the effective demand for waste collection services, in other words, their interest in and willingness to pay for collection services. Attitudes may be positively influenced through awareness-building campaigns and educational measures on the negative impacts of inadequate waste collection with regard to public health and environmental conditions, and the value of effective disposal. Such campaigns should also inform people of their responsibilities as waste generators and of their rights as citizens to waste management services (Schübeler, 1996). Willingness to pay for waste management services or facilities is very important to the success of the private sectors' participation (PSP) in (SWM) program. The question therefore has to do with the economics of household waste management especially in a developing economy like Addis Ababa. The perception of one's capability is said to set a limit to what to do and ultimately what can be achieved (Holland and Rosenberg, 1996). The influence of perception which describes how a person views himself and the world around him and how it tends to govern behaviour is explained by Anomie theory (Merton, 1968) which explains that deviance can arise by accepting culturally determined goals without the acceptability of cultural means. In this case it translates to either paying for SWM services or the total rejection of its cost recovery methods.

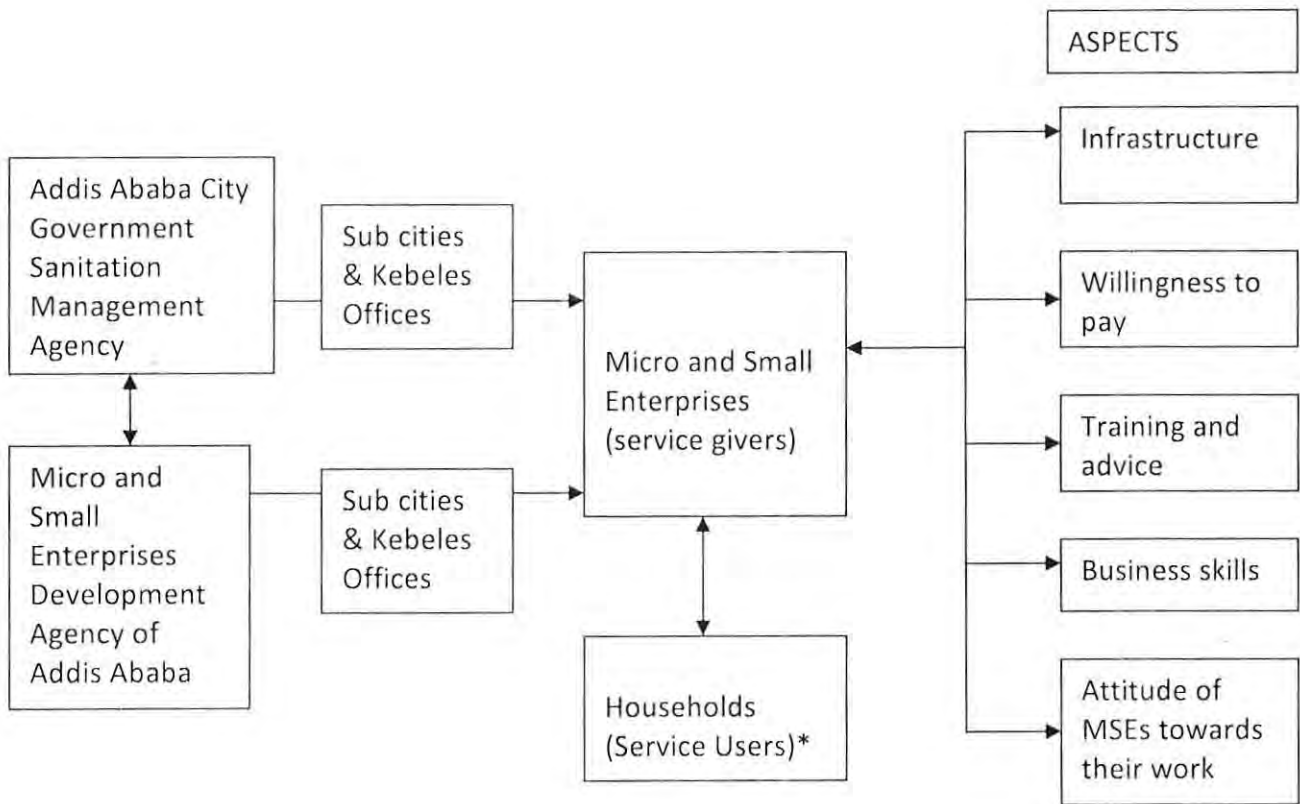


Figure 1. The four dimensions of MSEs involvement in solid waste management: service users, service givers, government bodies and aspects.

* After February 2010 service fee has been collected by Kebeles together with water bill

CHAPTER THREE

3. EXAMINING FACTORS AFFECTING THE PERFORMANCE OF MICRO AND SMALL ENTERPRISES (MSEs) IN SOLID WASTE MANAGEMENT

3.1 SOLID WASTE MANAGEMENT IN ADDIS ABABA: BRIEFING HISTORICAL AND LEGAL FRAMEWORK ISSUES

Established in 1887 with few tents and scattered huts, Addis Ababa at present covers an area of about 540km. Although an official estimation show Addis Ababa is a resident of 5 million, according to the recent CSA's census, the population of Addis Ababa is 2,738,248 (CSA Report of 2007). As per the CSA 2009 Census Report the demographic feature of the city is characterized by 1,389,817(47.6%) men and 1,527,478 (52.4%) women. The city population increases at a rate of 2.1 % per annum during the period of 1994-2007. The city has an estimated density of 5,536 persons per sq. km.

At present Addis Ababa City Government is structured along three layers: The City Government, Sub-Cities and Kebeles. The City Government includes a City Council, a Mayor, City Cabinet, the Office of the Chief Auditor and City Judicial Department. The City Government undertakes its functions through 8 bureaus which are accountable to the Mayor and 11 agencies, institutes and offices organised under City Manager Office (FDRE, 2003).

Sub-cities are second layer of the Addis Ababa City Government and each sub city is structured comprising three departments: a Sub-City Council, a Sub-city Administration and an Executive Body. The functions and power of each Sub-City Council in general are related to governing the Kebele Administrations within its boundary and ensuring how laws and orders are being exercised. Kebeles are the lowest level of government in Addis Ababa City Administration, and each Kebele consists of a Council, a Kebele Administration, an Executive Body and a Social Court. The roles and responsibilities of the Kebeles, according to Proclamation No.361/2003 Article No. 38/b are mainly facilitating conditions to make sure the availability of services within the reach of residents as much as possible.

According to Article 11 in Proclamation No. 361/2003, Addis Ababa City Government has legislative, executive and judiciary power to function over issues specified in the city charter and that have not been included in the powers and functions of the executive units of the Federal Government of Ethiopia. Proclamations No.261/2003 indicates that the city has a right to generate its own revenue from designated sources, obtain loans from local resources, and establish its own executive bodies, institutions and enterprises. Moreover, the City Government is responsible to define the power and duties of each unit in it. It also issues and enforces regulations and directives on matters connected with its jurisdiction.

3.1.1 Policy Environment and Legal Framework for MSEs Involved in Waste Management in Addis Ababa

3.1.1.1 Policy Environment

The solid waste management policy of Addis Ababa City Administration (2003) allowed the private sector to participate in the following areas:

- Private sectors should participate in solid waste collection or transporting or in the provision of disposal sites or in all management services privately or in partnership with government
- Institutional waste collection, transporting and disposal services should be covered by the private sector.
- The private sector should participate in solid waste management machinery maintenance, in machinery and vehicles provision services or participate in the production of equipments, alternative transporting vehicles or spare parts.
- Those organized micro business enterprises and associations participated in solid waste related services should be encouraged.
- Private sectors should be encouraged to participate in the areas of selling and use of compost processing, in the purchasing, selling transporting or in the recycling activities.
- Private investors should support or give aid for municipal solid waste management activities in order to accomplish their social responsibilities.

3.1.1.2 Legal Framework

Legislation related to solid waste management in developing countries is usually fragmented, and several laws (for example, public Health Act, Local Government Act, Environmental protection Act, etc) include some clauses on rules/regulations regarding solid waste management. The rules and regulations are enforced by the different agencies (Bartone, 1995). This is also true in Ethiopia regarding solid waste management laws. The federal constitution of Ethiopia on article 44(1) says all persons have the right to a clean and healthily environment (The Constitution of Federal Democratic Republic of Ethiopia, 1995). Although there was no standardized rules and regulations in Ethiopia, the Addis Ababa City Government issued regulations 13/2004 on waste management collection and disposal. The regulation on its preamble says, it is appropriate to manage, collect, transport and dispose waste generated from the city of Addis Ababa in a manner that does not pollute the environment and harm health. In this regulation article 3(6) also says any person has the responsibility to keep the area clean covering up to 20 meters in front of and away from the end of his household, organization or institution, on which he has possession. In addition article 4 prohibits disposing of waste in unauthorized place. In its part article 17 (1) allowed the private sectors to participate in the collection, transportation and disposing of solid waste through different participatory or transferring methods. On the responsibilities of private organizations, micro and small-scale enterprises engaged in sanitary service 18(1) says any person or a cooperative, or micro and small enterprise that provides sanitary service, shall take appropriate safety measures, to protect the health of the community and preserve the welfare of the environment. On the power and functions of the agency (SBPDA), article 21(6) the responsibility to encourage private investors, cooperatives, and micro and small enterprises, NGOs and community associations to engage in solid waste management. According to article 25 (1) any person residing in the territorial jurisdiction of Addis Ababa city Government, shall pay sanitation fee for the sanitary service he/it receives. Finally, it passed a penalty for a person, who has committed one or more fault provided in these regulations. The small and micro enterprises engaged in sanitary service shall obtain, for limited period of time, and free of charge service of landfill owned by the government as incentives (article 29(2)).

3.2 SOLID WASTE MANAGEMENT OPERATION IN NIFAS SILK LAFTO SUBCITY: AN EMPIRICAL ANALYSIS

Nifas Silk Lafto Sub-city covers a total area of 58.51sq.km. It includes 10 Kebeles' Administrations with 321,000 permanent residents. It is found in the south western part of Addis Ababa having high, middle and low income residents like other sub cities of Addis Ababa.

Solid waste management requires the provision of storage containers, collecting wastes, transportation and finally disposal of wastes at disposal sites. Nifas Silk Lafto sub-city Sanitation Management Office currently operates by regulating proper collection of all forms of solid wastes and their subsequent disposal by organizing and working together with different actors. The main actors involved in solid waste collection in the sub city are MSEs. According to a city official (Interview, March 2010) and Nifas Silk Lafto Sanitation Office Report (2009), there are 70 MSEs involved in house to house solid waste collection in the sub city. The 10 Kebeles are further divided into zones. Each MSE is allocated a certain number of Zones to accomplish its activities. An expert from Addis Ababa MSEs Agency (Interview, March 2010) explained that MSEs currently engaged in solid waste collection in Addis Ababa are from thousands of MSEs operating in the city. They were initially organized by MSEs Offices of Kebeles and later linked to Sanitation Offices to carry out solid waste collection services. According to the expert (interview, March 2010) the city government found it helpful organizing MSEs in its attempt of reducing unemployment in the city. The expert also added that different trainings were given during organizing MSEs at Keble level. He concluded that officials and experts of MSEs both at Kebele and Sub City levels ensured the organization and training of MSEs engaged in solid waste management in collaboration with their respective Sanitation Management Offices.

Table 1: Monthly Amount of Solid Waste Collected by MSEs and their Income from July 2001 to February 2002

Monthly Amount of Solid Waste Collected by MSEs and their Income in Nifas Silk Lafto Sub City from June 2001 to February 2002 E.C

S.No.	List of Micro and Small Scale Enterprises	Kebele	Male	Female	Total	July		August		September		October		November		December		January		February		Average Total Waste Collected	Average Monthly Income per MSE Total Income	Average Monthly Income per Person	Performance Category
						Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr	Solid waste collected in meter cube	Monthly income in Birr				
1	Yeseresh	03/04	9	1	10	291	8.730	250	7500	212	6.360	233	6.990	204	6.120	273	8.190	242	7.260	103	3.090	226.00	6.780.00	678.00	BP
2	Abenezere	03/05	6	2	8	155	4.650	164	4920	168	5.040	157	4.710	199	5.970	192	5.760	232	6.960	239	7.170	188.25	5.647.50	705.94	BP
3	Tesfa leedget	12/13	9	2	11	NA	NA	288	8640	325	9.750	272	8.160	288	8.640	189	5.670	299	8.970	295	8.850	279.43	8.382.86	762.08	BP
4	Edget Bebudin	12/14	8	2	10	NA	NA	133	3990	273	8.190	173	5.190	233	6.990	258	7.740	200	6.000	265	7.950	219.29	6.578.57	657.86	BP
5	Muluakababie	06/08	12	12	178	5.340	180	5400	205	6.150	160	4.800	146	4.380	142	4.260	96	2.880	132	3.960	154.88	4.646.25	387.19	LP	
6	Selam	06/08	10	10	75	2.250	88	2640	80	2.400	77	2.310	83	2.490	74	2.220	77	2.310	77	2.310	77	78.88	2.366.25	236.63	LP
7	Selam	09/14	10	10	60	1.800	87	2610	93	2.790	92	2.760	94	2.820	96	2.880	96	2.880	120	3.600	92.25	2.767.50	276.75	LP	
8	Edget fre	09/14	1	10	11	105	3.150	109	3270	119	3.570	118	3.540	122	3.660	177	5.310	123	3.690	138	4.140	126.38	3.791.25	344.66	LP

BP-Best Performing MSE; LP- Least Performing MSE; NA-Not Available

Source: Field survey April 2010

However, according to Head of Nifas Silk Lafto Sanitation Management Office, there are no any transfer stations in the city where collections of solid waste and its subsequent sorting is supposed to be carried out. As a result, waste trucks are forced to transport to Rappi landfill. Unloading the waste has been always a problem because all trucks across the city gather around Rappi to unload their carried solid waste. There is also a long queue of trucks to unload their solid waste but the unloaded waste had to be rolled down and leveled by landfill workers with their limited resources.

3.3 ANALYSIS OF FACTORS AFFECTING THE PERFORMANCE OF MSEs IN SOLID WASTE MANAGEMENT

There are different factors affecting the performance of MSEs engaged in solid waste management. The main factors affecting MSEs involved in solid waste management in Nifas Silk Lafto Sub city are listed, analyzed and tested below. As indicated in the conceptual framework of the study, the factors included a) training and advice b) business skills c) infrastructure d) willingness to pay e) attitude of MSEs' towards their solid collection work and f) gender difference. As indicated in the methodology part of the study, the subjects of the study were divided into two; namely, best and least performing MSEs based on their performance in solid waste management. A total of 72 members of MSEs (37 from best and 35 from least performing MSEs) were included in the study. Table 2 shows the gender profile and classification of MSEs.

Table 2: Gender profile and classification of respondents

Classification	No. of MSEs' members					Name of MSEs
	Male		Female		Total	
	Number	%	Number	%	Number	
Best performing	30	81.08	7	18.92	37	Yiseresh, Abenezzer, Ediget Bebudin and Tesfa Leediget
Least performing	1	2.86	34	97.14	35	Ediget Fire, Mulu Akababi, Selam (06/08) and Selam (09/11)

Source: Field Survery, April 2010

3.3.1 Profile of Respondents

All members of the eight MSEs were taken as a sample. The gender profile indicates that 81.08 % and 97.14% of members of MSEs from best and least performing MSEs were males and females respectively. The result based on the whole membership data depicted that the proportion of males to females' respondents is extremely different. The results from best performing indicated that the proportion of men is 81.08% and to the contrary from least performing the proportion of men is only 2.82%. As to gender division of labour, Coad (2005) stated that any role within solid waste management can be taken by a man or a woman. In one country a particular job may be almost exclusively done by men, and in another it may be done by women. But the situation in Nifas Silk Sub City indicated that both sexes engaged in solid waste management but forming with the majority of their own specific gender groups. Experts and officials from both Addis Ababa City Administration Micro and Small Enterprises Agency and its respective offices at Kebele and Sub City levels (interview, March 2010) explained that these MSEs were organized by their own initiatives and formed their groups with whom they could understand.



Figure 2: Some members of Selam MSE after Operation; Source: Field survey April 2010

From this result one can expect that this gender disparity can greatly influence the performance of MSEs in their solid waste management. This is because both sexes have their own needs, interests and priorities. Recent findings, however, suggest that associations and individuals consider girls to be more efficient in solid waste collection work than men (Abene Tegegn, 2006). Leaders from least performing MSEs (interviewed, March 2009) stated that their MSEs faced different challenges: members (women) were absent or late to work because they had responsible for different forms of domestic chores. In this regard Coad (2005) indicated that women are universally concerned with the living conditions in which their children are growing up.



Figure 3: Some members of Ediget Bebuden MSE under operation; Source:Field survey April 2010

The data on age is presented in table 3. Of the 37 and 35 respondents of the best and least performing MSEs, those aged below 20 years represented 2 (5.4%) and 0 respectively. The age bracket of 21 to 25 years constituted 14 (37.84%) for the best and only 2 (5.71%) for the least MSEs. Those aged between 26 to 35 represented 15 (40.54%) and 16 (45.71%) persons for best and least performing respectively while those between 36 -55 years accounted for 5 (13.51%) and 10 (28.57%) for best and least performing respectively. Respondents above 55 years constituted only 1 (2.70 %) from the best

and 7 (20%) from the least performing MSEs. From table 3 one can deduce that best performing respondents are highly concentrated between 21 – 35 years of age, active and productive age group, while least performing scattered up to and above 55. This can have its own implication on solid waste collection performance. Leaders of MSEs from least performing (interview, April 2010) stated that some of their members were very old to transport filled push carts and were mostly engaged in simple activities like loading the already collected solid waste to collection trucks. They added that collecting more solid waste meant getting more money and the situation had its own implication on their performance. During observation, it was identified that members spent more time discussing on different social issues even while they were working; and in spite of their inability to efficiently collect solid waste and transport push carts, the old were very much respected by both the members and leaders of MSEs. Realistically, 20% of members of MSEs has an average age greater than 55 indicates that such MSEs faced challenges in the difficult solid collection work as they were expected to collect a variety of solid waste from different residents as well as to transport carts in the difficult road environment. This can affect performance of the respective MSEs.

Table 3. Age Profile of Mebers of MSEs

	Age	Less than 20	21-25	26-35	36-55	Above 55
Performance Status	Best Performing MSEs	2	14	15	5	1
		5.41%	37.84%	40.54%	13.51%	2.70%
	Least Performing MSEs	0	2	16	10	7
		0.00%	5.71%	45.71%	28.57%	20.00%

Source: Field survey April 2010

Gender and age are important elements which could affect performance of MSEs. The fact that 81.08 % of members of MSEs from best performing were males while 97.14% of members of MSEs from least performing MSEs were females implies the likelihood of performance difference as a result of gender difference. Interview results confirmed that performance difference existed due to gender difference because females had competing priorities at home and in the community which became obstacle to them to regularly carry out their solid waste collection tasks like their males counterparts. In addition, more old age population resulted in less performance in solid waste collection work as it needs transporting carts in difficult roads as well as loading and unloading solid waste piles to and from trucks and carts.

3.3.2 Infrastructure and Performance of MSEs

The strong link between infrastructure and performance of MSEs was empirically explained by the works of Schübeler, (1996) and Cointreau, (1982). Specifically, Schübeler found out that besides the physical constraints of dense, low-income settlement, the inadequacies of other infrastructure services such as roads, drains and sanitary facilities often exacerbate waste management problems. Further relating to the performance of MSEs, he added that access of collection vehicles or push carts may be difficult where roads and foot-paths are unpaved. Cointreau, (1982) also confirmed that solid waste management practices are influenced by the supply of waste disposal services and other infrastructures. Therefore, the nature of infrastructure in a certain community can have its own positive or negative effect on the performance of solid waste collectors. Schübeler, (1996) further said that besides solid waste management, municipal governments are also responsible for the provision of the entire range of infrastructure and social services.

Considering the variation and nature of infrastructure services in different parts of Addis Ababa in general and Nifas Silk Lafto Sub City in particular, raising questions related to infrastructure is imperative.

Therefore, the bivariate analysis, based on the chi-square statistic, provides insight into the association or relationship between independent variable i.e. infrastructure (conduciveness of roads, proximity of garbage bins and availability) and dependent variable (performance of MSEs). For all independent variables taking one at a time, a test of association was carried out using the chi-square and the results are indicated in table 4.

Table 4. Chi-square Result of Effect of Infrastructure on the Performance of MSEs

S/N	Items	BP		LP		X ²	P-val
		Number	%	Number	%		
1	Conduciveness of roads					26.86	0.000
	Disagree	6	16.2	27	77.2		
	Neutral	5	13.5	1	2.9		
	Agree	26	70.3	7	20		
2	Proximity of garbage bins					17.94	0.000
	Disagree	8	21.6	25	71.4		
	Neutral	7	18.9	2	5.7		
	Agree	22	59.5	8	22.9		

Significant at $p < 0.05$ (Source, Field survey, April 2010)

- **Conduciveness of Roads and Performance of MSEs**

As table 4 shows, the majority (70.3%) of best and only 20% of least performing members of MSEs indicated that the roads in their operational localities were conducive to carry out their solid waste collection service. Whereas 16.2% from best and 77.2% from least performing MSEs disagreed on the conduciveness of the roads and the remaining replied neutral. The relationship between conduciveness of roads and levels of performance of MSEs were statistically significant ($\chi^2 = 26.86$, $df = 2$, $p < 0.000$) (See Table 4). This result indicates that conduciveness of roads are associated with performance of MSEs. Therefore, the existing performance difference between MSEs was caused by the existing difference in the nature of roads.

Leader of Selam MSE (interview, March 2010), from least performing group, complained that her group members faced serious challenges to roll up and down push carts because neighbourhood roads were not asphalted and members had to travel unpaved zigzag roads which made transportation of push carts difficult. It was also observed that some members of the least performing MSEs - Mulu Akababi,

Selam (Kebele 06/08) and Selam (Kebele 09/11), were struggling to transport their push carts up and down because of the difficult nature of the road. This significant difference showed that the condition of the roads had its own effect in the existing performance difference of MSEs. This result corroborates with the work of Schübeler, (1996), in his book *Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries*. Schübeler explained that access of collection vehicles or push carts may be difficult where roads and foot-paths are unpaved which usually make effective solid waste collection difficult. Cointreau, (1982) also stated that solid waste management practices are influenced by infrastructures.

- **Effect of Proximity of Garbage Bins and Performance of MSEs**

About 59.5% of best and 22.9% of least performing members of MSEs responded that proximity of garbage bins in their operational localities were conducive to carry out their solid waste collection service. About 21.6% from best and 71.4% from least performing MSEs disagreed on the proximity of garbage bins and the remaining replied neutral. The relationship between proximity of garbage bins and levels of performance of MSEs were statistically significant ($\chi^2 = 17.94$, $df = 2$, $p < 0.000$) (See table 4). This result indicates that proximity of garbage bins is significantly associated with performance of MSEs. Therefore, the performance difference between MSEs was caused by difference in location of garbage bins.

Leaders of the least performing MSEs (interviewed, March 3, 2010) stated that the location of garbage bins were relatively long which made their work very difficult and time consuming. It was also observed that some of their customers were found in distant places, crossing the main road, making their efficiency more challenging. This shows that proximity of garbage bins from customers' houses can affect the speedy collection of solid wastes which can have a lot to do with the performance of MSEs. This is because the longer the distance, the more time and energy is spent for transportation. The result, therefore, had its own implication on the performance difference of MSEs.

Therefore, results obtained from interview, observation and questionnaire indicated that condition of roads and proximity of garbage bin resulted in performance difference of MSEs. Best performing MSEs had better opportunities regarding infrastructure service than least performing ones which had a lot to do with their performance.

3.3.3 Training and Advice and Performance of MSEs

The effect of training and advice for the performance of MSEs' engaged in solid waste management was indicated in the works of Schübeler (1996) and Cointreau (1982). According to Schübeler setting up business ventures, even community-based enterprises, needs training and advice from specialists with expertise in areas such as entrepreneurship development, training, and marketing.

Considering the probable effect of training and advice on the performance of MSEs engaged in solid waste management, three specific questions were prepared for the respondents. The questions focused on start up and on job trainings; and technical supports given for members of MSEs engaged in solid waste management.

Using chi-square and percentages, the results on the assessment of respondents on the effect of training and advice on the performance of MSEs engaged in solid waste management is presented in table 5 and discussion for each question is narrated below.

Table5. Chi-square Result of Training and Advice on the Performance of MSEs

S.N	Items	Best Performing		Least Performing		X2	P-val
		Number	%	Number	%		
1	Avilability of start up training						
	Disagree	4	10.8	2	5.7	2.77	0.2503
	Neutral	1	2.7	4	11.2		
	Agree	32	86.5	29	83		
2	Provision of onjob training						
	Disagree	12	32.4	12	34.2	0.318	0.8529
	Neutral	10	27	11	31.4		
	Agree	15	40.5	12	34.3		
3	Provision of technical support						
	Disagree	3	8.1	12	34.3	7.92	0.0261
	Neutral	5	13.5	5	14.3		
	Agree	29	78.4	18	51.4		

Source: Field survey, April 2010; Significant at 0.05 and degree of freedom -2

- **Effect of Start up Trainings on the Performance of MSEs engaged in Solid Waste Management**

In the attempt to identify whether variation in the performance of MSEs resulted from difference in the provision of start up trainings for the two groups or not, 37 respondents from best and 35 from least MSEs were asked about the support they get from. The result of the analysis shows that (86.5%) of best and 83% of least performing members of MSEs agreed that they participated in initial trainings before they were engaged in solid waste management. Likewise, 10.8% from best and 5.7% from least performing MSEs disagreed on their participation in start up trainings while the remaining replied neutral. The relationship between provision of start up trainings and performance difference of MSEs were not statistically significant ($\chi^2 = 2.77$, $df = 2$, $p < 0.2503$) (See table 5). This result indicates that provisions of start up trainings are not associated with performance difference of MSEs. In both cases, the majority of members of MSEs had the opportunity to participate in trainings.

Heads of Kebele 06/07 and 04/05 Sanitation Offices (interviewed, March 2010) stated that start up trainings were given uniformly for two groups: members of MSEs and their leaders but few of them were absent for different reasons. They also added that members participated in three different trainings on overview of solid waste management and business skills by Nifas Silk Lafto Sub City Sanitation Management Office. Complementary to this, leaders of both least and best performing MSEs (interviewed, March 2010) stated that they participate similar start up trainings by the Sub City. They further stated that members enjoyed the trainings because they did not have any opportunity before they had joined their respective MSEs. They added that the trainings given were important to properly start their solid waste collection works. Haan et al. (1998) explained that effectiveness of MSEs can depend on availability of trainings given to them. This shows that availability of start up trainings can affect the efficient collection of solid waste which can have its own effect on the performance of MSEs. The result, however, does not indicate that one group got better or different trainings than the other which indicates performance difference of MSEs was not the result of difference in the provision of start up training.

- **Effect of onjob trainings for the Performance of MSEs engaged in Solid Waste Management**

Identifying the situation of on job trainings is also important to assess its effect on performance difference of MSEs. Because it is believed that such training programs provide immediate benefits for the right targets (Schübeler, 1996 and Haan et al, 1998). Thirty seven respondents from best and 35 from least MSEs were asked about their opportunity to participate in onjob trainings. The result of the analysis shows that 40.5% of best and 34.3% of least performing members of MSEs agreed that they usually engaged in onjob trainings before they were engaged in solid waste mangement. Likewise, 32.4% from best and 34.2% from least performing MSEs disagreed on their participation in onjob trainings while the remaining replied neutral. The relationship between provision of onjob trainings and performance difference of MSEs were not statistically significant ($\chi^2 = 0.318$, $df = 2$, $p < 0.8529$) (See table 5). This result indicates that provisions of onjob trainings are not associated with performance difference of MSEs.

This result was supported by the responses of heads of Kebele 06/07 and 04/05 Sanitation Management Offices (interviewed, March and April 2010) who explained that ongoing trainings were given homogeneously for all members of MSEs and their leaders. This response was also confirmed by both least and best performing MSEs (interview, March and April 2010) who said that members got three different trainings on overview of solid waste management and business skills. They further stated that members liked the refresher and new ongoing trainings.

Respondents also confirmed that the trainings given were important for their day to day solid waste collection works. Haan et al. (1998) explained that effectiveness of MSEs depends on the continuous and ongoing trainings given to them. This shows that the provision of on job trainings can affect MSEs' performance in their solid waste management. It can be inferred that both groups got similar opportunities to participate and the differences in performance between the two groups were not the result of difference in the provision of trainings.

- **Effect of technical support on the performance of MSEs in solid waste management**

In the daily collection of solid waste management activities, members of MSEs need continuous follow up and support. Having information to what extent they were getting technical support and its consequent result on their performance is important. Accordingly, the same number of respondents from both best and least MSEs was asked and their results are indicated in table 5.

About 78.4% best and 51.4% of least performing members of MSEs indicated that they got technical support on how to carry out effective solid waste management service. Likewise, 8.1% from best and 34.3% from least performing MSEs disagreed on their provision of technical support the remaining replied neutral. The relationship between provision of technical support and levels of performance of MSEs were statistically significant ($\chi^2 = 26.86$, $df = 2$, $p < 0.0261$). Hence, it is statistically significant and the chi-square test shows the strong of association between the two variables. This result indicates that provisions of technical support are associated with performance of MSEs. Therefore, the existing performance difference between MSEs was caused by the existing difference in the provision of technical support.

Heads of Kebeles 06/08 and 09/10 Sanitation Management Offices (interviewed, March 2010) explained that technical supports were given for the existing MSEs with a planned period of time. They added that every MSE got opportunities to be visited in the field, got technical advice from experts from Kebele Sanitation Management Offices as well as participated in weekly or bimonthly meetings. In some MSEs members did not regularly carry out the collection activities and this was even reported to their offices. The meetings were usually carried out to assess the challenges and activities during solid waste collection. Leaders of both least and best performing MSEs (interviewed, March and April 2010) also confirmed that members of MSEs used to get either weekly or bimonthly technical advices and supervision on how they could communicate with customers; facilitating transportation of solid wastes from garbage bins; and covering their zones. One of the leaders from least performing MSEs (March 3, 2010) complained that although experts from Kebele Sanitation Office frequently visited their zones, experts and even officials could not manage timely emptying of garbage bins. It was also observed that members of Selam (06/07) MSE were waiting trucks to get the accumulated waste collected so that they could unload their solid waste in their push carts. She added that this created a challenge for her group's subsequent collection of solid waste as it should be put in the emptied

garbage bin. The result indicated that both groups had similar chance of getting technical support and advice from the concerned bodies. During observation, it was found out that attention was more given mostly for best performing MSEs and special support was not given for those which were in need. The result indicated that the existing performance difference was due to the difference in technical support and advice.

Therefore, results obtained from interview and questionnaire indicated that provision of technical support affected performance difference of MSE while the provision of onjob and start up trainings, although essential for the efficiency of MSEs, did not result in the observed performance difference between the already identified and categorized best and least performing MSEs.

3.3.4. Leadership competence and MSEs' Performance in Solid Waste Management

The relationship between leadership competence and performances of MSEs engaged in solid waste management was well articulated by the works of Haan et al. (1998), Schübeler, (1996) and Cointreau, (1982). They all agreed that leadership competence is essential for the effectiveness of MSEs engaged in solid waste management. Haan et al. explained that success of MSEs in solid waste management is dependent up on leadership competence. Considering the importance of leadership competence on the performance of MSEs in solid waste management in different parts of Addis Ababa in general and Nifas Silk Lafto Sub City in particular, questions based on selection of leaders, customers handling and transparency were asked to respondents. Therefore, the result on the assessment of respondents on the effect of leadership competence on the performance of MSEs engaged in solid waste management is presented table 6 and discussion for each question is narrated below.

Table 6. Chi-square Result of Effect of leadership competence on the Performance of MSEs

S/N	Items	Best Performing		Least Performing		X ²	P-val
		Number	%	Number	%		
1	Merit and competition based selection criteria					2.85	0.2405
	Disagree	10	27	16	45.7		
	Neutral	12	32.4	9	25.7		
	Agree	15	40.6	10	28.6		
2	Relationship with customers					7.108	0.0286
	Disagree	2	5.4	10	28.6		
	Neutral	7	18.9	4	11.4		
	Agree	28	75.7	21	60		
3	Transparency about income and expenditure of MSEs					0.1868	0.9108
	Disagree	12	32.4	13	37.1		
	Neutral	9	24.3	8	22.9		
	Agree	16	43.2	14	40		

Source: Field survey April 2010; Significant at 0.05 and degree of freedom -2

- **Criteria for the selection of leaders of MSEs engaged in solid waste collection**

Identifying the criteria in which leaders of MSEs were selected is helpful because they are largely responsible for solid waste management. The main criteria considered were merit and competition. The result of the analysis shows that 40.6% from best and 28.6% from least performing MSEs replied that selection of leaders of MSEs were based on merit and competition while 27% from best and 45.7% from least performing MSEs disagreed on this and the remaining responded neutral.

The relationship between application of basic selection criteria and performance difference of MSEs were not statistically significant ($\chi^2 = 2.85$, $df = 2$, $p < 0.2405$) (See table 6). This result indicates that application of selection criteria is not associated with performance difference of MSEs. Although the percentage difference existed, the performance difference between the two groups of MSEs was not significantly caused by difference in the proper application of selection criteria.

This result was supported by the responses of leaders of both least and best MSEs (interviewed, March and April 2010) who explained that they were appointed based on their experience and merit. Heads of Kebele 06/07 and 04/05 Sanitation Offices (interviewed, March and April 2010) also confirmed by saying that relatively more experienced and competent persons were appointed for each MSE.

Although the selection of leaders of MSEs could have its own effect on performance, the result did not indicate the performance difference was due to difference in selection criteria.

- **Relationship with Customers and Performance Difference of MSEs**

Establishing good relationship with customers is important. As it is related to customer handling, it has a lot to do with effective implementation of any activities. In this case, members of MSEs relationship with their respective customers was taken as a point of assessment. It was attempted to identify whether the performance difference of MSEs has something to do with their customer handling practices. The result of the analysis shows that (75.7%) of best and 60% of least performing members of MSEs agreed that they had an understanding about importance of establishing good relationship with their income while 5.4% from best and 28.6% from least performing disagreed on this and the remaining replied neutral. The relationship between knowledge difference among members of MSEs and their difference in income (performance) were statistically significant ($\chi^2 = 7.108$, $df 2 = 2$, $p < 0.0286$) (See table 6). This result indicates that difference in relationships with customers' handling among MSEs resulted in performance difference of MSEs.

The result was supported by the responses of heads of Kebele 06/07 , 09/14 and 04/05 Sanitation Offices (interviewed, March and April 2010) who explained that both the start up and ongoing trainings were given in the attempt to develop their leadership competence. They added that issues of relationship with customers and handling their complaints were main issues during trainings. Hence, they believed that members of MSEs had good relationship with customers but they believed that some complains from customers were coming. Moreover, head of Kebele 09/14 Sanitation Office said, "members of MSEs faced challenges of acceptance by some community members and there were cases even conflicts happened. While collecting solid waste from house to house, a member of MSE asked households to bring out their solid waste. One head of household came out with solid waste and gave to the waste collector with impolite approach and insulting. The waste collector tried to handle the

situation but her customer kept on insulting and degrading her. Losing her tolerance, the waste collector knocked her customer down with stone and she was badly hurt. The situation was tense and we tried to handle the situation. The waste collector was penalized by her MSE and the Kebele. This seriously affected the MSE's relationship with customer although it was finally resolved".

The result shows that relationship with customers can affect MSEs' performance in their solid waste management. It also indicates that performance difference of MSEs was the result of difference in customer handling practices of members of MSEs.

- **Transparency about the income and expenditure of MSEs and performance difference**

Members of MSEs need to get up-to-date information about their income and expenditure. Having respondents' idea to what extent they were getting information about their income and expenditure and its consequent result on their performance is important. Accordingly, the same number of respondents from both best and least MSEs was asked to rate the extent to which they got information about their respective MSEs' income and expenditure. The result of the analysis shows that 43.2% of best and 40% of least performing members of MSEs agreed that they knew the income and expenditure of their respective MSEs while 32.4% from best and 37.1% from least performing MSEs disagreed on this response while the remaining replied neutral. The relationship between transparency about the income and expenditure and performance difference of MSEs were not statistically significant ($\chi^2 = 0.1868$, $df = 2$, $p < 0.9108$) (See table 6). This result indicates that transparency about income and expenditure is not associated with performance difference of MSEs.

Heads of Kebeles 06/08, 04/09 and 09/10 Sanitation Offices (interviewed, March and April 2010) stated, they used to get information about their income and expenditure. They added that since March 2010, solid waste collection fee was collected together with water bill and the collected amount goes to Sanitation Management Agency; finally, the money returned to Sub City. Payment has been made now based on the amount of waste collected. For one meter cube solid waste, 30.00ETB (thirty Ethiopian Birr) is paid. Kebele Sanitation experts carried out the implementation during their regular monitoring visits.

Hence, as an element of leadership competence, customer handling difference resulted in performance difference between the two groups of MSEs while transparency about income and expenditure as well as selection criteria, although essential for the efficiency of solid waste management, did not significantly result in performance difference.

3.3.5 The Effects of Willingness to Pay and Performance of MSEs

Willingness to or not to pay could have direct impact (positive or negative) on the reliability and success of any solid waste management strategy (Epp and Mauger, 1989, Rahman *et al.*, 2005). Schübeler (1996) also stated that willingness to pay for waste management services or facilities is very important to the success of the private sectors' participation in solid waste management program which is also applicable in MSEs. From June 2009 – April 2010, MSEs engaged in solid waste management had a role of collecting service fee from their customers with support from Kebele Sanitation Administration Offices. Therefore, willingness to pay was hypothesized as one of the main factors for the performance of MSEs for this study. The result on the assessment of respondents on the effect of willingness to pay is presented in table 7 and discussion for each question is narrated below:

Table7. Chi-square Result of Willingness to Pay and Performance of MSEs

S/N	Items	Best Performing		Least Performing		X2	P-val	
		Number	%	Number	%			
1	Proper waste collection service increases customers' willingness to pay	Disagree	15	40.5	17	48.5	6.4906	0.0389
		Neutral	5	13.5	11	31.4		
		Agree	17	45.9	7	20		
2	Income difference of customers	Disagree	9	24.3	11	31.4	1.5790	0.454
		Neutral	4	10.8	6	17.1		
		Agree	24	64.9	18	51.4		

Source: Field survey April 2010; Significant at 0.05 and degree of freedom -2

- **Waste collection service and customers willingness to pay for the service**

The link between willingness to pay and level of service is explained by the works of Coad (2005) and Haan et al (1998). The livelihood of members of MSEs is dependent upon their income from customers. If customers are not willing to pay, it is challenging for MSEs to function properly. The result of the analysis shows that 45.9% of best and 20% of least performing members of MSEs agreed that there was efficient waste collection service in their respective MSEs while 40.5% from best and 48.5% from least performing MSEs disagreed on this response while the remaining replied neutral. The relationship between proper waste collection service and performance difference of MSEs were statistically significant ($\chi^2 = 6.4906$, $df = 2$, $p < 0.0389$) (See table 7). This result indicates that the level of waste collection which has a lot to do with willingness to pay is associated with performance difference of MSEs.

Heads of Kebeles 06/08, 04/09 and 09/10 Sanitation Management Offices (interview, March and April, 2010) stated that solid waste collection was carried out by MSEs in their respective zones but the efficiency among MSEs vary. In areas where customers did not get effective solid waste collection service, they were not willing to pay and vice versa. Leaders of both best and least performing MSEs also stated that as long as they carried out their activities, customers were willing to pay for the service they got. This supported the result that performance difference was caused by difference in the provision of proper waste collection services among the two groups.

- **Income difference of service users and payment for services**

To identify whether income difference of service users affects the performance of MSEs, 37 respondents from best and 35 from least MSEs were asked a question about the extent to which income difference of service users affects payments for service for the two groups. The result of the analysis shows that 64.9% of best and 51.4% of least performing members of MSEs agreed that high income customers timely paid for services than less income customers while 24.3% from best and 31.4% from least performing MSEs disagreed on this response while the remaining replied neutral. The relationship between income difference of service users and payment for service (which has a lot to do with performance difference) of MSEs were not statistically significant ($\chi^2 = 1.5790$, $df = 2$, $p < 0.454$). This

result indicates that although there is a slight difference in the percentage of respondents, income difference is not associated with performance difference of MSEs.

Leaders of both the best and least performing MSEs (interview, March 4, 2010) stated that most of their customers paid as long as their solid waste was timely collected. One of the interviewees added that they used to select their customers who could afford paying for the service and did not face any problem. Head of Nifas Silk Lafto Sanitation Management Office stated, “both the private enterprises and MSEs were collecting solid waste of the well to do leaving sometimes the middle and mostly the poor behind. The new zoning approach was introduced to tackle this problem. Hence, each MSE has its own localities to carry out its solid waste collection service and any cleansing problem in that specific area is the responsibility of the MSE. Since every body pays for solid waste management with water bill, there is always a room for people (service users) to ask solid waste collectors for the service. MSEs also collect more waste any where as much as possible.” There is no observed performance difference which existed as a result of income difference of customers of MSEs. Hence, income difference could not be a factor for performance difference of MSEs.

Generally, as part of willingness to pay, proper waste collection service resulted in performance difference of MSEs while income difference did not result in performance difference of MSEs.

3.3.6 Attitude of Workers of MSEs’ Towards Their Solid Waste Management Service

The effect of attitude of members of MSEs towards their solid waste management business was indicated in the works of Coad (2005). Coad explained that positive attitude improved their working conditions greatly and helped even to attract new members. On the other hand, people’s positive attitude towards solid waste collection workers was explained by Schübeler (1996) and Cointreau (1982). They indicated that public positive attitude is one of the key factors for the effectiveness of members of MSEs in their solid waste collection efforts.

In order to assess the effects of members of MSEs’ attitude towards their solid waste management business, three specific questions were prepared and the result is indicated in table 8.

For each variable, data collected using Likert Scale questionnaire was analyzed in order to measure the strength of the respondents' opinion on household waste management issues under consideration (Page-Buchi, 2003; Isa *et al.*, 2005; Uebersax, 2006) The respondents were provided with several statement options such as strongly disagree, disagree, neutral, agree, and strongly agree. Using Likert's method, a person's attitude is measured by combining (adding or averaging) their responses across all items. All data collected was then analyzed using statistical tools for simple percentages, frequency analysis and severity index calculations. The answers to questions were displayed on a 0 to 4 point Likert Scale while the severity index (SI) was calculated using the following equation after Al-Hammed & Assaff (1996).

$$SI = \frac{\sum_{i=0}^4 a_i x_i}{\sum_{i=0}^4 x_i} (100)$$

Where:

a_i = the index of a class; constant expressing the weight given to the class

x_i = the frequency of response

$i = 0, 1, 2, 3, 4$ and described as below: where:

x_0, x_1, x_2, x_3, x_4 are the frequencies of response corresponding to

$a_0 = 0, a_1 = 1, a_2 = 2, a_3 = 3, a_4 = 4$, respectively.

The rating classification was adapted after Majid & McCaffer (1997):

a_0 = Strongly disagree $0.00 \leq SI < 12.5$

a_1 = Disagree $12.5 \leq SI < 37.5$

a_2 = Neutral $37.5 \leq SI < 62.5$

a_3 = Agree $62.5 \leq SI < 87.5$

a_4 = strongly agree $87.5 \leq SI < 100$

In order to assess the attitude of MSEs towards their solid waste management service, related questions indicated in table 8 were asked the result is also indicated in the table. On the point scale, the ratings given to each group are as follows: strongly disagree (0), disagree (1), neutral (2), agree (3), strongly agree (4). For ease of interpretation, each rating is given the following denotation:

Strongly disagree (SD)

Disagree (D)

Neutral (N)

Agree (A)

Strongly Agree (SA)

Only the responses to the questionnaires directly related to the scope of the present study have been analyzed and discussed.

Table 1/ Table 8. Respondents' attitude towards their solid waste management business

S/ N	Item		SD 0	D 1	N 2	A 3	SA 4	(SI) %	
1	It is less likely to leave my job if I get other options.	BP	N	6	5	5	19	2	64.19
			R	16.2	13.5	13.5	51.4	5.4	
		LP	PR	4	15	5	10	1	52.86
			N	11.4	42.9	14.3	28.6	2.9	
2	The management of the MSE is conducive to carry out my collection services.	BP	N	2	6	4	23	2	69.59
			R	5.4	16.2	10.8	62.2	5.4	
		LP	PR	3	3	3	23	2	69.85
			N	8.8	8.8	8.8	67.6	5.9	
3	Community's recognition to my work is encouraging to me	BP	N	5	26	3	2	1	34.46
			R	13.5	70.3	8.1	5.4	2.7	
		LP	PR	7	21	4	2	1	36.43
			N	20	60	11.4	5.7	2.9	
		R							
		PR							

(NR): Number of respondents, (PR): Percentage of respondents, (BP): Best performing, (LP): Least Performing (SD): Strongly Disagree, (D): Disagree, (N): Neutral, (A): Agree, (SA): Strongly Agree,

Source: Field survey April 2010

From the survey results the respondents expressed their concerns about communities' recognition to their work in the solid waste management system but their attitude to their work was found out to be positive. As indicated in table 8, the severity index value for the question was 34.46 and 36.43 for best and least performing MSEs respectively. This showed that the values of both are found in the same ranges of disagree ($12.5 \leq SI < 37.5$) (Majid and McCaffer, 1997; Isa *et al.*, 2005). This means that their work was not recognized by the community. Leaders of MSEs also supported this. Leaders of both the best and least performing MSEs (interviewed, March and April 2010) complained that they were mostly discouraged by the public reaction and no attention was given to them. An official from Sanitation Management Agency (interviewed, March and April 2010) stated that series of public

mobilization activities were carried out to increase people's awareness about solid waste management activities. He added that about 3 million people were sensitized to contribute to solid waste management efforts. This was done through "talk shows" in both Ethiopia Television and Addis Ababa Television; consultative conferences led by Mayer Kuma Demeksa, City Manager Mekuria Haile and anager of Sanitation Administration Agency Mulatu Gebru; conferences for relevant stakeholders. However, it is found to be challenging to change the attitude of people within short period of time.

As indicted in table 8, the severity index value for the question about attrition was 64.19% and 52.86% for best and least performing MSEs respectively. This showed that the values of both are found in the ranges of agree ($62.5 \leq SI < 87.5$) and disagree ($37.5 \leq SI < 62.5$) (Majid and McCaffer, 1997; Isa et al.2005). About 64.19% from best and 52.86% from least performing members of MSEs agreed that they were happy with the current job and less likely to look for other opportunities. The researcher also observed that members of MSEs did not show to move to street cobblestone production where they could earn more than two times of their current earnings. As to conduciveness of the management system of MSEs, the severity index value was 69.59% and 69.85% for best and least performing MSEs respectively. The values of both are found in the same range of agree ($62.5 \leq SI < 87.5$). This shows that members of MSEs are enjoying their management system.

In general, members of MSEs had positive attitude towards their solid waste management work. This could be expressed through their interest to continue in their work than aspiring other options and their appreciation to the management situations of their respective MSEs. But they uncovered that main decisions and powers were made and exercised by officials and experts of Kebeles and Sub Cities. The severity index values for the respondents' attitude towards their solid waste management business range between 34.46 and 69.9% for best performing MSEs and between 36.43 and 69.85% for least performing MSEs. For both best and least performing groups of respondents, the values fall in neutral and agree ranges of ($37.5 \leq SI < 62.5$) and ($62.5 \leq SI < 87.5$) (Majid and McCaffer, 1997; Isa et al.2005). During interviews with leaders of MSEs, they expressed that they wanted to stay in their current job and would further expect to be permanently employed by the municipality as Municipal Street Cleaners. This is because, they said, such employees got health care services and pension. At this present level of respondents' perception, a slight change could tilt the balance to the unfavorable side (Isa et al., 2005).

CHAPTER FOUR

4. SUMMARY, CONCLUSION AND RECOMMENDATION

4.1 SUMMARY AND CONCLUSION

The main objective of this study was to examine how possible factors like infrastructure, training and advice, willingness to pay, gender difference and leadership competence affect the performance of MSEs in solid waste collection; and to identify how members of MSEs' attitude on their solid waste collection efforts affect their performance. The conceptual framework of this paper is framed based on the works and findings of different scholars in the area of micro and small enterprises involvement in solid waste management. Profound practitioners includes Cointreau, (1982); Schübeler, (1996); and Haan, Coad and Lardinois, (1998). The Conceptual Framework provides brief definitions of the main concepts of MSEs' participation in solid waste management and identifies key issues that normally guide MSEs' performance in solid waste management.

Addis Ababa was chosen as the study area largely because it is the only primate city of Ethiopia having more than 521 MSEs engaged in solid waste management. Consequently, Nifas Silk Lafto Sub City was chosen because firstly it has both urban and peri-urban settings with high, medium and low income dwellers. The sub city was taking the lead in its solid waste management program having many best performing MSEs and a few least performing ones. Using purposive sampling method four best and four least performing MSEs were taken as sample of the study. Three methods of data collection were used; namely, personal observation, in depth interviews and questionnaires distribution. Data collected was then analyzed using statistical tools for simple percentages, frequency analysis, and chi-square and severity index calculations.

The result based on the whole membership data depicted that the proportion of male to female respondents is extremely different. Gender and age are important elements which could affect performance of MSEs. The fact that 81.08 % of members of MSEs from best performing were males while 97.14% of members of MSEs from least performing MSEs were females implies the likelihood

of performance difference as a result of this gender difference. Interview results confirmed that performance difference existed due to gender difference because females had competing priorities at home and in the community which became obstacle to them to regularly carry out their solid waste collection tasks like their males counterparts. Women in most societies are responsible for the domestic work, which include many tasks including childcare, shopping, cooking, cleaning and wellbeing of their husbands (World bank, 1999). This affects their mobility and suggests a convenient waste disposal method. The MSEs were formed on volunteer basis. In addition, more old age population resulted in less performance in solid waste collection work as it needs transporting carts in difficult roads as well as loading and unloading solid waste piles to and from trucks and carts.

The finding of the study indicated that the condition of infrastructure resulted in performance difference of MSEs. The result also collaborates with the works of different scholars. The strong association between infrastructure and performance of MSEs was empirically explained by the works of Schübeler (1996) and Cointreau (1982). Schübeler stated that besides the physical constraints of dense, low-income settlement, the inadequacies of other infrastructure services such as roads, drains and sanitary facilities often exacerbate waste management problems. Related to the performance of MSEs, he added that access of collection vehicles or push carts may be difficult where roads and foot-paths are unpaved. Cointreau (1982) also set that solid waste management practices are influenced by the supply of waste disposal services and other infrastructures. Therefore, the nature of infrastructure in a certain community can have its own positive or negative effect on the performance of solid waste collectors. Schübeler (1996) further said that besides solid waste management, municipal governments are also responsible for the provision of the entire range of infrastructure and social services.

The relationship between provision of technical support and levels of performance of MSEs was also found out to be statistically significant which shows the strong association between the two variables. Schübeler (1996) stated that manpower development would be supported through guidelines, training programs and technical assistance, including support for the establishment of institutional capacity for training and human resource development. Interview results also indicated that technical supports were given for the MSEs with a planned period of time. Every MSE got the opportunity to be visited in the field, got technical advice from experts of Kebele Sanitation Management Offices as well as participated in weekly or bimonthly meetings. Some members of MSEs did not regularly carry out the collection activities and did not get the opportunity to acquire technical support. Interview result also

confirmed that members of MSEs used to get either weekly or bimonthly technical advices or supervision on how they could communicate with customers; facilitating transportation of solid wastes from garbage bins; and covering their zones. Supporting this Haan et al. (1998) explained that MSEs may need support in a number of fields; a recommended policy for a municipality is that it should provide some technical advice and encourage regular communication with MSEs on operational issues. During observation, it was also found out that attention was given mostly for best performing MSEs and special support was not given for those who were in need. The result indicated that the existing performance difference was due to the difference in technical support.

Customer handling has a lot to do with the performance of MSEs. Hence, members of MSEs relationship with their respective customers were taken as a point of assessment to identify whether the performance difference of MSEs has something to do with their customer handling practices. The result of the analysis shows that the relationship between customer handling differences among the two groups of MSEs and their performance were statistically significant. This result indicates that difference in customers handling between the two groups of MSEs resulted in their performance difference while start up training and on job training had nothing to do with performance difference. Interview results also indicated that start up and onjob trainings were given to all members of MSEs and had nothing to do with performance difference.

4.2 RECOMMENDATION

Effective solid waste management is achieved through the involvement of different stakeholders. In Addis Ababa, MSEs are involved in house to house solid waste collection service. For the betterment of their service delivery, it is essential to identify basic factors which resulted in performance difference among themselves. This would enable to improve over weaknesses and build on best practices. Thus; the following recommendations are forwarded for the betterment of the effectiveness of the solid waste management service in Addis Ababa City.

Measures Required from Addis Ababa City Government

- Addis Ababa City Government should develop and issue citywide implementation strategy to support women MSEs engaged in solid waste management. Understanding the fact that women and men have different interests, needs and priorities, application of immediate affirmative action is essential.
- Since the implementation of this required financial and strategic direction, the city government should assist sub cities and Kebeles in financing and technically assisting the provision of conducive working atmosphere by providing the required facilities as a startup support and designing a system encouraging women.
- The city should invest on the disposal sites, transporting vehicles and other proper technologies.

Measures Required from Sub City

- Nifas Silk Lafto Sub City should direct its effort towards improving administration, and the institutional arrangement of the service to allow application of gender sensitive solid waste management program:
 - The Sub City should build its regulatory and monitoring capacity to follow up and regulate the MSEs operation;
 - Service charges should be determined based on correct determination of costs. Thus, the Sub City needs to establish a proper financial management mechanism that allows correct determination of costs of the service. Thirty birr payment for one meter cube solid waste has discouraged members of MSEs;
 - Further strengthen its support to Kebeles in the attempt to strengthn their capacities so that they can

carry out efficient and effective technical support.

Measures Required from Kebeles

- Kebeles should give attention to least performing MSEs by carrying out proper monitoring and technical support.
- They should consider the needs and challenges of women so that they give special support to women during monitoring visits, selecting garbage sites as well as providing trainings.
- They should facilitate timely collection of solid waste from garbage sites by regularly communicating with the Sub City.

Further Study

Although the topic is very relevant to the current situation of the Sub City and the City, time limitation and shortage of resources were major constraints to investigate the problem comprehensively across the city. Thus, further study should be carried out to investigate the challenges and opportunities of organizational and institutional arrangement of the solid waste management services in the city. Further study on the profile of the service, i.e., the volume, the quantity, the composition, and generation of solid wastes in Nifas Silk Lafto and /Addis Ababa looks to be essential to improve the solid waste management service.

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Appendix 1

The power and responsibilities of the three layers of government in Addis Ababa in solid waste management

A) Addis Ababa City Government

- Carry out urban based awareness creation and capacity building activities
- Conduct researches which improve the service
- Evaluate and provide feedback on citywide projects of different stakeholders
- Follow up and ensure the implementation of planned capital projects
- Identify, outsource and follow up activities
- Measure solid waste of the city , transfer and provide landfill service
- Organize and document different information for service users
- Follow up and support micro and small enterprise engaged in solid waste management
- Manage transfer stations and landfills
- Coordinate and implement citywide sanitation programs
- Establish complaints response mechanisms and ensure its proper implementation
- Ensure the collection and transfer of solid waste collection fee using water bill
- Prepare different guidelines, manuals and standards and ensure their distribution
- Provide landfill service and collect service fee
- Evaluate the implementation of activities at different levels and provide feedback

B) Sub Cities:

- Provide fast and speedy solid waste collection and transport service
- Ensure the work of collection vehicles; evaluate the implementation and provide feedback
- Ensure the management and maintenance of collection vehicles
- Ensure the supply and distribution of inputs and materials essential for the tasks
- Organize and document different information and ensure their distribution
- Follow up and support micro and small enterprises

- Prepare and administer transfer stations
- Carryout sub city wide solid waste collection campaigns
- Establish complaints response mechanisms and ensure its proper implementation
- Evaluate the implementation of activities and provide feedback
- Provide support and build the capacity of Kebeles Sanitation Management Offices
- Establish a system to reduce the generation,; sorting and collection of solid waste

C) Kebeles

- Develop zonings of households in each kebele and out source solid waste collection service to MSEs
- Establish a system to reduce solid waste from its source and its consequent collection
- Provide street sweeping and environmental cleaning service
- Carry out awareness creation campaign and ensure the enforcement of sanitation rules
- Follow up and control illegal waste dumping practices
- Carry out community based sanitation programs
- Support and follow up MSEs engaged in solid waste collection
- Carry out monitoring and evaluation to ensure the sanitation of environment
- Ensure garbage bins and sites are prepared as of the standard and ensure their proper utilization
- Make sure activities are accomplished as per the contract and give timely payment for MSEs
- Establish complaints response mechanisms and ensure its proper implementation
- Evaluate the implementation of activities and provide feedback
- Organize, document and distribute different information for service users

Source: Archive from Addis Ababa City Government Sanitation Management Agency, May 2010

Appendix 2

Addis Ababa University
College of Developmental Studies
Department of Urban Development and Management Center

INTERVIEW CHECKLIST FOR GOVERNMENT OFFICIALS AND EXPERTS

1. What criteria were used to select and organize Microand Small Scale Enterprises used in solid waste management?
2. Based on their performance, best MSEs' involved in Solid Waste Manament were selected and by Sanitation Management Agency. What were the criteria used to select and who carried out the selection?
3. What kind of support did MSEs get in their solid waste manangement service?
4. How did the management of the MSEs engaged in solid waste management look like? Please specify the selection and monitoring system.
5. How was the financial system of MSEs look like? Who was in charge of collecting fee and distributing to members?
6. How do you evaluate the conduciveness of roads and location of vehicles to implement solid waste collection by MSEs?
7. What type of support did MSEs get in their implementation of solid waste collection services?
8. If any issues related to MSEs involvement in solid waste management, please specify.

Thank you!!

Appendix 3

Addis Ababa University
College of Developmental Studies
Department of Urban Development and Management Center

INTERVIEW CHECKLIST FOR MICRO AND SMALL ENTERPRISES

1. How did you join SMEs in the very beginning?
2. How do you explain the conduciveness of roads, proximity of garbage bins for effective solid waste collection work?
3. What kind of support did you get to carry out effective solid waste collection? Which government bodies provide support and how often?
4. How often trainings were given? Did you participate in a start up training before you started your work? In which trainings did you participate? To what extent were the trainings helpful?
5. What kind of support did MSEs get in their solid waste management service?
6. What were the criteria to select leaders of MSEs engaged in solid waste collection?
7. As leaders, in which areas did you participate and make decisions?
8. How was the financial system of MSEs look like? Who was in charge of collecting fee and distributing to members?
9. How do you evaluate the conduciveness of roads and location of vehicles to implement solid waste collection by MSEs?
10. If any issues related to MSEs involvement in solid waste management, please specify.

Thank you!!

Appendix 4

Addis Ababa University

College of Developmental Studies

Department of Urban Development and Management Center

Research Questionnaire for members of Micro and Small Scale Enterprises

This questionnaire is designed by a student of Addis Ababa University Urban Development and Management Center to conduct a research on the topic Micro and Small Scale Enterprises in Solid Waste Management in Addis Ababa: The Case of Nifas Silk Lafto Sub. The purpose of this questionnaire is to get information how MSEs are implementing their solid waste management services.

The quality of the research output will depend on the information that you give. Therefore, I kindly request you to give reliable information on the matter that you are requested by the enumerator. I would like to thank in advance for your cooperation.

Instruction I: use 'X' mark for answers of questions with various alternatives in the box provided and write the specific issue when required in its appropriate place.

I. General Information

- A. Gender : Male Female
- B. Age : below 20 21-25 26-35 36-55 Greater than 55
- C. Which MSE are you a member of? _____

Instruction II: Read the following items and put 'X' mark for the answer, which most closely expresses of your feelings. For each rating the denotation is disagree, neutral and agree respectively in their order of your agreement.

No.	Item	Disagree	Neutral	Agree
1	The condition of the roads is mostly conducive to transport my push carts.			
2	Garbage bins are usually located near to customers' houses.			
3	I participated in training(s) before I have started my waste collection job.			
4	I usually get on job trainings on solid waste collection and disposal.			
5	I usually get technical support about waste collection and disposal from concerned government bodies.			
6	Leaders of my MSE are selected based on merit and competition.			
7	Improving my relationship with customers increases my income.			
8	I am informed about the income and expenditure of the MSE			
9	Because I give proper waste collection service, customers willingly pay for the service.			
10	High income customers timely pay service fees than lesser income ones.			

Instructions III: Read the following items and put 'X' mark for the answer, which most closely expresses of your feelings. For each rating the denotation is strongly disagree, disagree, neutral agree and strongly agree respectively in their increasing order of your agreement.

No.	Item	SD 0	D 1	N 2	A 3	SA 4
1	It is less likely to leave my job if I get other options.					
2	The management of the MSE is conducive to carry out my collection services.					
3	Community's recognition to my work is encouraging to me					

Thank you!!

Appendix 5

Best Performing Micro and Small Scale Enterprises Awarded in 2009 by Addis Ababa Sanitation Management Agency

No.	Sub City	No. of Kebeles	No. of MSEs	No. of signed contracts	No. of members in MSEs	Name of best performing MSEs
1	Nifas silk	10	70	70	721	Sefere Genet; Ediget
2	Kolfe	10	70	70	678	Nigat; Tsinat
3	Addis Ketema	9	52	52	710	Tenbi; Tsedey
4	Yeka	11	50	50	507	Addis Sirafetera; Yenege Tesfa
5	Akaki Kaliti	8	27	27	180	Awuranba; Rohbot
6	Kirkos	11	49	49	631	Ediget Behibret; Addis Wubet
7	Arada	10	45	45	667	Arenguede Gorf; Selam
8	Bole	11	70	70	828	Raiy; Kehulum Bandinet
9	Lideta	9	39	39	475	TibebTsidu; Serto Madeg
10	Gulele	10	49	15	420	Tibeltsig; Ediget
	Sum	99	521	487	5,817	

Source: Archieve of Addis Ababa Sanitation Management Agency, (April 2010)

