

**Addis Ababa University**  
**College of Education and Behavioral Studies**  
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*Compatibility of Interest and Personality Profile of Urban Health Extension Workers with Current Practices in Adis Ketema, Yeka and Gulele Sub cities, Addis Abeba.*

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## **Abstracts**

**Title:- *Compatibility of Interest and Personality Profile of Urban Health Extension Workers with Current Practices in Addis Ketema, Yeka and Gulele Sub cities, Addis Abeba.***

**Kassahun Negash**

Addis Abeba University, 2014.

*The main focus of the study was to explore the relationship between job performance and initial interest as well as personality of Urban Health Extension Workers in Gulele, Yeka and Addis Ketema sub cities. To arrive at the intended target a descriptive in its nature and a health facility based cross-sectional design was employed and using quantitative approaches. The study participants were women urban health extension workers whose employment period greater than six months. In this study some appropriate statistical tools like percentage, means, standard deviation, correlation and multiple regression method was used. Accordingly results indicated that social, enterprising interest and extrovert personality had correlation with awareness creation; introvert, conventional and investigative occupational interest had positively correlated with documentation. Social occupational interest and extrovert personalities found to be the predictor of the overall achievement of Urban Health Extension workers. However, the community culture of Ethiopia need to be considered as the extrovert people may be taken talkative and unstable which affect the acceptability of the community. Thus, the supervisor advice before deployment of this people and follow up is highly required. Human resources managers and related professionals can use these finding to selecting and appointing Urban Health Extension Workers to achieve the desire goal.*

## Acronyms

ANOVA-----	Analysis of Variance
ARAS-----	Ascending Reticular Activating System
CNHD-----	Center for National Health Development in Ethiopia
EEG-----	Electro Encephalo Gram
FFM-----	Five Factor Model
FMOH-----	Federal Ministry of Health
HEP-----	Health Extension Package
HEW- -----	Health Extension Worker
HMIS-----	Health Management Information System
HSDP- -----	Health Sector Development Program
PHCU-----	Primary Health Care Unit
RIASEC-----	Realistic, Investigative, Artistic, Social, Enterprising, and Conventional
	SD- Standard Deviation
SPSS-----	Statistical Package for Social Science
UHEW- -----	Urban Health Extension Worker

# Chapter One

## Introduction

### 1.1 Background

Ethiopia, one of the most populous countries in sub-Saharan Africa (74.5 million, 2007) yet one of the least urbanized (16%), and poorest (per capita gross national income of US \$220 (FMOH, 2008) .

The major health problems of the country remain largely preventable communicable diseases and nutritional disorders (FMOH, 2010). Despite major progresses have been made to improve the health status of the population in the last one and half decades, Ethiopia's population still face a high rate of morbidity and mortality and the health status remains relatively poor. Sadly high morbidity and mortality happened due to lack of awareness in diseases prevention and control at family level (FMOH, 2010).

Following then change of governments 1991, the transition of government produced the health policy which was the first in kind in the country and was among a number of political and socio economic transformation measures that were put in place. The translation of the health policy was flowed by the formulation of the four consecutive phases of comprehensive HSDP(HSDPIV, 2010-2015) .

The first phase of which has been implemented starting in 1996/97GC. The Health Extension Program was introduced under HSDP II in 2000/2003 GC with the fundamental philosophy, if the right health knowledge and skill is transferred, households can take responsibility for producing and maintaining their own health (HSDPIV, 2010-2015) .

The Health Extension Workers (HEWs), young local women with grade 10 education in rural area and diploma nurse in Urban settlement, are recruited by Kebele and Woreda Councils and given one year training prior to employment with the Woreda Health Office. Supporting HEP is the government's four tiered health system with primary units (health center with 5 satellite

health posts), and woreda hospitals, zonal hospitals, and specialized referral hospitals for populations of 25,000, 250,000, 1,000,000 and 5,000,000 respectively (FMOH, 2007).

Each Primary Health Care Unit (PHCU) is managed and supervised by the woreda health office presiding over its district and serves as the lead-point for the HEP. The functions of the woreda health office in relation to Health Extension Package include: preparation and implementation of operational plan at the district level; recruitment of female high school graduates for training; supervision of all HEP activities; training of district level trainers, supervisors; distribution and monitoring of drugs and other supplies to the health centers and health posts; and Health Management Information System (HMIS) data collation and program reporting. The cadre of HEW-supervisors has been developed to provide supervisory support to the HEWs on a regular basis. The HEW-supervisors are based at the district health office or health centers. The performance of HEWs is closely monitored and evaluated through the field supervisors. The HEW-supervisors received training on supervision techniques and HEP. Their main functions include: provision of support and guidance, ensuring adequate performance of HEWs, assessing the level of community participation and involvement in support of HEWs and HEP, and carrying out corrective measures to improve the performance of HEWs as per given guidelines.

Woreda health management used different criteria to assess the performance of HEWs. The majority of the Woredas used report from HEP unit head and result oriented criteria to assess the performance of HEWs. Few woredas used to assess the performance of HEWs include: report from unit head, results oriented, ability to complete given task, competence/ skills, discipline/ conduct, punctuality (behavior). The major operational achievement have been measured using the criteria model-family graduation, environmental sanitation (latrine construction), and disease prevention. (CNHD, 2007).

Supervisors were asked to state what they perceived were the main weaknesses and strengths of HEWs. The most frequently stated weaknesses of HEWs were absence from working area (28.6%), lack of commitment (27.7%), documentation of reports (24.6%), and lack of skill and knowledge (18.9%). Other perceived weaknesses of HEWs included lack of communication and lack of schedule (CNHD, 2007).

The reasons behind for the above reasons mostly attributed to factors such absence of institutional arrangements for management of health service extension program at all levels. Failure to proper recruitments of the Health Extension Workers can be a reason for the above mentioned problems as commitment highly attributed to personality and interest of each individual.

## **1.2 Problem Statement**

HEWs are expected to spend 75% time for outreach, primarily health promotion, with services at both health post and outreach sites. Among the services based on 16 health packages, maternal health is part of the Family Health package and includes delivery of normal births.

This huge responsibility is given to these cadres in order to create awareness and community able to own their health at individual and family level.

However, in the implementation of Health Extension program, the frequently mentioned challenges include; absence of Institutional arrangements for management of health service extension program at all levels, lack of supervision from district office, shortage of logistics and so on. However, different document showed (e.g., Alula, 2008) that poor performance has also been reported in localities where these obstacles do not exist.

Moreover, after recruitment the attrition still exist. According to the study CNHDE(2100), out of the total 3,241 HEWs deployed in the 64 woredas since HEP implementation, which varies between one to 6 years of implementation in the sample woredas, a total of 212 HEWs left their HEP work with overall attrition rate of 6.5%. The main reasons for leaving their HEP work in the woreda were: changed field of work (71 HEWs), due to personal reasons such as marriage and illness (68 HEWs), and due to uncomfortable work environment such as remoteness of kebeles, high workload, and low remuneration (31 HEWs).

Among the HEWs who left their work the majority found change of field works. This finding may trigger the policy makers why the Health Extension Workers are changing their field work? This may be related to lack of interest or satisfaction on their job. From observation interest and personalities of these Health Extension workers have never been considered during requirement. Individual to get satisfaction, the interest and environment should fit each other (Hollan, 1997). According to Holland (1997) people search for environment that let them exercise their ability and skill and express their attitude and value.

So far no information documented how far the HEWs interest and personality relate their current parities and the working environment..

### **1.3 Study Objectives**

Hence, the general objective of this study is to explore the relationship between job performance and initial interest as well as personality of Urban Health Extension Workers in Gulele, Yeka and Addis Ketema sub cities.

#### **Specific objectives**

1. Determine the initial interest of the UHEWs.
2. Determine the personality of the UHEWs.
3. Relate current practice with interest.
4. Relate achievement with personality type of UHEWs

### **1.4 Significance of the Study**

Traditionally the Health Extension Workers are recruited on the basis of their achievement in the school and on their performance on entrance exam. However, recruitment and selection of HEWs are seminal topics within human resource management, ensuring that respective woreda health offices should have the necessary human skills, knowledge and capabilities that enable the woreda to perform as the organizational goals and mission require.

Recent recognition of the strategic potential of recruitment and selection to enhance organizational performance put a lot of emphasis on getting the „right person“ for a post. Selecting the „right person“ means that the personnel recruitment and selection agenda should be determined by the objective and goal of that specific job.

The woreda health offices are frustrated by individuals who are more than capable of doing a job but show no interest once hired. This implies that there should be factor other than ability that should be considered in the recruitment of HEW. That is, personality and interest is the biggest factor that needs to be considered in evaluating Job fit. The results of this study would provide those involved in the recruitment process an insight into the relevance of such factor in the recruitment of HEWs. If there is a match between the personality of the employees and the

quality that the task requires, then it is possible to predict an individual's long term satisfaction and job productivity.

Thus, this research would give an insight to Federal Ministry of Health (FMOH) to consider the interest and personality of HEWs before they join the training. In addition such type of assessment would help to realize the ongoing status of HEWs in relation to interest and personality which in turn help for replacement and change work place.

## **Chapter Two**

### **Literature review**

Today Sub Sahran Africa is coping with 24% of the world's disease burden, while concurrently local health system are unresponsive, inefficient, inequitable and even unsafe (WHO 2006), The reasons for this underperformance are multiple; nevertheless it has been suggested that motivation and performance of health workers, as the foundation for any health care system, are a main determinate of health care service quality, efficiency and equity (e.g WHO 2006:Dielemann et el, 2006, Buchan 2005; France, Bennett and Kanfer 2002). However, African's Health System are not only experiencing one of the greatest shortage, but clinical staffs is currently faced with institutional frameworks and distortive incentive structures, resulting in an overburdened work health force with low level of work motivation (Mathaues & Imhoff 2006; Ferrinho & Lerberohé 2000). It is believed that this underperformance has not only undermined the capacity of health care organization, but even threaten the achievements of Millennium Development Goals (MDG) to " Reduce child mortality, Improve maternal health; and combat HIV/AIDs, malaria and other diseases (UN 2007, WHO 2006; Dielemann & Hammeije 2006).

Accordingly the African Human Resources in health (HRH) crisis has been placed high on the development agenda and finding appropriate solutions has become a crucial task. ,

To meet the Millennium Development Goal, Ethiopia government has shown a commitment to address the basic promotive and preventive health services to rural and marginalized community through Health Extension program.

Different literatures have been reviewed to identify the model as to how study on interest and personality of Urban Health Extension Workers is conducted.

A review of the psychology literature reveals that there are two widely accepted models for classifying personality and interests. For personality traits, Jang theory of typology has gained widespread acceptance, and for classifying vocational interests and preferences, Holland's RIASEC theory (Holland, 1978, 1985, 1996) has been extensively used. Both models are of

substantial theoretical and practical interest to the field of personnel psychology. Each provides a useful classification scheme that facilitates the accumulation and communication of research findings. In fact, each model has been the focus of a great deal of research that has investigated how individual differences relate to outcomes at work.

## **2.1 Theoretical framework of Interest**

Vocational interests reflect a person's preferences for behaviors, situations, contexts in which activities occur, and/or the outcomes associated with the preferred activities (Rounds, 1995; Su, Rounds, & Armstrong, 2009). The most widely researched theory on vocational interests was proposed by John L. Holland (1959, 1997), who organized vocational interests into six types, forming the hexagonal structure illustrated in Figure 1 and referred to collectively as the RIASEC model: Realistic individuals are interested in working with things, gadgets, or in the outdoors; investigative individuals are interested in science, including mathematics, physical and social sciences, and the biological and medical sciences; artistic individuals prefer creative expression, including writing and the visual and performing arts; social individuals enjoy helping people; enterprising individuals like working in leadership or persuasive roles directed toward achieving economic objectives; and conventional individuals are interested in working in well-structured environments, especially business settings. As illustrated in Figure 1, Holland's theory arranges the six interest types in a hexagonal ordering with distances between types inversely proportional to the degree of similarity between them that is, adjacent types (e.g., realistic and investigative) are most related, alternate types (e.g., realistic and artistic) have an intermediate relationship, and opposite types (e.g., realistic and social) are least related. Research has supported the hexagonal ordering of the six RIASEC interest types with large representative U.S. samples of college students and employed adults (Day & Rounds, 1998; Day, Rounds, & Swaney, 1998). In addition, a structural meta-analysis of RIASEC correlation matrices also supported the hexagonal ordering of types (T. J. Tracey & Rounds, 1993). In short, the hexagon appears to be a parsimonious and empirically supported interpretation of the RIASEC interest structure. Holland (1997) also proposed six types of work environments corresponding to the RIASEC interests and suggested that individuals are drawn to work environments that are compatible with their interests. More importantly, Holland argued that individuals' work attitudes and behaviors are influenced by the similarities between their interests and the

environment: They tend to be more satisfied, more successful, and more likely to persist in an environment that fits their interests. For example, employees who are interested in social activities are more likely to perform well and stay in occupations that provide them with opportunities to help others. Holland (1997) also recognized that an individual's environment is rarely homogeneous. In other words, there are many types of sub environments, even within the same organization, that can influence an individual. For example, students in different majors at the same university or employees in different occupations within the same organization may have very different experiences. For this reason, Holland suggested assessing the sub environment that has the largest influence on the individual when examining compatibility. Because occupations and college majors provide a salient and proximal environment to the person, they may also have the largest impact on individual behavior. Therefore, occupations and majors are commonly used to assess the work and academic environments, respectively. With this conceptualization, Holland's (1997) theory suggests that similarities between an individual's interests and his or her occupation or major will lead to positive outcomes, including better performance and longer tenure.

Holland's theory describes the nature or disposition of the individual workers. He use six basic personality interest types and classify the composition of the work environments in which those individuals function, according a parallel set of constructs.

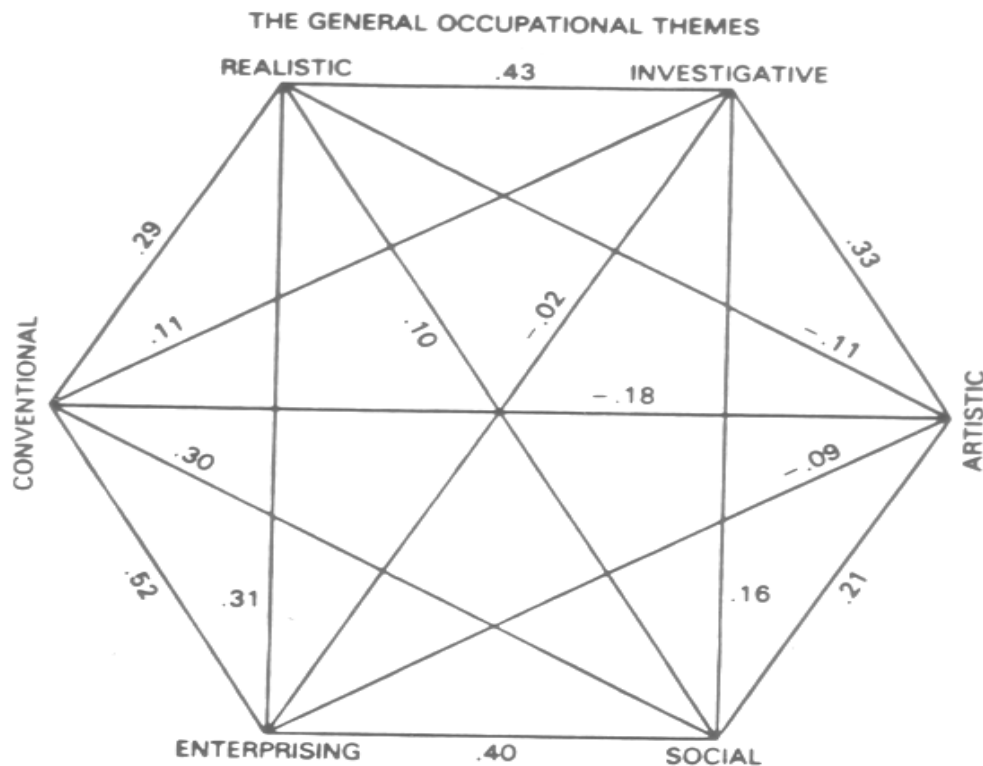
The interaction of certain types (and sub type combinations) with specific environments predicts and explain the behavior and interactions that occur in those environments (satisfaction, stability, performance, and so on ). This model of person environment fit implies some change and adjustment in people and in the environment in which they work (Holland 1997).

The six Holland personality type and their characteristics, drawn from repeated empirical investigation of the correlates of the types. The theory implies that many people resemble more than one, and in most cases all of the types to a degree. An individual's personality is a composite of all the types; each individual has unique combinations. These types reliably show characteristics repertoires of behavior and patterns of like and dislike, holds specific values, and endorse unique self description (Holland, 1997)

An individual may resemble one, two, or all six of the Holland types. The pattern of score and resemblance is called sub type. For example, a computer programmer might have a full code of IRCA. Typically, however, the highest three letters of the type code (IRC; called the three letters coded summary code) and used in the assessment and intervention. The diagnostic sign describe the relationship among types within the sub type or the relationship between the sub type of an individual and the sub type of the environment that individual inhabit.

A detailed theoretical empirical calculus, or diagnostic system, has been logically derived from the theory using the hexagon and is periodically undergoing empirical test. An understanding of the indicators in this system (congruence, consistence, differentiation and identify) is associated to complete and study of Holland's theory organizing system.

**Figure 1 Holland's Theory of Vocational Choice**



#### **4.2. Personality theoretical frame work**

Psychologist developed several theories of personality to attempt to understand the recurrent pattern of human behavior. Some theories categorized people according to their personality, which are distinct pattern of personality characteristics. In a typology approach, people has been classified interms of sociable behavior, value, interest, attitude and various features of biological constitutions of particular similarities (Corsini, 1984 and Eysenccks, 1997)

This theory contends that each individual has natural preference, which fails in to two categories and believed that each individual has a constitutional predisposition towards one of the categories. In relation to this idea, Jang theory of typology is widely known and most frequent in the literature surveyed categorize people in to two dimensions. According to this theory, are men are all born with innate tendencies to be concerned primarily either with one"s inner feeling or without side of the world (Baron, Earhard and Ozier, 1995)

Depending up on the above stated concept Jung categorizes personality in to extrovert and introvert types. Then, he libeled extroverted personality type to outward flowing personal energy (libidio). Such people have an interest in their relationship with an event, people and things; and are dependent on them. Extroverted people are usually motivated by outside factors and greatly influenced by environment. They are socially engaging active and confident in unfamiliar surroundings. They tend to be optimistic and enthusiastic. However, they show dependence on making good impressions, easily make and break relationship. They also have seen as superficial in sincere (Jarchic, 2001 and Pervin, 1993 ,). On the other hand, introverted are labeled as inward flowing personal energy, which is with draws concentrating on subjective factors. Introvert are usually happy and also with a rich imagination prefer reflection to activity. But, they are lack confidence in relation to people and things. Moreover, they are cautious because of this they are hesitant and tends to be unsociable, shy; and seen as egotistical and self centered ( Jarehic, 2001 and Prvin, 1993).

Jung"s introversion extroversion typology, which tended to think in terms of opposite polarities, arise from his conviction that they are stable patterns of personality characteristics.

For the extroverts the outer world is most important and they are active rather than passive. Introverts, on the other hand, resort more to the inner personnel world and are given to intersection rather than action (Child, 1993; Aggarwal, 1995; Daniel,1996).

Hence the dimension of introversion extroversion seems to be a basic one and continuous to be subject of considerable amount of research, since both dimensions of personality types are different and have their own characteristics.

### **Empirical studies**

Values and work values in particular are supposed to play a functional role in work-related central processes and outcomes, such as job satisfaction, motivation, organizational commitment, work performance and vocational streaming (Dose, 1997; Meglino & Ravlin, 1998; Roe & Ester, 1999). They are assumed to be predictors or moderators of these processes and criteria and they are further ascribed a central role in determining the fit between the individual and the employment organization. The underlying assumption is that people will be happier, more motivated, satisfied, and committed when the individual's values are congruent with those emphasized in the organization or vocational group.

Besides conscious considerations about what features are important, more compelling and deep anchored characteristics of the person can determine specific vocational interests. This influence can work both directly and indirectly. In the latter case personality traits are considered to influence specific vocational choices in so far they determine the general work values.

There are contraindicatroy ideas as to how interest influence job performance. One support interest is one of the powerful drive for motivation which in turn contribute for the effective achievement of the performance. According to Ainley,Hidi, & Berndorff, (2002); the level of a person's interest has repeatedly been found to be a powerful influence on learning (Ainley, Hidi & Bermdorff, 2002)

Interests, in contrast, were largely ignored in the personnel selection literature partly due to the assumption that interests only predict educational and career choices and are not good predictors

of performance within a chosen field. Findings from two recent meta-analyses have questioned this assumption (Nye et al., 2012; Van Iddekinge et al., 2011). Van Iddekinge et al. (2011) examined 74 studies and 141 independent samples and found interests to be predictors for job performance, training performance, turnover intentions, and actual turnover behavior. The validity estimates from the Van Iddekinge et al. (2011) study are significantly higher than those reported in a previous meta-analysis (Hunter & Hunter, 1984). For example, the overall meta-analytic correlation between interests and job performance is .14; when regression-weighted composites of multiple interest scale scores were created to predict job performance, the unshrunk and shrunk validities for the interest composites are .37 and .18, respectively; moreover, among interest scales of different specificity, occupational interest scales (most specific interest scales) have the highest predictive validity of .23 for job performance (specific outcome at the occupation level). Nye et al. (2012) conducted a meta-analysis of 60 studies and found that interests are related to performance and persistence in both work and academic contexts. Predictive validities are .20 and .23 for work and academic settings, respectively. More importantly, when interest congruence was used instead of interest scale scores, predictive validities of interests for work and academic performance rose to .36 and .32, respectively. The effect sizes for the interest-performance correlation found in these two meta-analyses are in the same range as reported correlations between conscientiousness and performance (Barrick & Mount, 1991; Judge et al., 1999). These meta-analyses provide critical evidence for the predictive power of interests for performance criteria in both work and academic settings.

Another study done on police men support the idea that interest predict job performance. A case in point is reported, using Holland's Self Directed Search and two groups of policemen. Scores on the Artistic and Conventional scales consistently predict effective performance as a patrolman in this Realistic and Social occupation (JOHN A., etl 1981)

As interest is the feeling of individual at particular moment and may get changed over time or may stable throughout the life. The study done on 162 intellectually gifted in relation to stability of vocational interest showed that for intellectually gifted individuals, it appears to be possible to forecast salient feature of their adult RIASEC profile by assessing their vocational interest during

the early adolescence, but some RIASEC themes seems more stable than others (**David.L. etl., 1995**)

However, change attitude and interest towards another area can be achieved through provision of training and practical session. The case control study done in Western Kenya in which the experimental group was exposed to intensive practical work and the control group was conventionally taught the same content. A performance test of reliability index,  $r_{xy} = 0.879$  was administered to both groups at the end of form two. Comparison in terms of achievement on the test, attitude developed towards physics, science process skills learnt, and relative choice to pursue the subject in form three for the two groups was made. The experimental group outperformed the control group on all the research objectives (O. Abacha., &M. Emmah Biyoyo)

Similar study conducted in Ethiopia to identify the reason why poor people often do not make investments, even when returns are high. The possible explanation is that they have low interest , aspirations and form mental models which ignore some options for investment. A placebo group watched an Ethiopian entertainment programme and a control group were simply surveyed. Six months after the screening of the documentaries, interest and aspirations had improved among treated individuals but did not change in the placebo or control groups (T. Bernard,. S. Dercon,. K. Orkin, & A. Seyoum 2014).

This clearly indicated that interest and personality can provide strong background information about individual preference compared to interest alone as personality has to do specifically with behaviours, thoughts, feelings and general life adjustment that are relatively stable over time (Newman & Newman, 2003).

Despite no literature is found that shows the relationship between two type of personality (extrovert and personality) and Holland's occupational interest group in predication of the job performance, several researchers have examined the relationship between the FFM personality dimensions and Holland's RIASEC types (Ackerman & Heegestad, 1997; Barrick, Mount, & Gupta, 2003; Costa, McCrae, & Holland, 1984; De Fruyt, & Mervielde, 1999; Dunn, Mount,

Barrick, & Ones, 1995; Gottfredson, Jones, & Holland, 1993; Hogan, 1986; Kieffer, Schinka, & Curtiss, 2004).

Among the most consistent relationships, Holland's Investigative and Artistic types demonstrate positive correlations with the Inquisitive HPI dimension; Social and Enterprising types demonstrate positive correlations with Ambition and Sociability scales (Barrick et al., 2003; Costa et al., 1984; Hogan, 1986); and Conventional types demonstrate positive correlations with Conscientiousness (Barrick et al., 2003; Gottfredson et al., 1993). Other researchers have suggested that the FFM may predict job performance in RIASEC occupations (De Fruyt & Mervielde, 1999). For instance, when asked to make selection decisions based on FFM personality descriptions of job applicants, supervisors selected individuals congruent with their RIASEC type (e.g., Enterprising supervisors selected extraverted applicants; Dunn et al., 1995). In addition, FFM dimensions are predictive of the nature and status of employment after college (e.g., Conscientiousness predicted employment in Realistic jobs). Collectively, these findings offer consistent support for the relationships among Holland's RIASEC types and the Five Factors Model.

So far no literature was found that clearly showed what was the interest and personality of UHEWs in relation to their environment where they are working. Considering interest and personality is crucial as work is central to most individuals' lives: a large proportion of our waking time is spent at work or in preparation for work; work settings constitute in most countries and cultures a substantial and influential part of our daily lives. Vocational interests are a major determinant of career choice and entry (Fouad, 1999), playing an important role in most, if not all, contemporary theories of career development from both U.S.-based (e.g., Holland, 1997) and international (e.g., Guichard, 2005) perspectives. Knowledge of the development of interests can inform important questions in the conceptualization of career preparation, entry and change and educational and vocational counseling. Vocational interests determine to a large extent the range and the type of roles we undertake, as well as our social interactions.

To identify the interest and personality as well as the compatibility with the current practice the theoretical background of Holland's vocational interest and Eysenk personality theory has been used.

The research question for this study are ;

1. What is the Interest and personality of Urban Health Extension Workers? and
2. What would be the relation of personality and interest with the current practice of Urban Health Extension Workers?

## **Chapter Three**

### **Methodology**

#### **3.1 Study Design**

The study is descriptive in its nature and a health facility based cross-sectional design was employed and using quantitative approaches to study the initial interest, and personality of Urban Health Extension Workers in relation to their performance.

#### **3.2 Study Area**

Addis Ababa lies 9°1'48"N latitude and 38°44'24"E longitude. The city is located at the heart of the country, at an altitude ranging from 2,100 meters at Akaki in the south to 3,000(9,800 ft) meters at Entoto Hill in the North (BoFED 2013)

According to CSA, the projected population of in 2013 Addis Ababa it is estimated to be 3,048,631 (BoFED, 2013).

Modern health care institutions commenced in the reign of Menilik II marked by the opening of the first modern hospital, Menilik II in 1900. In this regard, recently the city administration has been making effort to render health care access services based on prevention policy. The health facilities of Addis Ababa had been improved in service and increased in number in the past five years (BoFED2013).

Number of health care personnel is one of the indicators of health access. According to (BoFED, 2013) there are 116 doctors and 2624 nurses. To improve the preventive health service of the city additional 1261 Urban Health Extension workers have been deployed.

#### **3.3 Study Population**

The study populations are all Urban Health Extension Workers of Gulele, Addis Ketema and YekaSub cities.

### **3.4 Sample Size Determination**

According to the National Standard each Kebele has two urban health extension workers. All three sub cities (Addis Ketema, Yeka and Gulele) had a total of 480 Urban Health Extension Workers. All these sub cities were the subject of the study. According to Krejcie and Morgan (1970), for a population having size 480, the adequate number of participants is 214.

**Inclusion criteria:** All Urban Health Extension Workers who have been working in the sub cities more than six months.

### **3.5 Study variables**

#### **Dependent variable**

The study had three outcome variables namely; Awareness creation, documentation and overall achievement.

#### **◆ Awareness creation**

Four items were used to measure the relation of interest and personality with the level of awareness creation. This includes recruitment of model family, graduation of model family, frequent visit of the household and provision of education.

#### **◆ Documentation**

Four items prepared to assess the relation of interest and personality with documentation. These items focused on annual, monthly and weekly plan; and organize data, analyze and demonstrate in graph, table and displayed on visible place.

#### **◆ Overall achievements of Urban Health Extension workers**

The last six month performance reported from the supervisor of Urban Health Extension Workers has as taken the overall performance of the Urban Health Extension Workers.

### ***Independent variables***

- ◆ Socio-demographic characteristics: age, marital status, years of service
- ◆ Holland Interest (Realistic six items, Investigative six items, Artistic six items, Social six items, Enterprising six items, Conventional six items)
- ◆ Personality - Questionnaire was developed from (Eysenk 1982) personality trait. The scale has two sub scales which is important to differentiate what kind of personality the UHEWs has. This sub scale are introvert and extrovert personality.

The level of agreement in explanatory variables in achievement of Urban Health Extension Workers was assessed by using a Likert scale to identify the five level of agreement. The options were: strongly agree, agree, undecided, disagree and strongly disagree. The sum of these responses further divided in to three response in order to understand the proportion of independent variables. These responses were “Agree”, “moderately agree” and “disagree”. One standard deviation was used to divide the sum of the result.

### **3.7 Sampling Procedure**

The Administration of Addis Abeba City has 10 sub cities from which three sub cities for this researches was selected using simple random sampling technique. Prior to drawing the lottery, the total sample was obtained proportional the size of the total Urban Health Extension workers (128 –Gulele sub city, 201-Addis Ketema sub city, 151-Yeka sub city). Accordingly 67 study subject was drawn from Yeka sub city, 57 from Gulele sub city and 90 from Addis Ketema sub city.

Later list of Urban Health Extension Workers were obtained from respective Sub cities health office and used as sampling frame to select study units. Then, the number was given to each name of Health Extension workers. The number representing the name was recorded in small pieces and then rolled out. The selection was done by drawing the number from the ballot.

### **1.2 3.8 Data collection instruments and methods**

The questionnaires” used for this data collection for interest inventory were adopted on basis of John Holland's Theory of Vocational Development Holland (1970)and the personality questionnaires was developed from Eysenk (1982) personality trait. The personality scale has

two sub scales which is important to differentiate what kind of personality. These sub scales are introvert and extrovert with their scale point. Thirty items was used to collect the data in relation to interest and thirty six items to assess the personality of Urban Health extension workers

Quantitative data collection methods were used. For quantitative data collection structured questioners which were self-administered. The supervisors were explained in the detail how to respond for the questionnaire. Thirteen questions were revised based on the feedback.

### **3.9 Data quality assurance**

To assure the data quality two supervisors who had experience on supervision during data collection were recruited and trained for one day before the data collection. The training was delivered on how to instruct the participant of the study during self-administration of the questionnaire. The instrument was pretested on 30 UHEWs in Akaki sub city which has similar set up with the study area. Based on feedback obtained from the pretest instruments it was modified before the data collection.

### ***Job Performance***

It may be fairly difficult to point out the central characteristics of job performance. This may be because researchers seem not to agree in terms of its exact definition. Some researchers suggest that job performance is a multi-factor construct (Boshoff & Arnolds, 1995). In such a construct, some factors can indicate how well individuals perform at their work tasks and how well they manage to master problem solving in specific work related situations. Other factors can indicate how well individuals use their resources, to what extent they utilize time and energy at the task at hand, and how well they take actions towards completing their work tasks (Boshoff & Arnolds, 1995). Campbell, McHenry, and Wise (1990) debated that job performance is based on an eight factor model which covers all sub dimensions of job performance in all types of occupations. The same researchers (1990) distinguished between job performance and work results because the results are always influenced by other factors than job performance alone. Finally, McCloy, Campbell, and Cudeck (1994) and Viswesvaran and Ones (2000) indicated that job performance refers to how resourcefully individuals take 3 actions and contribute with behaviors that are in

line with an organization's objectives. As the present study will measure job performance subjectively, through supervisory ratings, the definition of job performance, throughout, will refer to measurable behaviors and actions that employees engage in and contribute to that are expected to relate to an organization's objectives, achieved or not.

The questionnaire for dependent variables was prepared based on the basic deliverables from Urban Health Extension Workers. According to Allula. S (2008) one of the expected outcome of the Urban Health Extension workers is awareness creation through Education and communication. Zufan A., Amsalu S., Jens K (2008) further explored that documentation found to be the major outcome of these health workers.

Awareness creation is targeted to improve the knowledge of the community in relation to basic health concept and change the behavior for action.

Documentation as important tool to extract evidence on community based health intervention; the commitment, accuracy, patience as well as concentration are highly required.

The supervisor report of the last six month performance was taken as overall achievement of the health extension workers. The score of achievement A refer 3, B refer 2, C refer 1.

The data collection instrument was initially prepared in English and translated in to Amharic to make understandable for respondents.

### **1.3 Reliability of the Instrument**

A total of 72 items (36 interest and 36 personality) items were developed and given to UHEWs who were not involved in the main study. A total of 30 questionnaires were analyzed for reliability of the tool. Then to estimate the internal consistency after reliability analysis using Cronbach Alpha the result of the Reliability coefficient found to be 0.928 which was acceptable to use without deleting any other items. (Annex I)

### **3.11 Data analysis**

Data were cleaned, entered and analyzed using SPSS version 20. Both descriptive and analytical statistical procedures were employed. Mean, univariate, bivariate and multivariate linear logistic regressions with the 95% confidence interval were used to examine the correlation between covariates and dependent variables.

## Chapter Four

### Results and Discussions

#### 4.1 Result

##### 4.1.1.Socio Demographic Characteristics of Respondents

A total of 214 study participants were included with the response rate of 92.05%. Mean ( $\pm$ SD) age of participants of the study was  $27.8\pm 3.301$  years and ranges from 20 to 39 years of old. All respondents were women and 111(56.3%) of them single and 77(39.1%) married and very few 9(4.6%) were divorced. According to the survey results, 56.3% % of the respondents have the experience of less than three years and 43.7% of them have an experience of above three years.

2. Table 1.The age distribution of the respondents

Age of the respondents	Number	%
20-25 year	64	32.5
26-30 year	107	54.3
31 and above	26	13.2
Total	197	100

##### 4.1.2Prior Interest and Personality of the respondents

The result of the study showed that 60 (30.5%) of them had realistic interest before they joined the Urban Health Extension Program and 26.9% had a prior intention being to work in social area. Large proportion 33.5% of the urban health extension workers had artistic type of interest however relatively low 22.8% had the prior interest of enterprising interest. The following table depict the prior interest of the Urban Health Extension Workers before they joined the current job.

3. Table 2. Prior Interest and personality of the Urban Health Extension Workers

No	Prior interest	Response	Number	Percent
1	Realistic interest	Like	60	30.5
		Neutral	87	44.2
		Dislike	49	24.9
2	Investigative interest	Like	52	26.4
		Neutral	85	43.1
		Dislike	60	30.5
3	Artistic interest	Like	66	33.5
		Neutral	51	25.9
		Dislike	80	40.6
4	Social Interest	Like	53	26.9
		Neutral	74	37.6
		Dislike	70	35.5
6	Enterprising Interest	Like	45	22.8
		Neutral	85	43.1
		Dislike	67	34.0
7	Conventional interest	Like	51	25.9
		Neutral	73	37.1
		Dislike	73	37.1

In relation to personality, 52(26.4%) of the respondents tends to be introvert while 59(37.6%) extrovert.

The correlation between interest groups and personalities was carried out to understand the relationship each other.

Accordingly, realistic interest significantly correlated with investigative, artistic, conventional interest group and introvert personality. Social interest had a significant association with enterprising interest and extrovert personality.

However, artistic interest had a negative significant correlation with realistic interest.

Furthermore, social interest had positive and significant correlation with enterprising occupational interests and extrovert personality.

The correlations among RIASEC group and two personalities (extrovert and introvert) domain are presented in Table 3.

4. Table 3: Meta-Analytic Results for Correlations Holland's Six Occupational Types, personalities, Addis Abeba, 2014

		Realistic	Investigative	Artistic	Social	Enterprising	Conventional
Realistic	$r_{xy}$	1	0.364	-0.203	0.012	0.048	0.163
	P Value		0.000***	0.000***	0.048	0.509	0.023***
Investigative	$r_{xy}$	0.364	1	0.180	0.014	-0.003	0.157
	P Value	0.000***		0.012***	0.850	0.965	0.027***
Artistic	$r_{xy}$	-0.203	0.180	1	0.027	-0.060	0.006
	P Value	0.000***	0.012***		0.703	0.404	0.928
Social	$r_{xy}$	0.017	0.087	0.106	1	0.204	0.089
	P Value	0.814	0.222	0.138		0.004***	0.215
Enterprising	$r_{xy}$	0.048	-0.003	-0.060	0.204	1	-0.007
	P Value	0.509	0.965	0.404	0.004***		0.928
<b>Personalities</b>							
Introvert	$r_{xy}$	0.222	0.354	-0.092	0.089	-0.122	0.113
	P Value	0.002***	0.000***	0.197	0.215	0.088	0.112
Extrovert	$r_{xy}$	-0.098	-0.037	-0.006	0.237	0.456	-0.116
	P Value	0.178	0.607	0.936	0.001***	0.000***	0.106

#### 4.1.3 Association of independent variables with dependent variable (achievement)

The outcome was classified in to three groups; awareness creation, documentation and overall achievement. This was analyzed to determine if there was any correlation between socio demographic characteristic, prior interest of urban health extension workers and personalities with their performance.

Accordingly, the awareness creation in relation to demographic characteristics, prior interest and personalities showed that there was a significant correlation between social and enterprising

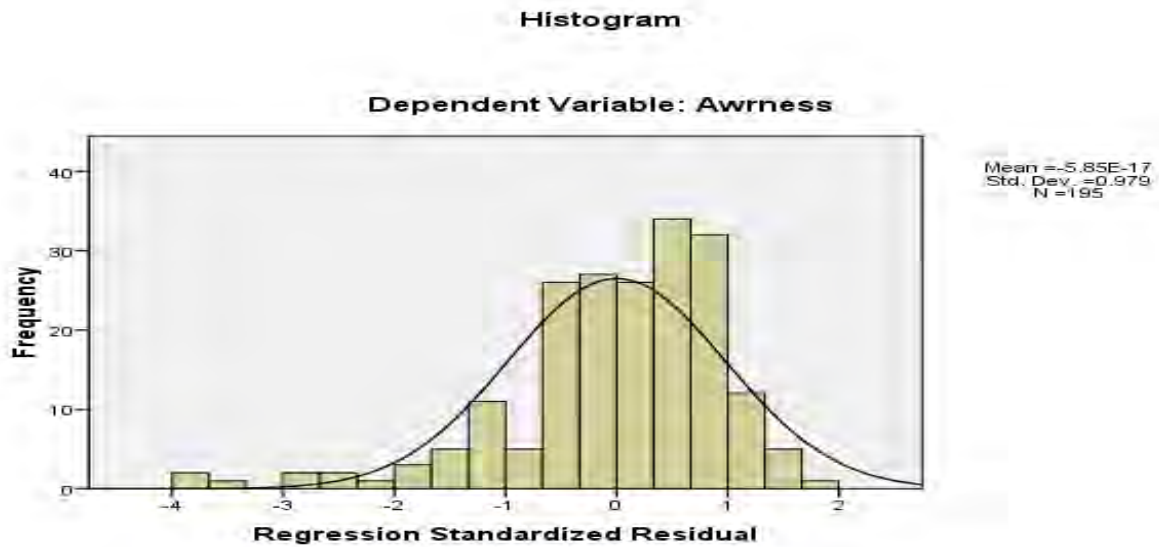
occupational interest with awareness creation. Significant correlation also observed between extrovert personality with the dependent variable (Table 4).

**Table 4. Correlation of demographic variable, interest and personalities with awareness creation**

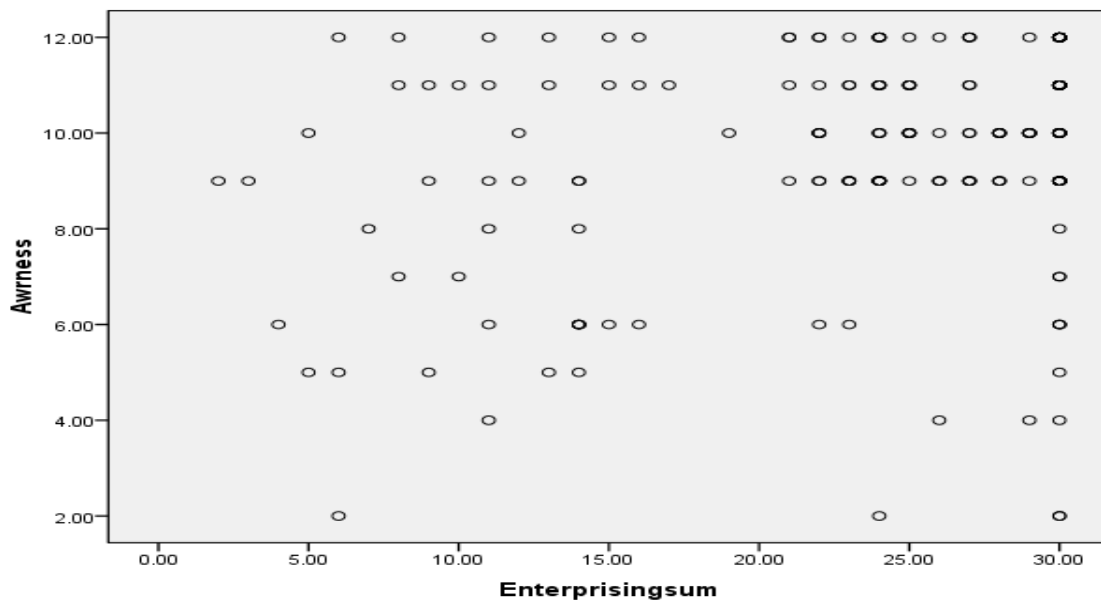
No	Independent variable	rx <sub>y</sub>	P value
1	Age	-0.116	0.103
2	Marital status	-0.002	0.981
3	Realistic	-0.020	0.981
4	Investigative	0.052	0.467
5	Artistic	0.084	0.240
6	Social	0.157	0.028***
7	Enterprising	0.260	0.000***
8	Conventional	0.132	0.065
9	Introvert	0.071	0.323
10	Extrovert	0.198	0.005***

Multivariate linear regression was planned to perform in order to understand whether awareness creation is predicted by social demographic characteristics, interest and personality. As the following figure showed the data was not uniformly distributed and there was no linearity. Thus, further analysis was not carried out.

**Figure 2 Distribution of Enterprising occupational interest and awareness creation of Urban Health Extension Workers, 2014.**



**Figure 3 Correlation between enterprising occupational interest and awareness creation among UHEWS, 2014**



As the major component of the urban health extension workers task, data was analyzed to explore the relationship with socio demographic characteristics, interest and personalities.

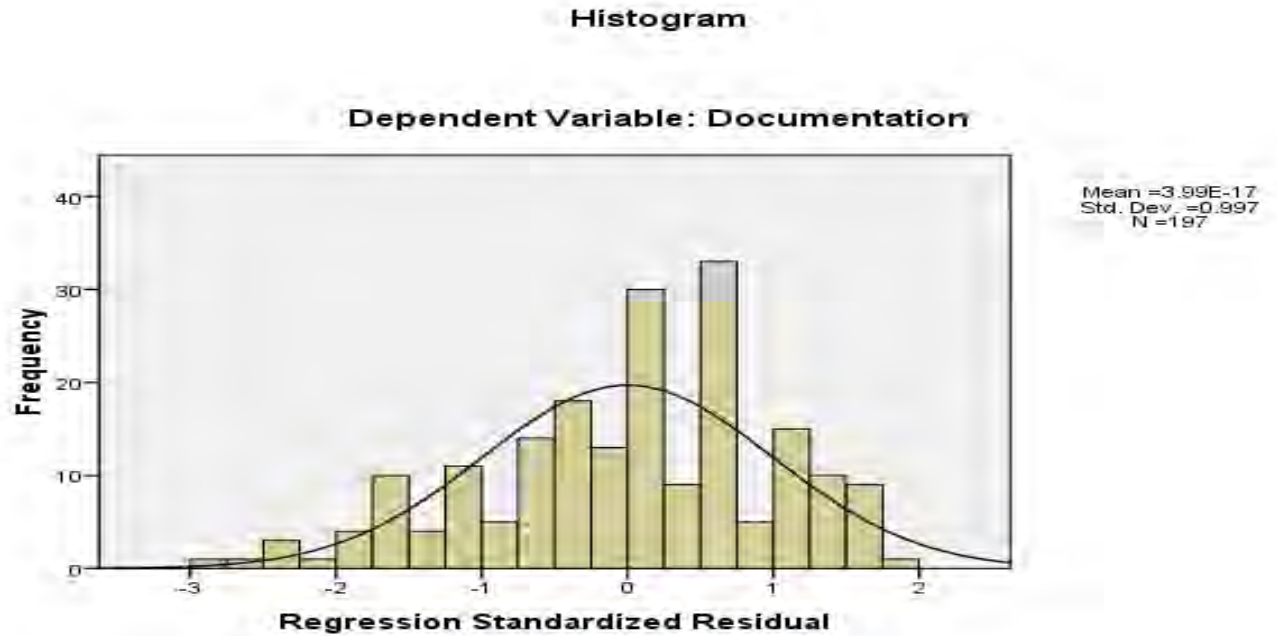
Investigative, conventional interests and introvert personality were significantly correlated with documentation. The following table depicts the correlation between independent variables with documentation.

**5. Table: Correlation of demographic variable, interest and personalities with documentation.**

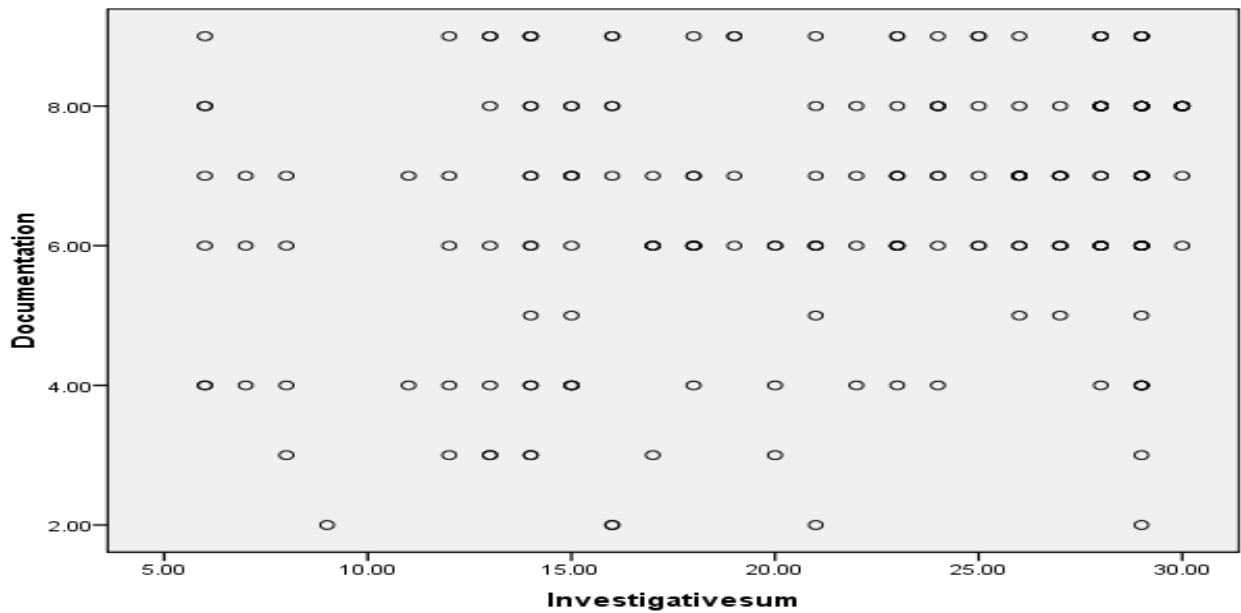
No	Independent variable	rx <sub>y</sub>	P value
1	Age	-0.039	0.583
2	Marital status	0.085	0.237
3	Realistic	0.056	0.437
4	Investigative	0.237	0.001***
5	Artistic	-0.002	0.983
6	Social	-0.004	0.958
7	Enterprising	0.035	0.629
8	Conventional	0.160	0.025***
9	Introvert	0.200	0.005*****
10	Extrovert	-0.083	0.248

To find the important predictors of documentation multiple regressions was attempted to perform. The linearity and normality of distribution was checked prior to the regression. However, the data was not uniformly distributed and the scatter plot showed that there was no linearity.

**Figure 4 Distribution of documentation in relation to Investigative occupational interest, 2014**



**Figure 5 Correlation between Investigative occupational interest and documentation, 2014**



To explore the correlation between the overall achievements of the urban health extension workers with the socio demographic variable, interest and personalities correlation analysis was undertaken.

Accordingly, social and enterprising as well extrovert personalities were significantly correlated with the overall performance of Urban Health Extension Workers. Marital status was negatively correlated with the dependent variable.

**Table 6 Correlation between Socio demographic characteristics, Interest and personality with overall achievement, 2014.**

No	Independent variable	rx <sub>xy</sub>	P value
1	Age	0.051	.475
2	Marital status	-0.162	0.023***
3	Years of experience	-0.026	.717
4	Realistic	0.033	0.650
5	Investigative	0.046	0.524
6	Artistic	0.089	0.213
7	Social	0.313	0.000***
8	Enterprising	0.226	0.001***
9	Conventional	-0.057	0.427
10	Introvert	0.073	0.305
	Extrovert	0.250	0.000***

The multivariate analysis indicated that the simple correlation was 0.489 and showed that correlation is not very strong.

**Table 7 Model Summary of the equation of Socio demographic characteristics, Interest and personality**

R	R square	Adjusted R square	Std error
0.393	0.155	0,141	0.719

The equation indicated that the total variation in the dependent variable explained by 14.1% of independent variables.

In order to understand how well the regression equation fits the data, ANOVA was used. The significance level was 0.000. As the p value is less than 0.05 regression model can predicts the dependent variable significantly good.

Furthermore the significant table indicated that the P value of social interest and extrovert remains to be significant which less than 0.05.

**Table 8 Coefficient summary of Socio demographic characteristics, Interest and personality**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.982	.206		4.770	.000
	Social	.022	.007	.215	3.013	.003
	Enterprising	.015	.008	.143	1.832	.068
	Extrovert	.007	.003	.165	2.205	.029
a. Dependent Variable: Achievement						

Accordingly, the final model depicts that social interest and extrovert personality ould predict the overall achievement of Urban Health Extension workers.

## 4.2 Discussion

In this study the sum of each interest and personality group exceeded the total number of respondents. This reflects that one person may have different interest at the same time and working in these areas may bring a remarkable result in job performance, if the environment allows exercising their interest. According to Holland (1985), most individuals can be described by one or more of these six interest types. He suggests that most people will have interests in several of the areas, but that they will probably have one interest area that is stronger than the others which positively affect their performance.

In relation to correlation interest group, the finding of the study was compared to Holland's hexagon which show correlation between interest group. A positive and strong correlation was observed between realistic interest and investigative interest, social and enterprising. This was almost consistent with Holland's hexagon. However, the findings had controversy between artistic and conventional type of interest. The finding showed positive but insignificant relation however in Holland's Hexagon negative correlation was observed. Despite there is inconsistency between these two interest groups, the correlation of this study was 0.0006 which is almost close to negative.

The Urban Health Extension program was launched to provide equitable access to promotive, preventive and minor curative health intervention and change the behavior of the through extensive health education of the individual and community level. Furthermore extracting evidence and ensure whether this approach is workable or not proper documentation was also considered as one of the outcome of the program. Thus, these two outcome variables were independently assessed. This is done because these outcome variables may require different type of interest and personalities as these outcome variables needs work environment that fits with relevant groups of non cognitive psychological traits. Those health extension workers who have a very good socialization may have a good relation and communication that support them to easily convey the health education message. Those who have not such type of personality may get challenged to communicate with people. In other hand this people may be effective to handle the information and document the output and the outcome of the activities. People may be effective to have outstanding performance in both. According to the findings social, enterprising interests and extrovert personality were significantly correlated with awareness creation.

The finding may be true in both statistical and theoretical. Social awareness has its roots in the second wave of the feminist movement (Bickford & Reynolds, 2002). It is viewed as one of the key components of consciousness-raising, the other being social action. For many researchers, awareness about issues affecting the community or raising social consciousness has always been a precursor to social movement (Steinem, 1983; Swift, 1990). The Health Extension Workers requires a series of communication to engage the community members and encourage them to develop awareness that will enable them to practice healthy life.

The research indicates that the social interests type has concern in dealing with people and dislike impersonal tasks that revolve around working with data and things (Shawn Bakkar and Donal MACBAB, (2004). These people have an interest in social work in which they can easily adhere community culture, norms and value. This helps them to introduce the health extension package which focus on prevention of communicable diseases, maternal and child health; sanitation and hygiene. As awareness creation activities require being communicative, informative and patience, hence, the interest and personalities play a major role to achieve the intended goal.

In this study there was a significant correlation between extrovert personality and awareness creation. Zimmerman et al (2012) declared that the extroverts are characterized by their enjoyment in interaction with the supervisors and they are found to achieve the compensations and higher positions. The extroverts are gregarious, assertive and have positive emotions to the others. It is further declared that the extroverts have more experiences in the organization in terms of achieving higher social integration (Zimmerman, 2008).

Research suggests that extroverted individuals are likely to excel in occupations that require individuals to socialize and be highly interactive with other individuals (Barrick & Mount, 1991). In evidence, researchers have reported that individuals with high levels of Extroversion tend to perform well at supervisory-, police-, and sales related positions (Salgado, 1997). It should be noted, that Barrick et al. (2001) found no significant relationship between Extroversion and overall job performance, however they extended Salgado's findings by reporting that Extroversion predicts managerial performance ( $r=.21$ ) as well as teamwork ( $r=.16$ ).

As this program is expected to be an effective model for many developing countries, information at grass root level need to be accurate in order to extract valuable evidence whether or not this program is workable in other setting. The study findings showed that investigative and conventional interest; and introvert personalities had a significant association with documentation.

This outcome usually requires people with meticulous and attentive type of characteristics. Handling materials and information and use them whenever they are needed is not every one behavior and experience despite all recognizes its importance. Introvert personality has minimal level of communication but give attention for those activities that is done individually.

Introverts like to let their fingers do the talking, i.e., they likely prefer writing to talking. Thus they may be better at articulating their position and documenting progress (<http://richardmale.com/why-introverts-make-great-leaders>).

The significant relationship between conventional interest with documentation clearly understandable as this interest type prefer working where the data and detail rather than with ideas. These people like working where the lines of authority are clear (my Plan, LLL, 2014). Conventional individuals are interested in data and things, rather than people. As a result, they prefer to work with the paper and computer based aspects of a business such as accounting, record keeping, and data processing.

Despite the health extension workers may not fully engage in activities that enforce them to work in deep thinking, the study shows significant level of correlation with investigative interest. People with investigative type of interest are inquisitive, analytical, and intellectual. They like investigating things and solving complex problems. Investigative individuals enjoy exploring ideas, conducting research, uncovering facts and establishing theories. Their preferred reading material includes scientific or technical magazines (SHAWN BAKKER & DONALD MACNAB, 2004). The finding to some extent is consistent with this theory. The result of this study may indicate that these people have an interest to deal with data which need to analyze and investigate the reason why high or low level performance is achieved.

As correlation analyses had shown that social and extrovert personality were significant predictors of the overall achievement of Urban Health Extension Workers. As this job require considerable interpersonal interaction with the respective community group, local leaders and other stakeholders such type of interests may highly require to attaining a desire goal. These people are concerned about human welfare, and are excited by work that allows them to overcome interpersonal problem and mediate disputes. The nature of these independent variables has shared similar characteristics where all needs the ability to communicate, convince and influence people to achieve a certain goal. More over being women as Urban Health Extension Workers help the program through socialization and ease to educate the people. From the outset of the program women have been engage in the implementation of HEP in their respective village. This approach found to consistent with the study results which showed that women prefer working with people, producing a large effect size ( $d = 0.93$ ) on the Things–People dimension (Rong.S., James.R., Patrick.I. 2009).

Extrovert personality also found to be one of the predictor of overall achievement. Past research findings, all in all, hint at the possibility that extroversion is an important personality trait to consider only for some specific occupations (Barrick & Mount, 1991; Salgado, 1997). As the job of urban health extension workers required being communicative with the community this personality may fit for overall strategy and goal of the program.

Moreover, extrovert personality and social occupational interest had a correlation. The result of two study conducted were consistent with this findings. These studies set out to examine the relationship between personality traits and Holland types (Barrick & Gupta, 1997; De Fruyt & Mervielde, 1999) found the social type was associated with Extraversion ( $r = .20$  and  $.26$ ). Ackerman and Heggstad (1997) also supported these relationships.

Extrovert personality has a nature of socializing. They easily get communication without difficulty and they may not consider culture and value of the community. Their ability to interact with people may help them to engage with community. However, in Ethiopia context such type of personality may not be well largely liked as the village people consider them talkative or

unstable. In relation to this factor being over communicative may affect the performance as the community may not take the issue discussed seriously.

In other hand these people (social interest and extrovert personality) may not have interest to document what they are doing which can be a major gap in the full implementation of the program.

In addition to that marital status was negatively correlated with overall achievement. It is may be related to additional family task which is most of a time overburden the married women. A single woman may have time to make frequent visit of the family and the supervisor which positively affect the job.

## **Chapter Five**

### **Conclusion and Recommendations**

#### **5.1 Conclusion**

Based on the analysis and major finding of the study, the following conclusion are delivered. Interest and personalities vary from individual to individual and each individual may have more than one interest at the same time. Environment in which these people are working determine the performance achivment and success. Accordingly, relatively, the, majority of the Urban Health Extension workers had realistic interest and extrovert personality. Urban Health Extension Workers with enterprising interest found to be low in proportion.

Awareness creation and documentation were identified as the major outcome of Urban Health Extension workers. Social and extrovert personality were identified as the major interstet and personality for the awareness creation. However, investigative interest and introvert personality found to be pertinent for documentation. This finding showed that these two outcome variables require people with different interest and personality which are unlikely to find in one individual. Thus, the last six month performance has been taken as the arbitrary which interest and personality group predict the overall achievement of the health extension workers. Social and extrovert personality identified as the predictor of the overall achievement of Urban Health Extension workers.

Despite socialization is very important being talkative and overactive may not be accepted by the majority of Ethiopia community where the educational status is very low. Moreover, according to the Ethiopian culture, the people gives more value for reserved people than non reserved.

hus, environment incompatibility may appear as the challenge with extrovert personality.

## **5.2 Recommendation**

It should be remembered that human resources managers and related professionals can use these findings to select and appoint Urban Health Extension Workers to achieve the desired goal. As the government relies on the prevention activities to be successfully performed by Health Extension Workers, considering personality and interest can be used during the recruitment process.

During the recruitment process social occupational interest and extrovert personality need to be given the priority together with the educational background and other criteria. However, being extrovert may not be liked by the community as Ethiopia people may consider them as talkative and not serious. Thus, additional advice needs to be given for Health Extension Workers with such type of personality that may be a barrier for acceptance. The community culture needs to be explained by the supervisor before deployment. Moreover, close follow up requires ensuring this personality to be used properly for this program. ,

Provision of training on documentation needs to be considered during implementation of the program. This may help to fill the gap in documentation.

In addition, doing periodical assessment of interest and personality may help to find out the change made during the performance process and plan for replacement.

## **6. Limitation of the study**

One important limitation of this study is recall bias due to the retrospective nature approach to data collection and mix up with the current interest what they have. This might lead to over/under estimation of the actual practice. Furthermore, this research didn't use Five Factor Model which includes other personalities such as conscientiousness and openness. Thus, additional research may require that include other personality and cognitive psychological traits which are very essential for this particular job

Moreover, the study lack detail information which need to be collected qualitatively. Thus it lacks qualitative information that could supplement the qualitative information.

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**Annex I: Reliability of the items**

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.928	.930	30

**Item-Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q2	134.53	765.930	.213	.	.929
Q3	135.58	751.146	.458	.	.927
Q4	135.11	738.544	.473	.	.927
Q5	135.05	730.386	.627	.	.925
Q6	134.00	746.556	.625	.	.925
Q7	135.32	739.117	.516	.	.926
Q8	134.32	737.006	.641	.	.925
Q9	135.16	743.029	.506	.	.926
Q10	135.21	740.509	.502	.	.926
Q11	134.63	734.468	.629	.	.925
Q12	134.95	721.386	.840	.	.923
Q13	135.95	732.497	.629	.	.925
Q14	134.58	721.813	.781	.	.923
Q15	136.11	741.988	.516	.	.926
Q16	135.79	753.731	.353	.	.928
Q17	135.89	756.655	.286	.	.929
Q18	133.95	765.053	.352	.	.928
Q19	134.21	737.287	.746	.	.924
Q20	134.53	741.374	.518	.	.926
Q21	134.53	737.930	.577	.	.926
Q22	134.37	735.579	.579	.	.925
Q23	133.95	770.608	.205	.	.929

Q24	133.84	775.807	.184	.	.929
Q25	133.84	753.696	.527	.	.926
Q26	134.42	738.480	.620	.	.925
Q27	135.84	757.696	.256	.	.930
Q28	134.68	740.561	.546	.	.926
Q29	134.47	738.374	.634	.	.925
Q30	133.95	751.275	.571	.	.926

7. Annex III

**Addis Abeba University**

These questionnaires consists of two parts Part one deal with the general background information of respondents, part two contains item designed to measure the interest of UHEWs before they joined the current position, part three personality. The objective of the study is to assess the compatibility of the UHEWs performance with their prior interest and personality. Therefore, you are kindly requested to fill out all the items honestly and frankly, since your responses have valuable significance for the successful completion of the study

General direction

1. There is no need to write the name
2. Indicate your response marking “X” to the appropriate response

**Part I**

- 1.1 Sub city-----  
1.2 I.d Number-----  
1.3 Sex : Male -----  
                    Female-----  
1.4 Age -----  
1.5 Marital status  
a) Married  
b) Single  
c) Widowed  
d) Divorced  
1.6 Date/month/year of recruitment-----

**1.7**

**Part II Questionnaire on prior interest**

Mark your interest in each activity listed below. Please indicate your prior interest before you joined the current position. Mark whether you think you liked to do the activity, *disliked* doing it, or felt *neutral* about it. Do not think about whether you have the skills or training to do an activity, or how much money you might make. Simply think about whether you would enjoy it or not.

<b>N o</b>	<b>Questionnaire</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neut ral</b>	<b>Agree</b>	<b>Stron g agree</b>
1	Participate in athletic activities					
2	Spend time working outdoors					
3	Use your hands and tools to build something					
4	Operate machinery to manufacture a product					
5	Take care of animals					
6	Help plants grow and stay healthy					
7	Calculate and solve math problems					
8	Study scientific issues and problems					
9	Research scientific topics independently					
10	Analyze numerical and quantitative data					
11	Invest your time to understand complex concepts					
12	Investigate new mathematical or scientific projects					
13	Design a new picture, flyer, or poster					
14	Generate innovative ideas and solutions to a problem					
15	Perform in a drama production					
16	Write a creative story or essay					
17	Play a musical instrument					
18	Express your emotions freely and openly					

19	Advise a friend with a personal problem					
20	Counsel youth in a community group					
21	Teach people new skills					
22	Participate in activities which benefit society					
23	Join a group discussion and share ideas, thoughts, feelings					
24	Help others less fortunate than you					
25	Manage a group to complete a project					
26	Persuade others to adopt your beliefs					
27	Sell products or services to the public					
28	Determine program goals and motivate others to achieve them					
29	Lead a team to victory					
30	Work in an upscale, plush environment					
31	Follow an organized set of procedures					
32	Work in a predictable and structured environment					
33	Process data or records in an orderly manner					
34	Perform numerical calculations					
35	Use a computer to complete work assignments efficiently					
36	Work in an office where expectations and goals are clear and definite					

### Personality questionnaire

Here are some questions reading your self interest, feeling and act that you show towards something or somebody. Make “X” sign after each item depending up on the degree to which each item says about you. The questions have no right or wrong answer, it is simply to measure the way you behave, feel and act

		<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strong agree</b>
1	I tend to do things as quickly as possible					
2	I like organizing people for activities					
3	I am enthusiastic about starting about starting new work					
4	I get it difficult to go in to room full of strange people					
5	I am in a hurry to get to places even when there is plenty of time					
6	I would rather watch sports than playing					
7	I think that I talk more when I am with group of people					
8	I like mixing with lots of other people and to play with them					
9	Unless I take time it is difficult to me to decided on some thing					
10	I like to crack jocks with groups of friends					
11	I enjoy solitary activities such as reading or watching TV on my own					
12	When I am walking with other people, they often get difficult to keep up with me.					
13	In-group work I like to be the leader (coordinator)of the group					

14	I prefer to keep my feeling to my self rather than sharing to others					
15	I would rather plan things than simply go a head and start.					
16	I need to use a lot of self –control to keep out of trouble					
17	I can make decisions quickly					
18	I calmly sit and watch competitive sports like rice, foot ball and the like					
19	Frequently I make a carless mistake					
20	Rather than having a plan for some thing in advance I prefer to do as they appear to me					
21	I feel uncomfortable in company of other people					
22	It easy for me to discuss intimate and personal matters with my family					
23	I hesitate to complain if I was served a tasteless food					
24	I easily express my love to my partner					
25	I can express my feeling in the presence of a bog crowd					
26	I someone express an opinion with which I am disagree I tell my idea immediately					
27	Frequently I like to be alone with my own thought					
28	Frequently I lost in thought that I do not notice what is going on around me					
29	I easily make friends with members of my own sex					

30	I like works that needs sustained concentration					
31	It does often take me a long time to get started on some things					
32	I live for today and let tomorrow take care of itself					
33	I am more reserved than other people					
34	I am not bothered to keep the secret of some one					
35	I make sure that I am on time for appointment					
36	I am afraid to communicate with opposite sex					

**Current Achievement**

No	Activities	Low	Medium	HIGH
1	I am satisfied on my current job			
2	I have annual, monthly and weekly plan			
3	I meet the given target and perform with acceptable quality			
4	I have frequent visit with the family members			
5	I hardly educate the community about prevention of communicable disease and monitor them properly			
6	Graduate model family			

7	I organize data, analyze and demonstrate in graph, table and displayed on the wall			
8	The last six month performance			

**የከተማጤናኤክስቴንሽንሠራተኞችበዚህሥራከመሠማራታቸውበፊትያላቸውንፍላጎትናያላቸውንባህ  
ሪንበተመለከተለሚደረግየዳሳሰጥናትየተዘጋጀመጠይቅ**

ይህ መጠይቅ በሶስት ክፍሎች የተለየ ነው። አንደኛው አጠቃላይ የሆነ የተጠያቂውን መረጃ ይመለከታል።

ሁለተኛውና ሥስተኛው ክፍል የሚያተኩረው የጤና ኤክስቴንሽን ሰራተኛዎ ይህንን ስልጠና ከመውሰድዎ በፊትና እና በዚህ ሥራ ከመሰማራቷ በፊት ምን አይነት የስራ ፍላጎት እንደነበራት ለማወቅና የግለሰቧን ባህሪ ለመለካት የቀረበ መጠይቅ ነው።

የዚህ ጥናት ዓላማ የከተማ ጤና ኤክስቴንሽን ሠራተኞች አሁን የተሰማሩበት ስራንና ሥራቸውን ከመጀመራቸው በፊት ካላቸው ፍላጎትና ባህሪ መዛመዱን ለማጥናት ነው። ስለዚህ ይህ ጥናት ወደ ፊት ለሚደረጉ የባለሙያ ምልመላ ክፍተኛ አስተዋፅኦ ስለሚኖረው መጠይቁን በታማኝነትና ግልፅ በሆነ መልኩ መልሱን እንዲሰጡን በትህትና እንጠይቃለን።

**አጠቃላይ መመሪያ**

- 1. ስም መጻፍ አያስፈልግም
- 2. መልስዎትን በሚገባው ቦታ “X” ያስቀምጡ

ከዚህ ቀጥሎ በአንድ ነገር ላይ በራስ ፍላጎት፣ ስሜት እና ድርጊት ተመልክቶ የቀረቡ ጥያቄዎች አሉ። ከእኔ ፍላጎት፣ ስሜት እና ድርጊት ጋር ተመሳሳይ ነው ብለው በሚያምኑበት ቦታ ላይ “ X “ ምልክት ያደርጋሉ። በዚህ ጥያቄ ውስጥ ይህ ትክክል ይህ ስህተት ነው የሚባል መልስ የለም። የግለሰቦች ፍላጎትና ባህሪ ሊለያይ እንደመታመኑ የዚህ ጥያቄ አላማም እያንዳንዱ ጥያቄ ከተጠያቂው ፍላጎትና ባህሪ ጋር መሄዱን ማረጋገጥ ና ደረጃውን በግምት ማስቀመጥ ይሆናል።

I .አጠቃላይ መረጃ

1	ዕድሜ	-----
2	የጋብቻ ሁኔታ	1. ያገባች 2. ያላገባች 3. ሌላ (ይገለፅ)-----
3	በጤና ኤክስቴንሽን የቆዩበት ጊዜ	-----
4	በቀጠናዎ ርስዎ ስንተኛ የጤና ኤክስቴንሽን ባለሙያ ነዎት	-----

II. በዚህ ክፍል ያሉ መጠይቆች ትኩረት የሚሰጡት የከተማ ጤና ኤክስቴንሽን ባለሙያዎ ከስልጣናዎ እና በዚህ ስራዎ ከመስማራቷ በፊት የነበራት ፍላጎትን ለመዳሰስ የቀረበ ጥያቄ ነው

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም ዓይነትም ለኝም	በትንሹ ፍላጎት ነበር	በጣም ፍላጎት ነበረኝ
1	በአትሌቲክስ መሳተፍ					
2	ብዙ ጊዜ ከቤት ሆኜ የሚሰሩ ሥራዎችን መስራት አዘወትራለሁ					
3	የተለያዩ መሣሪያዎችን በመጠቀም አንድን ነገሮችን መስራት					

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም አይመስለኝም	በትንሹ ፍላጎትነበረኝ	በጣም ፍላጎት ነበረኝ
4	ማሸኖችን በመጠቀም ሥራዎችን መስራት					
5	እንስሳቶችን መንከባከብ					
6	አትክልቶችን በእንክብካቤ እንዲያድጉ ጥረት ማድረግ					
7	ሂሳባዊ ነገሮችን መቀመጥና መልሱን ለማምጣት ጥረት ማድረግ የነበረ ፍላጎት					
8	ሳይንሳዊ የሆኑ ነገሮች ማጥናትና መፍትሔ ለማፈለግ የነበረ ፍላጎት					
9	ሳይንሳዊ ጥናትን ሰው ያለምንም ድጋፍ ለማከናወን ጥረት ለማድረግ የነበረ ፍላጎት					
10	ሂሳባዊ ነገሮችንና ቁጥሮችን መተንተንና መልሱን ለማግኘት ጥረት ለማድረግ የነበረ ፍላጎት					
11	ብዙ ጊዜ የተወሳሰቡ ሁኔታዎችን ለመረዳት ጥረት ለማድረግ የነበረ ፍላጎት					

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም ዓይነትም ለኝም	በትንሹ ፍላጎትነበ ረኝ	በጣም ፍላጎት ነበረኝ
12	አዳዲስ ሃይንሳዊ ሀሳቦችንና ወይም ሳይንሳዊ ኘሮጀክቶችን ላይ ለመመራመር የነበረፍላጎት					
13	አዳዲስ የስዕል ምስሎችን ዲዛይን ለማድረግ የነበረ ፍላጎት					
14	አዳዲስ ሀሳቦችንና መፍትሔዎቻቸውን ለማመንጨት የነበረ ፍላጎት					
15	በድራማ ሥራ ላይ መሳተፍ የነበረ ፍላጎት					
16	አዳዲስ የፈጠራ ታሪኮችን ለመጻፍ የነበረ ፍላጎት					
17	በሙዚቃ መሣሪያ ለመጫወት የነበረ ፍላጎት					
18	የራስን ስሜት በግልፅና ነፃ በሆነ መልኩ ለመግለፅ የነበረ ፍላጎት					
19	ጓደኛን በግል ችግሩ በማማከርና ችግሩን ለመፍታት የነበረ ፍላጎት					
20	ወጣቶችን በቡድን ለማማከርና ውጤት					

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም አይመስልኝም	በትንሹ ፍላጎትነበረኝ	በጣም ፍላጎት ነበረኝ
	እንዲያመጡ የነበረ ፍላጎት					
21	ለሕብረተሰቡ አዳዲስ የሥራ ልምዶችን አምጥቶ ለማካፈል የነበረ ፍላጎት					
22	ሕብረተሰቡን ይጠቀማሉ በሚባሉ ሁኔታዎች ላይ ለመሳተፍ የነበረ ፍላጎት					
23	በየቡድኑ መሳተፍ ሀሳቦችን፣ ስሜቶችን ለማካፈል የነበረ ፍላጎት					
24	ከአንድ በታች የሚሆኑ ግለሰቦችን ለመርዳት የነበረ ፍላጎት					
25	አንድ የታሰበ ኻሮጀክት እስኪገባደድ በብቃት ለመምራት የነበረ ፍላጎት					
26	የራስሽን ሀሳብ ሌሎችን አሳምኖ እንዲቀበሉ የነበረ ፍላጎት					
27	በንግድ ስራ ተሰማርቶና ዕቃን በቀላሉ ሸጦ ጥሩ ነጋዴ ለመሆን የነበረ ፍላጎት					
28	የአንድን ኻሮግራም ግብ በመወሰን ሕብረተሰቡ ተግባራዊ እንዲያደርገው በንቁ ለማሳተፍ የነበረ ፍላጎት					

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም አይመስለኝም	በትንሹ ፍላጎትነበረኝ	በጣም ፍላጎት ነበረኝ
29	አንድን ቡድን ለድል ለማብቃት ችሎታ እንዲኖር የነበረ ፍላጎት					
30	ሥራን በዘመናዊነት መሥራትና አካባቢን ለማስዋብ የነበረ ፍላጎት					
31	የተደራጀ አሠራርን ለመከተል የነበረ ፍላጎት					
32	ሥራን ሊተገበር የሚችልበትና ሥርዓት ባለው ሁኔታ ለመፈጸም የነበረ ፍላጎት					
33	መረጃን በአግባቡ በመመዘገብና በመያዝ መረጃው በተፈለገ ጊዜ የሚገኝበትን ስልት-ለመፍጠር የነበረ ፍላጎት					
34	ከሂሳባዊ ነገ ነገሮች ጋር የተያያዙ ስራዎች ለምሳሌ ኢንጂነሪንግ፣ ስታቲስቲክስ፣ አካውንቲንግ በመሳሰሉት ስራዎች ላይ ለመሰማራት የነበረ ፍላጎት					
35	ሥራን በአግባቡ መሥራት ኮምፒውተርንና ሌሎች ኤሌክትሮኒክስ መሳሪያዎችን ለመጠቀም የነበረ ፍላጎት					

ተ. ቁ	መጠይቅ	በጭራሽ ፍላጎት የለኝም ነበር	በጥቂቱ ፍላጎት የለኝም ነበር	ምንም ዓይነትም ለኝም	በትንሹ ፍላጎትነበ ረኝ	በጣም ፍላጎት ነበረኝ
36	አንድን ነገር ከመስራት በፊት ቀደም ብሎ ግብ በማስቀምጥ ወደ ተግባር ለመሰማራት የነበረፍላጎት					

**IV. የእራስን ባህሪ ይለማወቅ የወጣጥ ያቁ**

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
1	ሥራን በተቻለኝ መጠን በፍጥነት ለመጨረስ እሞክራለሁ					
2	ሰዎችን ለሥራ ከማሰማራቴ በፊት በተገቢው መንገድ አስቀድሞ ማደራጀት እወዳለሁ					
3	አዲስን ሥራ ለመሥራት እንገዛለሁ					
4	እንግዳ ሰው በበዛበት ክፍል ውስጥ መግባት ይከብደኛል					

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
5	ምንም እንኳን አንድን ነገር ለመስራት በቂ ጊዜ ቢኖረኝም ስራውን በተፋጠነ መልኩ ለመስራት እሞክራለሁ					
6	እግርኳስን ከመጫወት ይልቅ ማየትም እወዳለሁ					
7	እኔ እንደማስበው ብዙ ሰው ባለበት የበለጠ አወራለሁ።					
8	እኔ ከብዙ ሰዎች ጋር አብሮ በመሆን መጫወት እወዳለሁ።					
9	አንድ ነገር ለሚሰጥ ጊዜ እስካለጠሁበት ድረስ ለመወሰን ይከብደኛል					
10	በጓደኞቼ መካከል ቃላቶችን ማንሳት እወዳለሁ።					
11	ተቀምጦ የሚደረግ ለምሳሌ ቲቪ ማየት ወይም መጽሐፍ ማንበብ ይበልጥ ያስደስተኛል					
12	ከለሎች ጋር በምንዘበት ወቅት ከእኔ					

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
	ጋር መሆን ይከብዳቸዋል።					
13	በአንድ ቡድን ስንሆን እኔ የመሪነቱን ቦታ መዝ ደስ ይለኛል።					
14	እኔ ብዙ ጊዜየ ራሴን ፍላጎት ለሰዎች ከማካፈል ይልቅ በራሴህ ሳብና ፍላጎት መያዝን እመርጣለሁ።					
15	አንድን ነገር ዝም ብሎ በቀላሉ ከመሥራት ይልቅ በዕቅድ መሥራትን እመርጣለሁ።					
16	አንድች ችግር ከሚመጣብኝ አስቀድሞ ነገሮችን በራሴ ለመቆጣጠር እሞክራለሁ					
17	ፈጣን ውሳኔ ለመወሰን እችላለሁ።					
18	በፀጥታ ተቀምጦ የስፖርት ውድድር ለምሳሌ እግርኳስ ውድድር የመሳሰሉት ማየት እወዳለሁ።					
19	ብዙ ጊዜ ነገሮችን በቸልታ በማየት ስህተት እሰራለሁ					

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
20	አንድን ነገር በእቅድ ከመሥራት ይልቅ ነገሮች እንደአመጣጣቸው መፈፀም እመርጣለሁ።					
21	ሌሎች ሰዎች ባለበት ምቹት አይሰማኝም					
22	የግሌን ሁኔታ ከቅርብ ጓደኞቼ እና ከቤተሰቦቼ ጋር በቀላሉ እወያያለሁ					
23	ጣፋጭ የሆነ ምግብ ካልቀረበልኝ ቅሬታዬን ለመግለፅ እቸገራለሁ					
24	ለፍቅር ጓደኛዬ ፍቅሬን በቀላሉ እገልጻለሁ።					
25	ህዝብ በተሰበሰበበት ቦታ ሀሳቤን ያለምንም ፍራቻ እገልጻለሁ።					
26	አንድ ግለሰብ ያቀረበው ሀሳብ ካለተስማማኝ ወዲያውኑ ያለመስማማቴን እነግራለሁ።					
27	ብዙ ጊዜ በራሴ ሀሳብ ጋር መቆየት እመርጣለሁ።					
28	ብዙ ጊዜ በራሴ ሀሳብ በመውሰዴ					

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
	ምክንያት አካባቢዬ የሚደረገውን ነገር አላስታውስም					
29	ብዙ ጊዜ ከራሴ ተመሳሳይ የታ ጋር ጓደኛ መሆን ይቀለኛል።					
30	ከፍተኛ ትኩረት /አትኩረት የሚያስፈልጋቸውን ሥራ መሠራት እወዳለሁ።					
31	አንድን ነገር ለመጀመር ብዙ ጊዜ አይወስድብኝም					
32	የዛሬን እንጂ ስለነገ ራሱ ይጨነቅ የሚል መርህ ወይም የአኗኗር ዘይቤ አለኝ።					
33	ከሌላው ጋር ራሴን ሳነፃፅር ዝምተኛ ነኝ ብዬ አስባለሁ።					
34	የሌላውን ሚስጥር ለመጠበቅ ብዙ አያስጨንቀኝም					
35	በቀጠሮ ለመድረስ እርግጠኛ መሆን እመርጣለሁ					

ተ. ቁ	መጠይቅ	በጭራሽ ከእኔ ባህሪ ጋር አይሄድም	በጥቂቱ ከእኔ ጋር ይሄዳል	አንዳንድ ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
36	ከተቃራኒ የታ ጋር መግባባት እፈራለሁ።					

**ሠራተኛዎን የስራ አፈፃፀምና በአሁኑ ሰዓት በዚህ ስራ ላይ ያላትን አመለካከት ለመለካት የተዘጋጀ ነው። ስለዚህ መረጃውን ግዜ በመውሰድና በታማኝነት እንዲሞሉልን በትህትና እንጠይቃለን**

ተቁ	መጠይቅ	ዝቅተኛ	መካከለኛ	ከፍተኛ
1	አሁን በምሰራው ሥራ እርካታ አግኝቻለሁ			
2	በዓመትና በወራት እንዲሁም በቀናት የተለየ ዕቅድ አለኝ።			
3	ያቀድኩትን በተገቢው ብዛት ና ጥራት እፈጽማለሁ			
4	ህብረተሰቡን በጤናው ጉዳይ ለማነጋጋር በተደጋገጋሚ ወደ ቤታቸው በመሄድ አነጋገራለሁ።			
5	ህብረተሰቡን በሽታን አንዲከላከል ያለመታከት አስተምራለሁ እከታተታለሁ			
6	የሞዴል አባወራ በዕቅድ መሰረት ማስመረቅ			
7	መረጃዎችን በማጠናቀር በሰንጠረዥ፣ በግራፍ፣ እንዲሁም ስዕላዊና ሊንቦኝ በሚችል መልኩ አስቀምጣለሁ			
8	በመጨረሻ 6 ወር ያገኙት የሥራ አፈጻጸም ደረጃ			

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## DETERMINING SAMPLE SIZE FOR RESEARCH ACTIVITIES

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The ever increasing demand for research has created a need for an efficient method of determining the sample size needed to be representative of a given population. In the article "Small Sample Techniques," the research division of the National Education Association has published a formula for determining sample size. Regrettably a table has not been available for ready, easy reference which could have been constructed using the following formula.

$$s = X^2 NP(1 - P) \div d^2(N - 1) + X^2 P(1 - P).$$

$s$  = required sample size.

$X^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

$$1.96 \times 1.96 = 3.8416$$

$N$  = the population size.

$P$  = the population proportion (assumed to be .50 since this would provide the maximum sample size).

$d$  = the degree of accuracy expressed as a proportion (.05).

No calculations are needed to use Table 1. For example, one may wish to know the sample size required to be representative of the opinions of 9000 high school teachers relative to merit pay increases. To obtain the required sample size enter Table 1 at  $N = 9000$ . The sample size representative of the teachers in this example is 368. Table 1 is applicable to any defined population.

The relationship between sample size and total population is illustrated in Figure 1. It should be noted that as the population increases the sample size increases at a diminishing rate and remains relatively constant at slightly more than 380 cases.

### REFERENCE

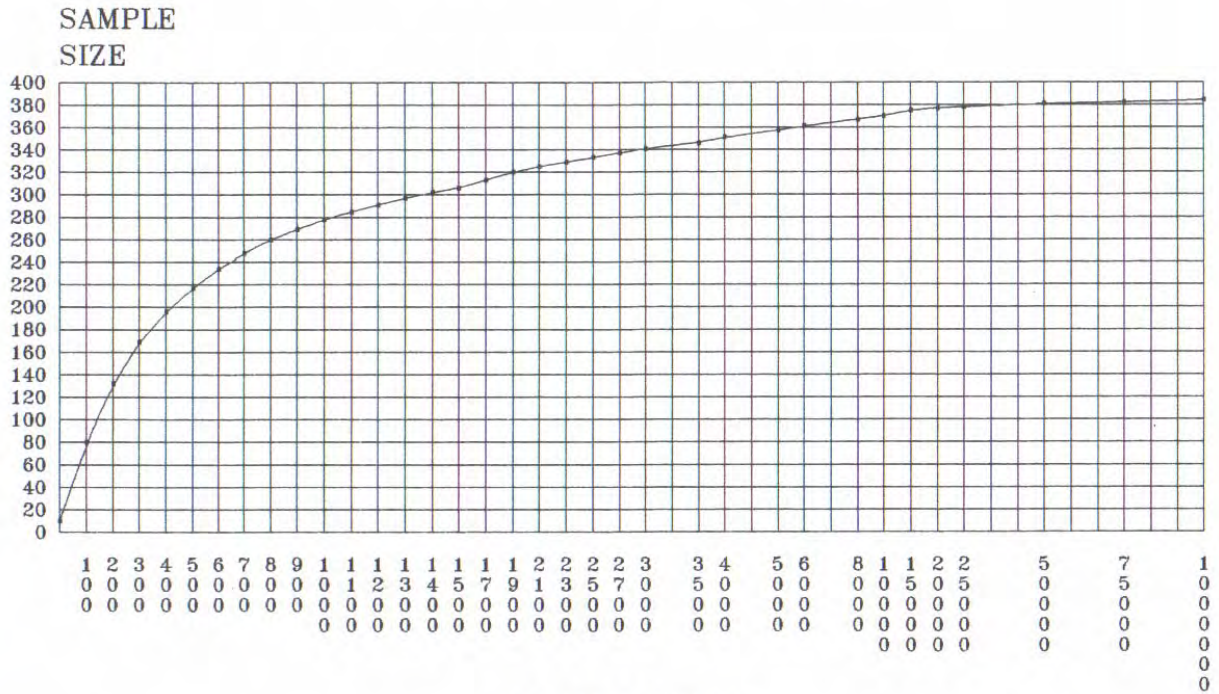
Small-Sample Techniques. *The NEA Research Bulletin*, Vol. 38 (December, 1960), p. 99.

TABLE 1  
*Table for Determining Sample Size from a Given Population*

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size.  
*S* is sample size.

# SAMPLE SIZE VS. TOTAL POPULATION



Assumes Standard Error = .05

# FORMULAE FOR DETERMINING NEEDED SAMPLE SIZES

**POPULATION SIZE UNKNOWN:**

$$\text{SAMPLE SIZE} = \frac{\left( \frac{\text{RANGE}}{2} \right)^2}{\left( \frac{\text{ACCURACY LEVEL}}{\text{CONFIDENCE LEVEL}} \right)^2}$$

**Confidence Levels:**

	$\alpha$	$\alpha/2$
.10 level	1.28	1.64
.05 level	1.64	1.96
.01 level	2.33	2.58
.001 level	3.09	3.29

**Accuracy Levels:**

Range X Desired Level  
of Accuracy  
(expressed as a  
proportion)

**POPULATION SIZE KNOWN:**

$$\text{SIZE} = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

$X^2$  = table value of Chi-Square @  $d.f. = 1$  for desired confidence level

.10 = 2.71    .05 = 3.84    .01 = 6.64    .001 = 10.83

$N$  = population size

$P$  = population proportion (assumed to be .50)

$d$  = degree of accuracy (expressed as a proportion)