ADDIS ABABA UNIVERSITY

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ANALYSIS OF PROFESSIONAL ETHICS PRACTIES IN ETHIOPIAN CONSTRUCTION INDUSTRY: IN THE CASE OF ETHIOPIAN ROADS ADMINISTRATION

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Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another university or elsewhere.

However, works by other authors which served as sources of information and referencing have been acknowledged by references to the authors thereafter.

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Certification

This is to certify that this research project was carried out under my strict supervision and has been approved for submission to the Department in partial fulfillment of the requirements for the award of Degree of Masters - MSC in Business Administration for Addis Ababa University

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ABSTRACT

While the construction industry contributes to the achievement of targets for social and economic growth, there are still a number of problems. One of the key ones is the unethical conduct of its professionals that affects companies, efficiency, time and expense and influences them. It is necessary for professionals to use applicable codes or guidelines to exercise their knowledge of ethics. The more professionals practice their approaches to ethical questions, the more likely it is to make the right decisionwhen the pressure is on.Therefore, the primary goal of this research is to examine professional ethics practices and identify the most unethical practices in Ethiopia's construction industry, analyze the reasons why people behave unethically and try to come up with realistic solutions that could be sufficient to eradicate these negative effects by assessing the current conditions in the Ethiopian Roads Administration /ERA/.To achieve the above-mentioned goal, this research was undertaken by conducting a literature review on professional ethical practices in the construction business, followed by a full questionnaire survey. By utilizing an exploratory research design and factor analysis, the key findings of the study are, *economic downturn, delayed salaries of workers, location of the project (boarder area), professional indiscipline, personal behavior, excessive love for money (greed), lack of strict contractual laws,* and*overlapping between personal and professional ethics,* are the main variables contributing to acting unethically.*The degree of unethical behavior in the construction industry as a whole,desire to engage in unethical behavior while performing professional duties, individuals or organizations engaging in the work without the necessary qualification, experience or training,* u*nder bidding, professional's commitment conflicting with clients interest, professionals not safeguarding the client's belongings from going missing or being stolen, professionals do not treat employees fairly, professionals are devoted to their superiors and management,* are the most common form of unethical behaviors observed among professionals in Ethiopian construction industry.According to the research, unethical behavior has a negative influence on cost and project quality. It's a good idea to have a code of ethics that's well-followed.It is vital to establish a program to ensure that professionals have the necessary traits, duties, attributes, and ethical conduct at all times.

Key Words: ***Professional Ethics, Construction Industry, Ethiopian Roads Administration /ERA***

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LIST OF ABBRIVATION

CI	Construction Industry
CIDB	Construction Industry Development Board
CIOB	Chartered Institute Of Building
CMAA	Construction Management Association ofAmerica
FEACC	Federal Ethics and Anti-Corruption Commission
KMO	Kaiser-Meyer-Olkin
NCOP	National Code of Practice
OED	Oxford English Dictionary
SPSS	Statistical Package for the Social Sciences
TQM	Total Quality Management

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CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Moral standards that guide a person's behavior or how an activity is carried out is called ethics. Professional ethics is a topic that receives a lot of attention at present (Mason, 2009).Professional ethics is directly or indirectly linked to quality concerns, delays, and cost overruns in Ethiopia and other developing countries. Construction is one of the largest industries that contribute a significant share to a certain country's economic development. Because professional misconduct has escalated, construction projects have suffered from under performance. The construction industry is distinguished by the presence of a lot of small enterprises that subcontract for work that is readily available. Because of the absence of investment in new process and technology development, short-term emphasis connections, and planning, this structure has resulted in a hostile culture, under capitalization, and low earnings (London, 2006).

Furthermore, the complexities of the construction industry's disrupted interactions with regulatory agencies and inter-organizational relationships may be prominently illustrated, allowing for the development of ethical standards and the activities of individuals in this sector to work to develop and enhance its effectiveness by developing a shared understanding of and recognition of each party's rights in the industry. As a result of these changes in ethical behavior, the quality, timeliness, and cost of construction projects will all improve (CIOB, 2006).The construction industry, according to Mondejar, Cheung, S, and Suen (2007), is one of the world's economic foundations, and it is distinguished by its transient multiple organizational presence, in which people with various skills and backgrounds join a team for the course of a project's lifespan in order to achieve a mutual goal.

Personal reputation, economic viability, and business reputation are all influenced by ethics, according to Ameh & Odusami (2010).The construction industry plays a significant role in the national economy of a country, regardless of the degree of economic growth in the country (Hassim, Kajewski, and Trigunarsyah, 2010). Ethiopia is no exception; one of the major fields of economic engineering helping its national economy is the local construction industry. Several local construction projects, however, have experienced poor outcomes due to a lack of resources, frequent design and drawing revisions, inadequate participant

engagement, insufficient monitoring and evaluation, and a lack of skill in project leadership, among other factors (Enshassi, Sherif, and Saleh, 2009).

In order for a business to thrive, it must address the issue of ethics. It also has a substantial impact on the industry's overall effectiveness and plays a key role in maximizing the advantages of construction projects (Ehsan, Anwar, and Talha, 2009).People can situate themselves among a network of interrelationships if they have ethics (Suen et al., 2007).Professional ethics is defined as a set of guidelines that can be used to discuss the moral standards and conduct of professionals in their everyday work, according to Bayles (1989). Von (2004) is concerned that there is too often a disconnect between organizational priorities in the "real world" and actual behavior, including ethical goals.

A profession is a job that involves rigorous study and mastery of a set of skills and is dedicated to supporting, insuring, or preserving any matter that has a significant impact on other people's well-being (Vee and Skitmore, 2003).Professional ethics often assigns moral obligation to all professionals practicing in a specific field, not to a person. Provide guidelines on how a person in such an environment should behave towards other individuals and institutions. Codes of professional ethics are also created by professional organizations to assist and direct members or workers in conducting their job functions according to a clear ethical principle. Almost every profession has its own set of ethical norms that act as a reference for making ethical decisions.

Wide spectrums of people are affected by professional ethics in the construction industry. Besterfield, Michna, Besterfield, and Sacre, (2003) noted that ethics is a precondition for quality, implying that quality and ethics are closely intertwined and share a concept of concern to do the right thing. It is an established way of lowering costs, improving competition and building customer loyalty. It is obvious that low ethical standards can lead to quality problems.

Generally, the construction industry has a poor reputation. In addition to harming the environment, construction is often viewed as inconvenient due to the amount of time it takes to complete a project. For example, highway construction can take years to be completed, which in turn, creates traffic jam when parts of a road are closed off to complete construction. Unethical activities are one of the most fundamental causes of why the construction industry has such a poor image, such as; corruption, unbalanced bidding, and bribery.

This is not only confined to Ethiopia, there are researches that have been done on unethical practices all around the world showing the same pattern. A research titled " The relationship between corporate culture of South African construction firms and performance" by (Suen, Cheung, & Mondejar, 2007), investigated the relationship that exists between the corporate culture and performance of South African construction firms and confirmed a positive correlation exists between corporate culture and business performance. However, in the context of South African construction firms, the magnitude of the influence of corporate culture on business performance is inversely proportional to the size of the firms. Another paper by Ray, Hornibrook, Skitmore, &Zarkada-Fraser, discusses the key principles of Stead's model in the context of construction organizations in Asia and how the teachings of Confucianism, Taoism and Buddhism and Globalization influence the understanding of ethical behaviors in Asian organizations. It is argued that the Model is equally applicable to construction organizations in Asia but managers must be aware of the divergent approaches of East and West and the issues of globalized economy.

A research in Australia aimed at examining the role of ethics in tendering concluded that a more empirical approach to the development of future ethical prescriptions in the field is needed.

The construction industry offers a variety of ways to deal with unethical problems, such as a code of ethics by different professional bodies. The code of conduct, on the other hand, will not help to alter the situation unless the transformation begins with the individual. The industry will be just as ethical as the people who own, manage, and work for it. In construction, ethics is relevant, but ethical problems continue to be faced by the industry. This may be because, as people, we are not able to adapt and therefore change the whole system.

1.2. Statement of the Problem

Professional ethics and construction efficiency, according to Abdul-Rahman, Wang, and Yap (2010), are inextricably linked. The majority of quality-related concerns are thought to be caused by a lack of professional ethics in particular.

Lack of quality, budget and schedule overruns attributed to professional ethics is the major problem in Ethiopia particularly, in road projects. Yet, professional ethics code of conduct (COC) for construction professionals has not been distributed very well at construction projects. Codes by themselves cannot ensure the application of ethical behaviors they need to

be accompanied with the assignment of functional responsibility (e.g., ethics officer) and employer training (Calhoun & Wolitzer, 2001).

After uncovering flaws in 20 ERA projects, the Federal Ethics and Anti-Corruption Commission (FEACC) ruled that the Ethiopian Roads Administration's (ERA) contract awarding methods are prone to corruption and cost and time overruns. One of these was the method in which road contracts were awarded to contractors without consideration for their past record, resulting in time and budget overruns as well as impacting the quality of each road built. The research also found that there are gaps in ERA's regulation of each and every project and its progress monitoring in terms of resource wastage and time over runs.

As per a recent study conducted by the Ethiopian office of the Construction Sector Transparency Initiative (COST), the Adiremet-Dejena-Dansha road project, a 97-kilometer route in Tigray's northwestern areas, was planned to be completed in February 2012. Unfortunately, as of October 2014, just three-quarters of it had been constructed. The administration was charged an additional 274 million birr due to the delay in the timetable, which increased the total cost to 980.7 million birr from the original estimate of 980.7 million birr. Lack of transparency, a lengthy procurement process, design modifications, and the contractor's restricted capacity were all cited as major issues in the report. These problems have been identified as the main indicators of unethical behaviors by several scholars.

Therefore, this study was carried out to tackle this problem from the base and find solutions for professional ethics problems in Ethiopian construction industry in the case of Ethiopian Roads Administration.

1.3. Research Questions

Developing and answering the following research questions aided in achieving the research's goals:

- What is the state of professional ethical practice in the construction industry?
- What influence does unethical behavior have on the construction industry?
- What is the most common form of unethical behavior in the construction industry, and how does it affect the construction process as a whole?
- What variables contribute to unethical conduct?
- How can the construction industry's image of ethics be improved in respect to the specified tasks?

1.4. Objective of the Study

1.4.1. General Objective

The general objective of this study is to evaluate professional ethics practices in the construction industry accordingly with the related problems attributed to road construction projectsin Ethiopian Roads Administration, and its various effects on the projects.

1.4.2. Specific Objectives

The specific objectives of this study are:

- Examine the Ethiopian Road Administration's professional ethics practices.
- Determine the elements that influence an employee's professional ethics behavior.
- Determine the most common form of unethical practices in the construction industry.
- Identify the variables that contribute to unethical conduct.
- Determine how the construction industry's image of ethics can be improved.
- Analyze the effect of unethical behavior on project costs, safety, and work quality.
- Assess the extent to which people in the construction industry are aware of the relevance of professional ethics.

1.5. Scope of the Study

The main purpose of this study is focused on Ethiopian Roads Administration at the head office. Seeing as it is not possible to study through all issues attributed to professional ethics at the whole head office due to money and time constraints, the scope of this thesis' research is confined to analyzing significant ethical duties through the Engineer's perspective. Since the Engineers are responsible for the execution of some of the main activities that have a strong relationship with professional ethics practices such as: endorsement of the annual procurement plan and schedule, selection of project delivery and implementation strategies, ensuring timely procurement of contracts, selection of good performing consultants and contractors, plays a coaching and advocacy role and coordinates inter-organizational and inter-process relationship among the teams in the context of the Project Development Process; they are believed to be an adequate representative of the ERA as a whole for the purpose of this research.

1.6. Significance of the Study

In the construction industry, unethical actions and corruption have taken a high toll worldwide, including lost lives, financial resources, diverted resources, and environmental

degradation (Azhar, Selph, and Maqsood, 2011). Even though it is clear that construction is one of the major activities generating income to the growth of a certain country, assessment of unethical actions should be done not only for its economic advantage; but also for saving the human life. The various researches done on the Ethiopian context has been focused on the unethical practices done on the contractor's side, while I believe these problems should be assessed from the Ethiopian Roads Administration's point of view in order to tackle it from the core since that is where the projects are awarded to different contractors and consultants. The outcomes of adhering to the professional ethics among professionals will be the foundation for encouraging the professionals to comply with the principles of ethics, so that their works meet the clients' expectations and that their obligations will be carried out in professional manner in the future. The study also suggests that professionals better understand why professional ethics is critical to be successful in the field.At the end of the study, it will try to clear out the reason of not practicing professional ethics.

1.7. Organization of the Study

The research paper has five chapters; the first chapter includes background of the study, statement of the problem, research questions, objectives, scope and significance of the study. The second chapter is a literature review which is related to the study area and it gives a detail description of the study phenomenon by relating other scholar papers on the area. The third chapter is all about methodology of the study in which research approach and method, sources of data, sampling techniques and procedure, method of data collection and analysis and the like will be included. In the fourth chapter the collected and analyzed data is discussed and interpreted. And the last chapter contains conclusion, recommendation, references and annex (if any).

CHAPTER TWO

2. LITERATURE REVIEW

Introduction

The importance of ethics on an organization's integrity and financial sustainability, as well as its reputation and personal safety, is apparent. There is widespread agreement within and beyond the construction industry that the industry is riddled with corruption and other unethical practices (Ameh and Odusami, 2010). Regardless of the fact that the construction industry is the significant determinant of ethical management's economic growth around the world, it is plagued by ethical issues such as bid shopping, payment games, conflict of interest, lying, unreliable contractors, professional negligence, claims games, threats, collusion, and fraud, (Ho, 2011).

The definition and justification of claims regarding the right and wrong behavior of actions in specific intent, i.e. the virtue of the reasons that motivate them, is at the root of ethics, according to Ray, Hornibrook, Skitmore, and Zarkada-Fraser (1999). The goodness or badness of the consequences they generate, as well as the acclaim or blameworthiness of the people who perform them. Construction managers require ethics in order to situate themselves within a web of interconnections among numerous parties in a commercial setting (Mondejar, Cheung, & Suen, 2007).

Despite the fact that ethical violations in the construction industry are common, they rarely make the news. This review will focus at corporate ethics as well as ethics in general, along with its definition and philosophy. It will then discuss professionalism and professional ethics, as well as ethical dilemmas and their ramifications in the construction industry.

Theoretical Review

2.1. Ethics

2.1.1. Definition

Ethics is generally defined as “a system of moral principles, by which human actions and proposals may be judged good or bad, right or wrong; and the rules of conduct recognized in respect of a particular class of human actions” (Oxford Dictionary, 1999).It's a method of understanding your values are important, sticking to them, and treating others with dignity (Hendrick, 2008).There is no universally agreed-upon definition of ethics, there are many. For example, the way we treat other people while adhering to a local and unpredictably legal

norm, the way we retain the integrity of our own thoughts while being tempted but refusing it, the path of behavior that pays money and many others. Ethics entails analyzing society's moral rules and determining how they apply to our lives, as well as whether they are rational or irrational. Ethics studies society's moral principles, determines whether they are rational, and assesses the impact of these standards on people's lives.

2.1.2. Ethical Behavior in General

Ethics is a set of moral standards which can be used to judge if human actions and suggestions are good or bad, correct or incorrect, as well as rules of conduct that apply to a certain class of human behaviors and individual moral beliefs (Vee and Skitmore, 2003). In some societies, what is acceptable in one culture may be regarded improper in another. The meanings of words can be vague and even conflicting within the same culture. The fact that people commonly perceive right moral and ethical activities in their own ways contributes to the ambiguity (Hinze, 1993).

While ethics cannot be taught, a system for evaluating and deciding on ethical issues could be devised, according to (Sinha, 2007). An integrated approach looks to be the greatest alternative for teaching ethics because it requires the framework's various components. Indeed, ethics entails more than simply expressing and adopting a code of ethics, or selecting how to implement the code of ethics (Oyewobi, Ganiyu, Oke, Ola-Awo, &Shittu, 2011).Ethics, according to Hassim (2010) and Bowen, Pearl, and Akintoye (2007), entails not just to understanding whether a goal is good, but also emotions, terminology, logic, methods, and judgment that influence people's decisions that affect their own and others' well-being in their daily lives. It's about how we feel, think, and act, not just how we feel, think, or behave.

Yet, according to Oyewobi et al. (2011), ethics entails not just assessing whether a goal is desirable, but also making feasible decisions or judging whether a decision is right or wrong after careful analysis. Dealing with ethical norms is tough. It's about someone's conduct as well as the expectations of others, including performance standards. It is not acceptable for employees of a company to act in any way they choose at work. Clients also see the organization's image, which might include all shades of unethical and ethical behavior.

2.2. Ethics in Business

Instead of relying exclusively on financial and managerial concepts, business ethics applies to organizational conduct measurements based on principles of right and wrong (Hartman, 2005). It was formerly believed that business and ethics ought not to be intermingled. The

fleeting concept of "business ethics" has taken on a life of its own. The phrase "oxymoron" has been used to describe it (Mason, 2011; Ray, Hornibrook, Skitmore, &Zarkada-Fraser, 1999). Nevertheless, it is now widely recognized that business exists to serve the public and meet individual and social needs, and that broad ethical norms apply to the entire world (Vee and Skitmore, 2003; Mason, 2009; Pearl et al., 2005).

Business ethics refers to ethical conduct and a set of moral principles that are shared by both businessmen and the public at large (Ray et al., 1999).Business ethics is divided into two types: normative and descriptive ethics, which deal with ethical challenges and work-related ethical decisions (Mishra and Mittal, 2011).The phrase "business ethics," according to Tow and Loosemore (2009), refers to the moral and legal societal acceptance of company decision-making and intervention in larger society.

Contrary to popular belief, business is led by moral principles. Because it encompasses social behavior, business is governed by moral standards. It explains what people do and discusses personal and professional difficulties, as well as beliefs and norms (London, 2006).Roger (1998), on the other hand, argues that business operation is filled with morality and ethics because the development process involves qualities and ethical code; nonetheless, there is debate and disagreement concerning business ethics, even among executives and business enthusiasts. Unrealistic standards exist in terms of the ethical decisions that businessmen can lawfully make. Preconceived notions about the role of business in society are to blame for these misinterpretations.

According to Toner (2001), the phrase "corporate values" is defined by two categories of values: basic (or personal) values and core company values. Fundamental values such as trustworthiness, transparency, and justice, he identified, offer a foundation within the business for the decision-making process that has a meaningful impact on the firm's success. The organization's fundamental values are principles or beliefs that guide personnel, such as "unrelenting customer focus," and are something that a company can deem critical to its success.

Organizations in the business world, according to (Hatcher, 2004), that operate based on the economic objectives and reaping profits, must, on the other hand, promote and support these economic goals through the use of a work ethic. As a result, businesses began looking for ways to evaluate employee’s ethical performance on the job. Their efforts, however, fall short of what was required. In both the social and corporate sectors, common principles control

ethics and business ethics (Svensson and Wood, 2005).The need of inter-organizational collaboration is highlighted, as is the requirement for the ability to build healthy relationships based on ethical principles. To achieve these long-term partnerships, parties must shift their commercial transactions from low trust to high trust based on a high ethical foundation. The construction industry around the world acknowledges the need to improve its ethical efficiency. Knowledge of the person and situational factors that influence staff ethical behavior are part of managing ethical conduct (London, 2006).

Employee attraction, retention, and productivity are all contingent on an organization's ability to maintain an ethical corporate culture, according to Talukhaba (2009).Business aims to serve community and meet civic and social demands, not just to enrich a chosen number of people (Mason, 2009). Business ethics will not be influenced by unethical activity unless those who engage in it want to do so (London, 2006).

2.3. Professional

A professional is someone who has attained a high level of expertise in a certain field. The term "professional" refers to a highly educated person who values workplace autonomy, fair pay, and work that is both innovative and intellectually stimulating (Ogachi, 2011).A profession is a career that demands sophisticated study and knowledge of a particular information body, as well as a commitment to supporting, assuring, or safeguarding any topic that has a significant impact on other people's well-being (Vee and Skitmore, 2003). A symbol of a notable profession, according to Oyewobi et al. (2011), is the readiness to accept the requirement to behave in the public good, which necessitates an open effort to submit personal advancement to this duty.

Professionals, according to AbdRahman (2008), must meet all of the following credentials for their line of work:

- A university, college, or institute's academic credentials
- Expertise and specific knowledge in the field of professional performance.
- Superior mechanical, technical, and intellectual abilities in the field in which they work.
- High-quality work in ideas, items, operations, presentations, consultations, primary or secondary studies, managerial, marketing, or other endeavors.
- Maintaining a high level of professional ethics, conduct, and administrative tasks while performing one's job is essential

- Professional job experience in one or both of the following capacities in areas where one has professional qualifications is required.

Experts have discovered five key assumptions that govern ethical thinking (RICS, 2000 cited in Oyewobi et al., 2011)

1. **Professional ethics is a methodical procedure:** Ethics is a complex topic that cannot be taught in a single session. It's a method of evaluating conduct against a set of ever-changing norms. What is ethical today or in one culture may be judged differently by others or at a later date.
2. **Human behavior is the caused:** There is always a reason for every immoral or ethical human behavior, such as monetary gain, domination, or compassion.
3. **Deeds have ramifications:** There is a link between the two. It's related to Newton's Third Law of Physics, which asserts that every action has a counter-response.
4. **The individual's viewpoint determines what is ethical:** A range of factors, including written codes and declarations, influence this.
5. **The cornerstone of ethical business conduct is mutual vulnerability:** Everyone is susceptible to other people's actions, and how we treat others determines how we are treated. For example, if a customer appears unable to defend themselves due to a lack of necessary competence, the client must be safeguarded against abuse.

2.4. Ethical Principles and Codes of Conducts

Regulations are necessary to assure justice, accountability, and transparency in every economic transaction, especially in a competitive economy. To achieve these features, other enforcement mechanisms could be applied such as legal texts or social standards, Ssegawa, &Abueng, (2006). Efforts have been made all around the world to improve ethical standards and ethics in the construction industry.

As in the case of inability to develop effective answers to ethical challenges, organizations in the construction sector continue to struggle to find successful strategies to recruit and retain the best individuals and raise their standards of success, efficiency, and service to new heights (Ray et al., 1999). "Civil communities have long emphasized well-recognized virtues; individuality, self-reliance, community engagement, obligation to family, hard labor, thrift, honesty, sobriety, and so on," according to Roger (1998). These qualities are necessary while working with individuals in both commercial and non-commercial contexts. Hundreds of technical organizations and educational institutions have ethical guidelines that are rooted in

a worldview that extends back to the Enlightenment (George, 2006).The purpose of codes is to assign responsibilities to opposing tenderers as well as the major tenderers (client, owner) in order to maintain a balance between what is appropriate for a certain project and what is common sense.

To cope with ethical difficulties in the construction sector, rules of conduct are available. Tendering rules have been developed in Australia's construction industry to handle ethical concerns such as withdrawal, bid lowering, cover pricing, tendering cost compensation, and collusion (CIOB, 2006).In modern society, government restrictions are growing increasingly stringent and extensive. The application of increasingly tight limitations in the construction industry is concentrated on the preservation of human life. Equal rights, life, liberty, and the pursuit of happiness, as well as safety, are among our society's most universally held ideals, civic responsibility, justice, dignity, the legal system, secrecy, and private property (Sinha et al., 2004).Ethical behavior, according to Masson (2011), is defined by adherence to the following ethical principles:

1. **Honesty** - Try to be truthful and avoid behaviors that might contribute to others' deception, either directly or indirectly.
2. **Fairness** - Do not seek to profit from the exploitation of others, whether explicitly or implicitly.
3. **Fair reward** - Refrain from taking activities that may deprive another individual of a just reward for their efforts.
4. **Reliability** – Maintaining your abilities and simply providing services in your sector of competence
5. **Integrity** - Consider the general public's interests, especially those who will use or be interested in the project in the future.
6. **Objectivity** - All potential conflicts of interest should be recognized and disclosed to anybody who might be harmed as a result of them.
7. **Accountability** - Give information and cautions about topics about which you are knowledgeable and which may be damaging to those who may be affected. To allow significant action to be done to avoid injury, warnings must be delivered in a timely way.

According to Jefferies and Kirk (2004), the NCOP (National code of practice for the construction industry) established nine key ethical criteria to ensure that all project stakeholders performed ethically at all times. They are:

- All components of the tendering process, at all levels of the industry, must be performed with honesty and integrity.
- Tenderers must not collude in any way and must be willing to provide proof of their integrity.
- The participants must fulfill all legal obligations.
- Participants must refrain from engaging in any activity that favors one party over another.
- The tendering requirements and selection criteria mentioned in the tender documents must be followed when evaluating tenders.
- All through the tendering process, any information provided must be kept confidential.
- On any particular project, the tendering terms must be the same for all bidders.
- Clients must explicitly explain their expectations as well as evaluation criteria in the bidding documents.
- Any party who has a conflict of interest must declare it as soon as it is discovered.

A professional code of conduct must be in place not just to address ethical difficulties, but also to guarantee that the entire company is capable of following it.

Empirical Review

2.5. Professional Ethics in Construction Industry

The working group's concept of professional ethics is to do one's best to ensure that customers' requirements are addressed, but to also understand and value the larger public interest (Howard, 2000 referenced in AbdRahman, 2008). Professional ethics entails treating individuals with the same amount of honesty with which they would like to be treated (Vee and Skitmore, 2003).Professional ethics, according to Fellows (2003) and Hamzah et al. (2010), is a collection of behavioral standards. The application of such standards to the use of specific knowledge and, as a result, to a considerable extent, the connection between specialists and laypeople, so that this system can deal with both professional morality and actions in their daily practices.

In practice, according to Vee and Skitmore (2003), professional ethics entails reevaluating judgment not just in terms of human moral concerns, but also in terms of professional norms. Issues of professional ethics in the construction industry impact a great amount of people. Everyone has contributed to the discussion, as well as moral and ethical challenges in the construction business. For a variety of reasons, professionals engage in unethical behavior.

This could be due to a lack of regulatory enforcement, intense competition, or a downturn in the economy, as well as insufficient school and technical ethical teaching, cultural transformations, and the growing complexity of construction projects (Adnan, Hashim, Mohd, & Ahmad, 2010). (2012).

There is an altruistic attitude of a legitimate profession cannot be done without an ethical dimension when defining professions as "groups employing unique knowledge in the service of a client" (Pearl, et al., 2005). Professionalism's primary purpose should take precedence above the client's or professional's own physical or financial necessities (Uff, 2003).

Engineers bear a specific moral obligation because their work has such a direct impact on people's lives. However, it has been suggested that their responsibility to others, such as the public, surpasses their responsibility (Ehsan, Anwar, &Talha, 2004). (2009). There is no conflict or dispute between an engineer's professional ethics and his organization's social duty, according to Bond (2009), because they all strive for low risk standards and demonstrate the social responsibility that the government and the general public require.

In the construction sector, ethics is a means of providing the finest possible service to ensure that customers' needs are met (Oyewobi et al., 2011). The level of trustworthiness and integrity with which companies and individuals conduct business can be used to evaluate ethical behavior in the construction industry (Mason, 2009).

The following is a summary of the key definitions that will be utilized in this thesis:
Ethics: the study of the positive and negative aspects of moral responsibility and obligation.
Professional: a well-educated adult has job autonomy, earns a good pay, and engages on both innovative and intellectually difficult projects.
Professional ethics: treating others with the same respect and decency that you want to be treated with.

2.6. Unethical Behavior in the Construction Industry

Ethical concerns in the construction industry should be highlighted, since this will assist to dispel the myth that such issues are unimportant or exclusive to the industry (Sinha et al., 2004).With its low-cost philosophy, severe competition, and razor-thin margins, the construction business is considered as the world's most unethical industry, fostering a perfect environment for ethical dilemmas (Hamimah et al., 2012). The ethical considerations that are significant in the construction sector are necessary and necessitate, for example, the notice of disasters that must be prevented. In this circumstance, the obligation is multifaceted, and

ethical issues must be considered (Uff, 2003).One of the most frequent type of unethical corporate activity is bribery. It is described as "the providing of a good, service, or payment to an authorized person with the goal of obtaining a privileged and advantageous consideration (or purchase) of one's product or corporate initiative" (Vee and Skitmore, 2003). Other unethical activities that are regularly reported include fraud, breach of secrecy, and ineptitude. Deception, deceit, cunning practice, or violation of confidentiality are all terms used to characterize the unethical practice of fraud, which is employed to gain an unfair or deceptive advantage (Vee and Skitmore, 2003).

It is clear that there are significant areas of concern about construction professionals' ethical behavior. Corruption and unethical practices in the construction industry have taken a high toll around the world, resulting in the loss of human lives, financial resource diversion, and environmental destruction (Azhar, 2011). Ethically questionable and corrupt actions, according to Oyewobi et al. (2011), have several detrimental effects for businesses, economic advancement, and human capital. Unethical or dishonest tactics distort construction operations, limiting economic wealth. Unethical behavior does not develop as a result of a child's upbringing, but rather as a result of learning specific task or being exposed to experience, according to popular thinking (Vee and Skitmore, 2003). According to Olusegun, Benson, Esther, and Michael (2011), high and management officials in government offices spend illegally on bribes and corruption throughout contract award, execution, and payments.

Patrick (2006) discovered that corruption can take many forms and present itself in a variety of ways at any point during the construction project's life cycle.

2.7. Unethical Behavior According to Developing Countries

Ssegawa, &Abueng, (2006) conducted a study in Botswana to obtain a feel of how contractors feel about unethical behavior in the industry, and the first statement accepts the result, however the second statement is bad for the code if the new code is successful in addressing unethical practices.

Because of its diverse nature, the Nigerian construction sector, according to Olusegun et al. (2011), is prone to ethical failures, making it necessary for construction professionals to maintain high ethical standards. Alutu and Udhawuve (2009) identified a number of characteristics that may encourage unethical behavior in their study in Nigeria with participants who want to obtain riches through any means to boost public standing rated the most unethical conduct, followed by people who are motivated by their inherent greed for

money, by paying negotiated sums of money to officers of awarding organizations. Poverty, an overwhelming desire for money (greed), politics in award of contract, professional lack of professionalism maximizing profit for the Contractor, and favoritism are all listed as reasons of corruption in the study.

Ehsan et al. (2009) discuss the ethical issues that the Pakistani construction industry faces according to the findings of a lengthy and comprehensive study, there was not a single person in the construction sector who had not been subjected to some type of unethical behavior in the form of bribery, unfair conduct, undertaking work beyond capability, favoritism, and overcharging.

While investigating the link between workplace culture and the success of South African construction enterprises, Talukhaba (2009) concluded that there is a favorable association between corporate culture and company performance based on the results of the questionnaire survey. According to Mason (2009), a single industry-wide code could strengthen the sector's ethical standards.

According to a survey done in Malaysia's construction industry, many forms of unethical conduct have a major impact on construction quality. Professional ethics, according to this study, is a requirement for obtaining consistent and reasonable construction quality (Hamzah, 2010). In a survey of construction organizations, Tow and Loosemore (2009) three elements have been identified as influencing ethical behavior: a lack of ethics trainings, reward mechanisms for employees who act ethically, and the industry's limited visibility.

Design defects (carelessness and neglect) account for 50% of construction failures in Nigeria, construction problems account for 40% (professional ineptitude and fraudulent practices), and product failures account for 10%, according to (Ameh and Odusami, 2010).

2.8. Effect of Unethical Behavior in Construction Projects

Construction costs have risen to an alarming level as a result of corruption. According to Olusegun et al., (2011) bribery and corruption result in project failure, abandonment, upward contract review, expense, time extension, and a reduction in the life duration of construction.

Unethical behaviors have long-term consequences for construction and engineering enterprises, including lost tender expenses, tender instability, increased project costs, damage to the economy; extortion, felony charges, fines, blacklisting, and reputation damage are all possible outcomes. Professional ethics has sparked a lot of discussion and controversy, and the literature is increasingly pushing for high ethical standards and professional behavior in

the construction industry. The construction industry is frequently blamed for corruption and wrongdoing due to its scale and reach.

Common problems raised include the tendering system, poor construction quality, safety procedures, payment issues, corruption, and, most significantly, commitment for public funding works (Hamimah et al., 2012).Although there are norms and actions in place to govern the procurement process, ethical issues still arise when it comes to the procurement of projects, which eventually leads to a worse project quality end.

2.9. Ethics and Quality of Projects

The construction industry's unethical conduct puts the quality of projects at risk (Hamzah et al., 2010).The sector has a bad reputation for poor quality and service, as well as a bad safety record and a history of broken promises and unscrupulous behavior (Tow and Loosemore, 2009).Human factors are at blame for the most of quality problems. Contractors and clients in the construction sector will strive to procure contracts through methods that are devoid of morals and dignity, such as unethical behavior. This is due to their willingness to go to any length to stay afloat during the economic slump. The project's efficiency has been considerably harmed as a result of the parties' immoral behavior in the construction industry (Hassim et al., 2010).

It goes without saying that a lack of ethical standards among construction experts might result in poor quality. As per data from construction sites, a rise in unethical behavior will result in a decline in project quality. Despite the fact that the overall number of industrial accidents has decreased by 35% since 2005, the construction industry has seen a 5.6 percent increase. During the same time span, the number of people killed climbed by 60%.According to one study, the major causes of these numbers are bad administration of weak inspection programmers, poor security rules, a lack of safety education programs, and unsafe working methods. Many of these businesses don't even follow the law, let alone go above and beyond (Hamimah et al., 2012). Mlinga (2008) believes that, in addition to their technological talents, the specialists' ethical skills are to blame for difficulties such as low efficiency, late completion, and cost overruns in construction projects.

2.10. Concluding Remarks for Literature Review

This chapter sets the stage for the investigation into unethical behavior, its origins, and the repercussions of such acts. It starts with a definition of unethical professional behavior, which is a discipline dealing with the positive and negative aspects of moral duty and obligation,

followed by a discussion of corporate ethics and who is a professional? Professional ethics, according to the literature, is defined as treating others with the same amount of honesty with which they would like to be treated. He or she is a highly educated individual who appreciates job autonomy, makes a good pay, and works on creative and intellectually demanding projects. Honesty, justice, equitable compensation, and trustworthiness must all be adhered to by the code and principles of ethics, which developed a set of principles in past literature.

Unfair conduct, carelessness, conflict of interest, collusive tendering, embezzlement, loss of confidentiality and propriety, bribery, and infringement of environmental ethics are all examples of unethical behavior in the construction industry, as defined by previous research, which is then explained in terms of developing countries.

Following that, it discusses the ramifications of unethical action in a project. It has a detrimental impact on cost, causing project cost to rise, project collapse, project abandonment, contract upward review, contract extension, and construction life span shortening, as well as a negative impact on project quality, according to previous research.

It focuses on the factors that contribute to unethical action, such as economic downturn, national objective, leadership, lack of transparency in the selection process, inadequate process evaluation, and ineffective professional ethics and policy. The literature review discusses several ethical challenges in the construction industry, illustrating the dynamics of corporate ethics management and the mismatch between ethics theory and practice. Furthermore, throw it highlights the gap that exists in our idea of what constitutes ethical behavior, the significance of individual and contextual variables, including the influence of ethical ideologies, decision philosophies, and organizational characteristics, exploring ethical concerns, and the negative effects of unethical behavior on the construction process, as well as the importance of ethical philosophies, decision ideologies, and organizational factors, exploring various ethical issues, and the negative effects of unethical behavior on the construction process. All of this helps to define the study's scope and bounds.

While the concept of ethics and its interpretation have received a lot of attention in recent research, empirical evidence of ethical behavior trends has been few. Due to the pervasiveness of unethical activity in the construction industry, this study's methodology attempts to establish a pattern of ethical behavior and preventive actions for unethical behavior. In order to do that it utilizes a questionnaire survey.

Conceptual Framework

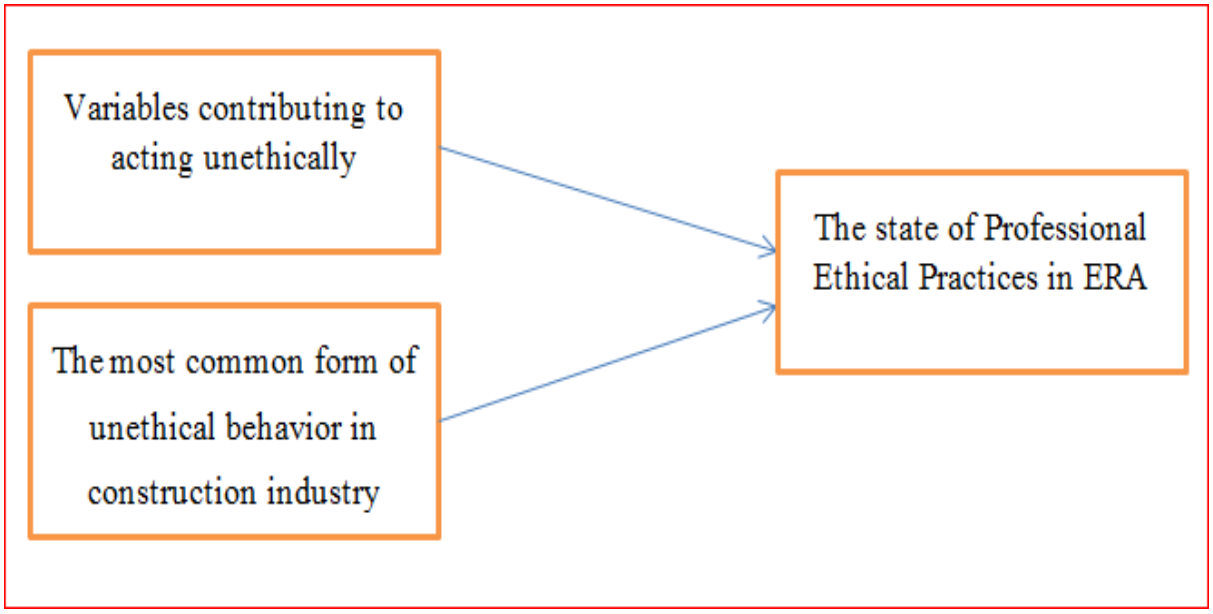


Figure 1: Conceptual Framework

CHAPTER THREE

3. RESEARCH METHODOLOGY

The methods employed in this study are discussed in this chapter. The methodology includes a review of the literature on unethical activities, as well as details on the research design, population, sample size, data collecting, questionnaire content, instrument validity, and data processing and analysis. The most common method of gathering data and viewpoints from respondents was using a questionnaire.

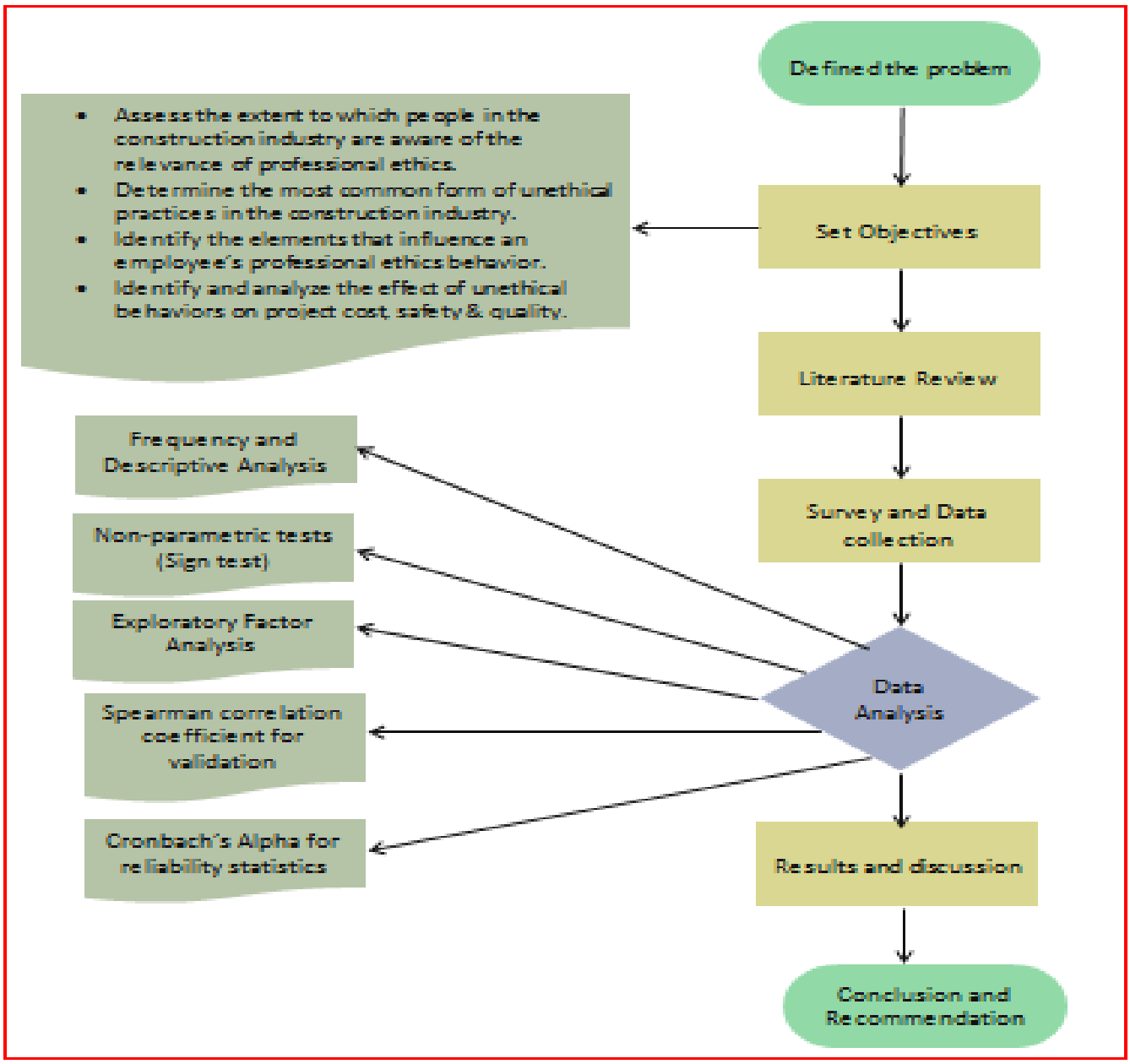


Figure 2: Methodology Flow Chart

3.1. Research Design

A research design is a logical and methodical plan for conducting a research study that includes a summary of the study's important aspects and serves as the blueprint for data collecting, measurement, and analysis (Warfield, 2010). The study employed exploratory research design, which is described as research conducted to learn more about a problem that isn't well defined. It is carried out in order to gain a better knowledge of the current problem, but the results will not be conclusive. For this type of study, a researcher begins with a broad concept and uses the research to discover difficulties that can be the subject of future studies.

3.1.1. Data

In order to support the questionnaire method, the indicators to be assessed in the data were chosen from a summary of the extensive literature research, which are; variables contributing to acting unethically, the most common form of unethical behavior in construction industry, effects of unethical behavior on quality and cost of work, ethics in the workplace and strategies to improve unethical practices. The research is carried out in Ethiopian Roads Administration head office, by researching elements that lead to unethical behavior, the study focuses on finding and evaluating professional ethics procedures in ERA as well as factors affecting employee behaviors with reference to acting unethically.

3.2. Methodology

3.2.1. Data Collection Method

The researcher employed a review of all relevant literatures to establish the major concerns linked to the research subject in order to achieve the study's final goal. The primary source of data which was collected by surveys using questionnaires for the employees working in that office. The questionnaire was the primary method for gathering information and viewpoints from respondents. The questionnaire was updated from Al-sweity, (2013).

The questionnaire was built on the base of the literature review. The questionnaire design was inspired by past research on the subject, such as: (Oyewobi et al. (2011); Ssegawa and Abueng (2006); Olusegun et al. (2011); Alutu and Udhawuve (2009); Azhar et al. (2011); Vee and Skitmore (2003); Ray et al. (1999); Pearl et al. (2005); Hamimah et al. (2012); Talukhaba et al. (2009); Ameh and Odusami (2010); Zarkada et al. (1998); Tow and Loosemore (2009); Hamzah et al. (2010); Jefferies and Kirk (2004); Ehsan et al. (2009); King et al. (2008); Hamzah et al. (2010);, Ray et al. (1999)). To be suitable for the survey, all

information that could aid in the attainment of the study's objectives was acquired, evaluated, and standardized.

Personal information that was not essential was excluded, as were tough and unnecessary questions. To promote a high response rate, the questionnaire arrived with a cover letter that detailed the study's aim, how to reply, the research goal, and the confidentiality of the information. Secondary data on ethical practices in the construction business will be gathered from ERA guidelines, prior research, and academic journals.

To achieve the research's goal, the questionnaire was divided into four parts, as follows:

1. The first part of the document offers general information about personal data.
2. The second part discussed the variables that contribute to acting unethically.
3. The third part is about the most common form of unethical behavior in construction industry.
4. The implications of unethical behaviors on the construction industry are discussed in part four. Includes four subsections, these are:
    - Economic effect of unethical conduct on the construction industry.
    - The effect of unethical behavior on project quality.
    - Ethics in the workplace.
    - Strategies to improve the ethical behavior.

3.2.2. Population Sampling Techniques and Procedure

The total population of the study consisted of engineers working at ERA head office, who are responsible in assuring the quality of design documents comparing with the available design standards so as to assure a standard and quality road design, and responsible for the procurement of the engineering services and works contracts. These group of people are selected as the target population because it is believed by the researcher these professionals will have access to vital information, experience and professional skills that are necessary and relevant for the study since they are responsible for endorsement of the annual procurement plan and schedule, selection of project delivery and implementation strategies, ensuring timely procurement of contracts, selection of good performing consultants and contractors, playing a coaching and advocacy role and coordinates inter-organizational and inter-process relationship among the teams in the context of the Project Development Process.

Simple random sampling technique was used to select the key informants since it is free from subjectivity and free from personal error, provides appropriate data for one’s purpose, the

observations of the sample can be used for inferential purpose. It is also believed every one contributes to ethical practices or their lack of within the office. There are 300 Engineers currently working at ERA head office.

The researcher chose to use the following formula to calculate the sample size.

$n= p (100-p) z^2/E^2$

Where, n is the required sample size,

P is the percentage occurrence of a state or condition,

E is the percentage maximum error required, and

Z corresponds to the required level of confidence.

In social research, a margin of error of 5% is permissible. The normal degrees of confidence employed in management research are 95 percent. (0.05: a Z value equal to 1.96) or 99 percent (0.01: Z=2.57).

According to (Bartlett, Kotrlik, & Higgins, 2001), researchers should adopt a 50% estimate of P because this will maximize variance and provide the largest sample size. Based on the table describing sample size derived from desired accuracy provided by Gill, & Johnson, (2002), for a given population size, Variance of the population P=50%, Confidence level 95%, and a 5% Margin of error; the appropriate sample size for a population size of 300 is, 168.

3.2.3. Data Measurement

The scale of measurement must be known in order to determine the right method of analysis. There is/are an acceptable method/s for each sort of measurement that can be used and others that cannot. Ordinal scales were employed in this study. Ordinal scale is a ranking or rating system that uses integers in ascending or descending order to rank or rate data. The significant numbers do not show that the interval between scales is equal, nor do they represent absolute quantities. They're just labels with numbers on them (Naoum, 1998). Based on Likert scale as shown:

Table 1: Likert Scale Numerical Labels

1	Item	5	4	3	2	1
	Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2	Item	5	4	3	2	1
	Scale	Very High	High	Moderate	Low	Very Low

Source: Naoum, 1998

3.3. Method of Data Analysis

The method of data analysis used for this study is inferential statistics method (effect-analysis)to analyze the information in the questionnaire supplied by the respondents so as to allow accuracy and easy decoding of information.

The researcher would utilize statistical tools such as: Factor Analysis (Type exploratory factor analysis), Cronbach's Coefficient Alpha for Reliability, Frequency and Descriptive Analysis and Nonparametric Tests (Sign test) for data analysis.

A. Validity of Questionnaire: this relates to how well an instrument measures what it was supposed to measure. Validity is defined by a variety of factors and methods of evaluation. The questionnaire's validity has been proven to be significant (i.e. sig.≤0.005)by using bivariate correlation on SPSS. The SPSS output table is provided in the appendix.

B. Reliability of the Research: refers to the degree of consistency with which the research evaluates the attribute that the research is designed to evaluate (Polit& Hunger, 1985). The lower the fluctuation in repeated measurements of a feature, the more reliable the instrument. The stability, consistency, and dependability of a measurement tool.

- **Cronbach's Coefficient Alpha:** is used to determine the questionnaire's reliability between each field and the mean of the entire questionnaire's fields. Cronbach's coefficient alpha values typically

range from 0.0 to +1.0, with higher values indicating greater internal consistency. For each field of the questionnaire, the Cronbach's coefficient alpha must be calculated.

Table 2: Cronbach's Alpha for each field of the questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
.881	47

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	133.2903	257.072	-.009	.883
VAR00002	133.4194	249.520	.279	.879
VAR00003	133.3871	252.303	.132	.882
VAR00004	133.4194	244.072	.368	.878
VAR00005	133.2258	256.457	.032	.882
VAR00006	133.8710	240.891	.511	.875
VAR00007	133.4194	240.569	.605	.874
VAR00008	133.5161	240.316	.585	.874
VAR00009	133.2903	249.418	.253	.880
VAR00010	133.6774	249.625	.223	.880
VAR00011	133.3871	250.098	.323	.879
VAR00012	133.5484	241.481	.588	.875
VAR00013	133.6452	240.814	.544	.875
VAR00014	133.9355	235.844	.715	.872
VAR00015	133.9032	238.077	.549	.874
VAR00016	133.8710	245.302	.363	.878
VAR00017	133.7097	250.586	.283	.879
VAR00018	133.4516	251.211	.236	.880
VAR00019	133.6774	243.009	.532	.875
VAR00020	133.9677	241.069	.531	.875
VAR00021	133.9032	250.272	.209	.881
VAR00022	133.7097	254.477	.064	.883
VAR00023	133.7097	241.375	.540	.875
VAR00024	133.8710	240.113	.537	.875
VAR00025	133.9032	242.423	.443	.877
VAR00026	134.3548	238.479	.509	.875
VAR00027	134.0645	240.774	.434	.877
VAR00028	134.1935	227.379	.646	.872
VAR00029	133.7742	242.122	.374	.878

VAR00030	134.1290	236.999	.511	.875
VAR00031	133.5806	253.023	.137	.881
VAR00032	134.0645	242.655	.323	.879
VAR00033	134.0968	239.828	.428	.877
VAR00034	134.3548	237.246	.467	.876
VAR00035	136.4194	254.904	.255	.880
VAR00036	136.5484	252.249	.374	.879
VAR00037	134.3548	251.906	.227	.880
VAR00038	136.3226	257.409	.000	.881
VAR00039	136.4839	254.651	.223	.880
VAR00040	136.5161	252.186	.403	.879
VAR00041	136.3548	257.679	-.053	.881
VAR00042	136.7419	251.155	.383	.878
VAR00043	133.7097	258.240	-.060	.883
VAR00044	136.5161	257.051	.016	.881
VAR00045	136.6452	253.463	.250	.880
VAR00046	136.3871	258.141	-.100	.882
VAR00047	136.5161	255.040	.175	.880

Source: SPSS Output

Cronbach's Alpha values are displayed for each field of the questionnaire as well as the overall questionnaire in Table (2). The fields' Cronbach's Alpha ratings varied from 0.872 to 0.883. This range is considered high, and the result demonstrates that each of the questionnaire's fields is reliable. Cronbach's Alpha for the entire questionnaire is 0.881, indicating that the whole thing is pretty reliable.

As a result, the researcher determined that the questionnaire was valid, reliable, and capable of being circulated to a representative sample of the population.

C. Factor Analysis: is a statistical method of condensing a large number of variables or factors into a smaller number of variables or factors. It's used to condense a large number of interconnected variables into a more manageable number. To determine if data are predicted to factor, the Kaiser- Meyer-Olkin (KMO) sample adequacy measure is utilized. To apply factor analysis, Kaiser (1974) suggested accepting scores for the KMO test that are more than 0.5. Bartlett's test of sphericity is used to test the null hypothesis that the original correlation matrix is an identity matrix, indicating that the factor model is wrong. A significant test indicates that the correlation matrix is not an identity matrix, indicating that there are some links between the variables that should be considered in the study, such as Principal Component Analysis.

Research Ethics

All of the participants of this research have given their full consent and were more than willing to share any information they have on the topic at hand, since the objective of the research has been clear to them while guarantying their full anonymity.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

This chapter presents the findings of a field survey in which 186 questionnaires were returned out of a total of 250 questionnaires distributed.

Table 3: Response Rate

Issued Questionnaire	Returned Questionnaire	Response Rate
250	186	$\frac{186}{250} * 100\% = 74.4\%$

Source: Own data

4.1. Background of the Respondents

The demographic profile of the respondents was provided in the following section. The gender, age, educational background, years of experience in construction projects, years of employment with the company, and position of the respondents are all represented in the personal profile of the respondents.

Table 4: Respondent's Profile

General Information	Frequency	Percentage
Gender		
Male	126	67.7
Female	60	32.3
Age		
18-25	18	9.7
26-33	108	58.1
34-40	36	19.4
Above 40	24	12.9
Educational Background		
Diploma	0	0
BSC/BA	114	61.3
MBA/MSC	66	35.5
PHD	6	3.2

Years of Experience in Construction Projects		
0-2	30	16.1
2-5	84	45.2
6-10	42	22.6
Above 10	30	16.1
Years of employment in the organization		
Less than 2	30	16.1
2-5	84	45.2
6-10	42	22.6
More than 10	30	16.1
Position		
Office Engineer	36	19.6
Resident Engineer	24	12.9
Project Manager	36	19.6
Contract Administration	42	22.6
Material Engineer	24	12.9
Other	24	12.9

Source: Questionnaire

Gender: Table 4 shows that male respondents made up 67.7% (126) of the total, almost twice as many as female respondents (32.3%), (60). Even though there was unequal gender representation in the organization, these distributions revealed that both male and female were represented in the study.

Age: Table 4 shows that 58.1 percent (108) of the respondents are between the ages of 26 and 33, 19.4 percent (36) of the respondents are between the ages of 34 and 40, 12.9 percent (24) of the respondents are above 40, and 9.7 percent (18) of the respondents are between the ages of 18 and 25. As a result, the majority of the current sample employees are under the age of 40 and relatively young in order to provide accurate information on the present situation.

Educational Background: Table 4 shows that 3.2 percent (6) of the respondents have a PhD, 35.5 percent (66) have an MBA/MSC, 61.3 percent (114) have a BSC/BA, and none have a Diploma. This indicates that the respondents' qualifications qualify them to provide useful feedback. This result suggests that the business has skilled personnel, as well as an increase in the study's response rate.

Years of Experience in Construction Projects: Table 4 shows that 16.1 percent (30) of respondents have less than two years of experience in construction projects, 45.2 percent (84) have two to five years of experience, 22.6 percent (42) have six to ten years of experience, and 16.1 percent (30) have more than ten years of experience in construction projects.

Years of employment in the organization: Table 4 shows that 16.1 percent (30) of respondents have worked in the organization for less than two years, 45.2 percent (84) have worked in the organization for two to five years, 22.6 percent (42) have worked in the organization for six to ten years, and 16.1 percent (30) have worked in the organization for more than ten years.

Respondents' Position: Table 4 reveals that 19.6% (36) of the respondents were office engineers, 12.9 percent (24) were resident engineers, 19.6% (36) were project managers, 22.6 percent (42) were contract engineers, 12.9 percent (24) were material engineers, and 12.9 percent (24) were other. It is obvious that more than half of the respondents have crucial roles in the construction industry.

4.2. Exploratory Factor Analysis

The results of exploratory factor analysis were presented in this section for:

- Variables contributing to acting unethically,
- The most common form of unethical behavior in construction industry

A. Variables contributing to acting unethically

Research objective: to identify the key factors leading to unethical practices in the projects in Ethiopian Roads Administration.

Table 5: KMO and Bartlett's Test for Variables contributing to acting unethically

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.650
Bartlett's Test of Sphericity	Approx. Chi-Square	550.268
	Df	45
	Sig.	.000

Source: SPSS output

The statistical tool for the social sciences (SPSS), IBM Statistics 20, was used to check questionnaire replies. The acceptability of the data was first determined using a sample adequacy metric. Table (5) demonstrates that the outcome of KMO = 0.650 is excellent;

therefore, we may be convinced that factor analysis is adequate for this data. The p-value was calculated using Chi-Square and df to determine whether or not factor analysis could be performed. Bartlett's test is extremely significant (P-value 0.001) for these data, hence exploratory component analysis is recommended.

Table 6: Total Variance for Variables contributing to acting unethically

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.317	33.170	33.170	3.317	33.170	33.170	2.938	29.379	29.379
2	1.529	15.291	48.461	1.529	15.291	48.461	1.672	16.718	46.098
3	1.426	14.260	62.721	1.426	14.260	62.721	1.662	16.623	62.721
4	.929	9.286	72.007						
5	.649	6.491	78.498						
6	.591	5.914	84.412						
7	.507	5.065	89.478						
8	.444	4.438	93.916						
9	.406	4.055	97.971						
10	.203	2.029	100.000						

Source: SPSS output, Extraction Method: Principal Component Analysis.

Table (6) shows the eigenvalues associated with each linear attribute prior to extraction, after extraction, and after rotation. Before extracting the data, SPSS identified ten linear attributes (components): personal behavior, excessive love for money (greed), professional indiscipline, project location (border area), lack of strict contractual laws, economic downturn, delayed worker salaries, project complexity and size, non-availability of raw materials in the market freely, and overlapping personal and professional ethics.

The eigenvalues for each attribute show the variation explained by the linear attributes, and SPSS also presents the eigenvalues as a percentage of the variance explained. The percentage of variance for the factors SPSS obtained by lowering the characteristics is shown by column rotation sums of squared loading (so, factor 1 named external circumstances explains 29.379 percent of total variance).

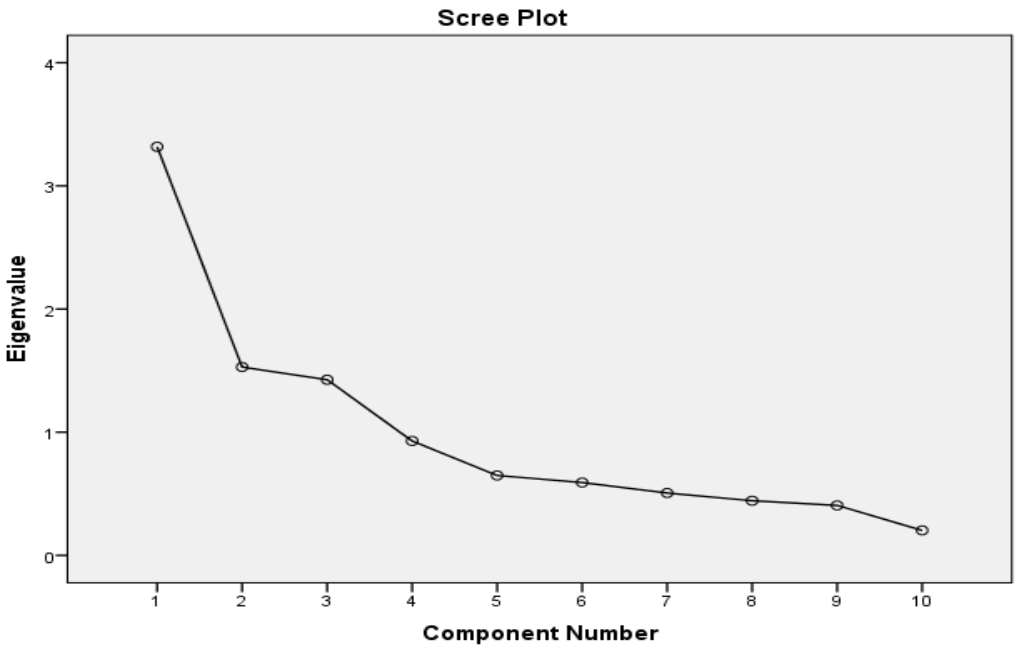


Figure 3: Scree plot for the Variables contributing to acting unethically components

Using a principal component analysis, the presence of three separate variables was revealed. A varimax rotation, a method of exploratory factor analysis, was also used to produce interpretable data from these factors. After extraction, factor 1 explains 29.379 percent of variation, compared to 16.718 percent for factor 2 and 16.623 percent for factor 3.It is evident that the first few components (particularly attribute 1) explain a significant amount of variance, but following attributes explain just a minor amount of variance. Because the regression line is harsh up to component 3 and then becomes virtually straight, Figure (3) illustrates the scree plot, which indicates three elements: external circumstances, personal characteristics, and poor control.

Factor Interpretation for Variables contributing to acting unethically

This section outlined the interpretation of factor analysis for each group's factors, as well as a list of the factors and their qualities as determined by SPSS.

Table 7: Factor profile for variables contributing to acting unethically

Factor Name	Factor Loading	% Variance
Factor 1: External Circumstances		**29.379**
Location of the project (boarder area)	0.587	
Economic downturn	0.831	
Delayed salaries of workers	0.731	
Complexity and Size of the project	0.753	
Non-availability of raw materials in market freely	0.809	
Factor 2: Personal Characteristics		**16.718**
Personal behavior	0.643	
Excessive love for money (greed)	0.809	
Professional indiscipline	0.698	
Factor 3: Poor Control		**16.623**
Lack of strict contractual laws	0.848	
Overlapping between personal and professional ethics	0.837	

Source: SPSS output

Factor 1: external circumstances, factor 2: Personal characteristics and factor 3: poor control accounted for approximately 62.72 percent of the overall variance. Table (7) shows the three-factor solution with loading scores for Factor 1: External circumstances (Variance = 29.379 percent, Eigenvalue = 3.317), Factor 2: Personal characteristics (Variance = 16.718 percent, Eigenvalue = 1.529), and Factor 3: Poor control (Variance = 16.623 percent, Eigenvalue = 1.426).

To determine the underlying characteristics, the findings were evaluated and numbered in descending order of the degree of variance. As indicated in table (7), each component was subjectively categorized based on a set of individual traits.

External circumstances, the first factor, accounted for 29.379 percent of the total variation and have five features. The majority of attributes had a factor loading of 0.587 or higher.

Personal characteristics, the second component, accounted for 16.718 percent of total variation and consist of three qualities representing respondents' personal traits with a moderately high factor loading (0.643).

Proper control, the third component, accounted for 16.623 percent of the total variance and consists of two traits with a high factor loading (0.837).

Table 8: Relative importance index and rank for variables contributing to acting unethically

Item	Mean	RII (%)	P-Value (sig)	Rank
Factor 1: External Circumstances				
Economic downturn	3.774	75.484	0.000	1
Delayed salaries of workers	3.677	73.548	0.000	2
Location of the project (boarder area)	3.452	69.032	0.000	3
Non-availability of raw materials in market freely	3.419	68.387	0.000	4
Complexity and Size of the project	3.387	67.742	0.000	5
Factor 2: Personal Characteristics				
Professional indiscipline	4.097	81.935	0.000	1
Personal behavior	4.032	80.645	0.000	2
Excessive love for money (greed)	3.903	78.065	0.000	3
Factor 3: Poor Control				
Lack of strict contractual laws	3.645	72.903	0.000	1
Overlapping between personal and professional ethics	3.613	72.258	0.000	2

Source: SPSS output

B. The most common form of unethical behavior in construction industry

***Research objective*:** To determine the most unethical behavior among Ethiopian Roads Administration professionals working on construction projects.

Table 9: KMO and Bartlett's test for most common form of unethical behavior in construction industry

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.778
Bartlett's Test of Sphericity	Approx. Chi-Square	1894.420
	Df	78
	Sig.	.000

Source: SPSS output

To reduce the 13 qualities to a small group, SPSS, KMO, and Bartlett's Test of Sphericity were used to check if factor analysis could be performed, as well as KMO and Bartlett's Test of Sphericity.KMO = 0.778, which is excellent, suggests that factor analysis is appropriate for this data. Given the strong significance of Bartlett's test (P-value 0.001), exploratory factor analysis is recommended.

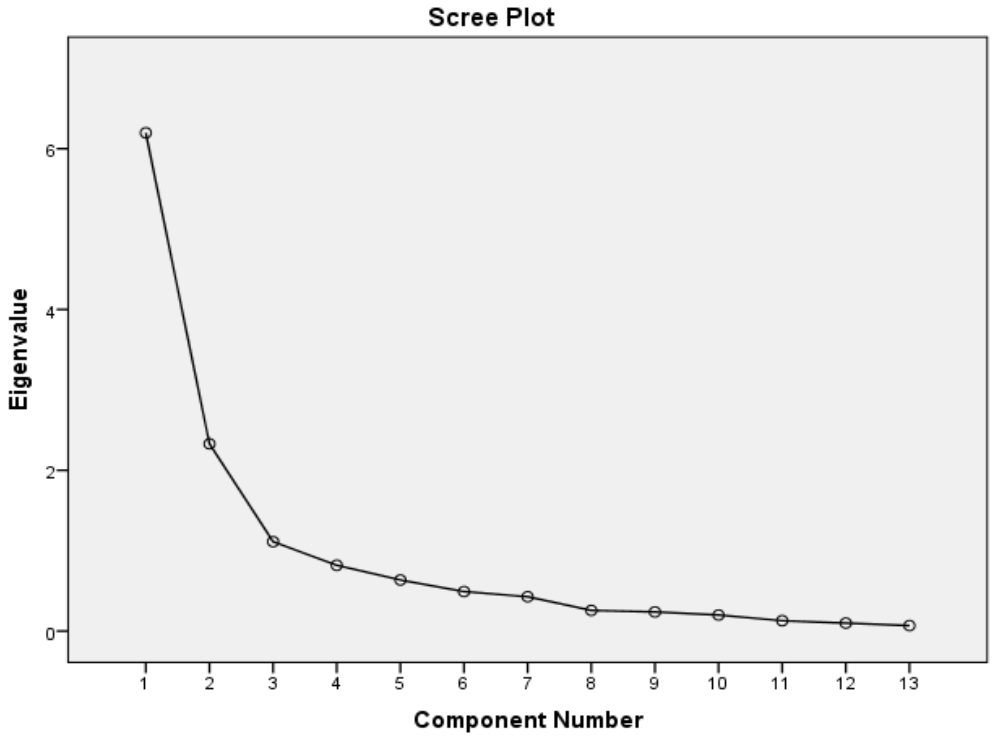
Table 10: Total variance for the most common form of unethical behavior in construction industry

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.197	47.671	47.671	6.197	47.671	47.671	6.129	47.146	47.146
2	2.329	17.913	65.584	2.329	17.913	65.584	1.943	14.949	62.095
3	1.112	8.551	74.135	1.112	8.551	74.135	1.565	12.040	74.135
4	.818	6.294	80.429						
5	.636	4.891	85.320						
6	.491	3.778	89.098						
7	.427	3.283	92.380						
8	.257	1.977	94.358						
9	.238	1.831	96.189						
10	.199	1.534	97.722						
11	.129	.996	98.718						
12	.099	.762	99.480						
13	.068	.520	100.000						

Source: SPSS output, Extraction Method: Principal Component Analysis.

Table (10) shows the eigenvalues associated with each linear attribute prior to extraction, after extraction, and after rotation. Before extracting the data, SPSS identified thirteen linear attributes (components): the degree of unethical behavior in the construction industry as a whole, desire to engage in unethical behavior while performing professional duties, professionals do not treat employees fairly, illegal award to contractor, underbidding, individuals or organizations engaging in the work without adequate qualification, experience, or training to do the job, leaking information about the project budget for some contractors, and employing individuals or organizations without adequate qualification, experience, or training.

Figure 4: Scree plot for most common form of unethical behavior in construction industry



Source: SPSS output

Using a principal component analysis, the presence of three separate variables was revealed. A varimax rotation, a method of exploratory factor analysis, was also used to produce interpretable data from these factors. After extraction, factor 1 account for 47.146 percent of variation, compared to 14.949 percent and 12.040 percent for factor 3.It is evident that the first few components (particularly attribute 1) explain a significant amount of variance, but following attributes explain just a minor amount of variance. Because the regression line is harsh up to component 3 and then becomes virtually straight, Figure (4) illustrates the scree plot, which indicates three elements: unethical professional conduct, lack of professional dedication, and lack of professional devotion.

Factor Interpretation for the most common form of unethical behavior in construction industry

This section outlined the interpretation of factor analysis for each group's factors, as well as a list of the factors and their qualities as determined by SPSS.

Table 11: Factor profile for the most common form of unethical behavior in construction industry

Factor Name	Factor Loading	% Variance
Factor 1: Unethical professional conduct		**47.146**
The degree of unethical behavior in the construction industry as a whole	0.765	
Desire to engage in unethical behavior while performing professional duties.	0.777	
Illegal award to contractor	0.789	
Under bidding	0.772	
Individuals or organizations undertaking work without adequate qualification, experience or training.	0.869	
Leaking information about the project budget for some contractors	0.752	
Employers try to compel their staff to engage in unethical behavior	0.878	
Make a quality compromise or raise the price	0.891	
Tax avoidance in the project	0.899	
Factor 2: Lack of professional dedication		**14.949**
Professional's commitment conflicting with client's Interest	0.921	
Professionals not safeguarding the client's belongings from going missing or being stolen	0.843	
Factor 3: Lack of professional devotion		**12.04**
Professionals do not treat employees fairly	0.744	
Professionals are devoted to their superiors and management	0.851	

Source: SPSS output

Factor 1: unethical professional conduct, factor 2: lack of professional dedication, and factor 3: lack of professional devotion accounted for approximately 74.135 percent of the total variance. The number of attributes loaded on each component was then determined by examining the factors. Factor 1: Unethical professional conduct (Variance = 47.146 percent, Eigenvalue = 6.197), Factor 2: Lack of professional dedication (Variance = 14.949 percent, Eigenvalue = 2.329), and Factor 3: Lack of professional devotion (Variance = 12.040 percent, Eigenvalue = 1.112) are presented in table (11) with their respective loading scores.

To determine the underlying features, the findings were evaluated and numbered in descending order of the degree of variance. As indicated in table (11), each component was subjectively categorized based on a set of individual traits.

The first factor, unethical professional conduct, is made up of 9 attributes and accounted for 47.146 percent of the total variation. The majority of attributes had a rather high factor loading of ($\geq$0.5752).

The second element, a lack of professional dedication, accounted for 14.949 percent of the total variation and consists of two variables that indicate the respondents' commitment, with a factor loading of ≥0.843.

The third component, a lack of professional devotion, accounted for 12.040 percent of the total variance and consists of two qualities that indicate the respondents' loyalty, each with a factor loading of ≥0.744.

Table 12:Relative importance index and rank for the most common form of unethical behavior in construction industry

Item	Mean	RII (%)	P-Value (sig)	Rank
Factor 1: Unethical professional conduct				
The degree of unethical behavior in the construction industry as a whole	3.871	77.419	0.000*	1
Desire to engage in unethical behavior while performing professional duties.	3.613	72.258	0.000*	2
Illegal award to contractor	3.548	70.698	0.000*	3
Under bidding	3.367	67.333	0.000*	4
Individuals or organizations undertaking work without adequate qualification, experience or training.	3.258	65.161	0.000*	5
Leaking information about the project budget for some contractors	3.226	64.516	0.000*	6
Employers try to compel their staff to engage in unethical behavior	3.194	63.871	0.000*	7
Make a quality compromise or raise the price	3.067	61.333	0.000*	8
Tax avoidance in the project	2.968	59.355	0.000*	9
Factor 2: Lack of professional dedication				
Professional's commitment conflicting with client's Interest	3.645	72.903	0.000*	1
Professionals not safeguarding the client's belongings from going missing or being stolen	3.613	72.258	0.000*	2
Factor 3: Lack of professional devotion				
Professionals do not treat employees fairly	3.419	68.387	0.000*	1
Professionals are devoted to their superiors and management	3.419	68.387	0.000*	1*

Source: SPSS output

4.3. The implications of unethical conduct on the construction industry

Research objective: Examine the effect of unethical practices on the construction industry and what may be done to improve it.

I. The economic effect of unethical behavior on a construction project

	Yes		No	
	Frequency	Percent	Frequency	Percent
There is a positive relationship between ethical behavior and the organization's ultimate revenue growth?	168	90.3	18	9.7
There is a positive relationship between ethical behavior and the company's short- term cash flow?	144	77.4	42	22.6

Source: SPSS output

Table 13: Economic effect of unethical behavior on a construction project

Table 13 shows that 90.3 percent (168) of the entire sample agreed that ethical behavior has a positive link with the organization's ultimate revenue growth, and 77.4 percent (144) agree that ethical behavior has a positive association with the company's short-term cash flow.

Organization's ultimate revenue growth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.587[a]	.345	.334	.24554

a. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 14: Regression model summary for the organization's ultimate revenue growth

R^2=0.35; taken as a set, table (14) shows that the predictors lack of professional devotion, unethical professional conduct, and lack of professional dedication account for 35% of the variance in long-term profitability of the company.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.589	3	1.863	30.901	.000[b]
	Residual	10.611	176	.060		
	Total	16.200	179			

a. Dependent Variable: **Organization's ultimate revenue growth**

b. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 15: ANOVA table

In table (15) is a test of whether the above presented R^2 is significantly greater than zero ($p<0.05$). Meaning that the predictors are able to account for a significant amount of variance in long-term profitability of the company. In other words, the overall regression model was statistically significant, $F(3,176) = 30.901$, $p<0.001$, $R^2=0.35$.

Short-term cash flow

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.622[a]	.387	.377	.33486

a. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 16: Regression model summary for short-term cash flow

$R^2=0.40$; taken as a set, table (16) shows that the predictors lack of professional devotion, unethical professional conduct, and lack of professional dedication account for 40% of the variance in short-term cash flow of the company.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.465	3	4.155	37.057	.000[b]
	Residual	19.735	176	.112		
	Total	32.200	179			

a. Dependent Variable: Short- term cash flow of the company

b. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 17: ANOVA table

In table (17) is a test of whether the above presented R^2 is significantly greater than zero ($p<0.05$). Meaning that the predictors are able to account for a significant amount of variance in long-term profitability of the company. In other words, the overall regression model was statistically significant, $F(3,176) = 37.057$, $p<0.001$, $R^2=0.40$.This result leads to the conclusion that improving ethical behavior will boost profits.

I. Effect of unethical behavior on project quality

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Quality and production efficiency in the construction industry	186	1.00	1.00	1.0000	.00000
Valid N (listwise)	186				

Source: SPSS output

Table 18: Effect of unethical behavior on project quality

Table 18 reveals that all of the respondents felt that unethical practices in the construction industry have an impact on quality and productivity.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.653[a]	.426	.416	.54110

a. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 19: Regression model summary for quality of Ethiopian construction industry

R^2=0.43; taken as a set, table (19) shows that the predictors lack of professional devotion, unethical professional conduct, and lack of professional dedication account for 43% of the variance in quality of Ethiopian construction industry.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	38.268	3	12.756	43.567	.000[b]
	Residual	51.532	176	.293		
	Total	89.800	179			

a. Dependent Variable: Quality of Ethiopian construction industry

b. Predictors: (Constant), Lack of professional dedication, Unethical professional conduct, Lack of professional devotion

Source: SPSS output

Table 20: ANOVA table

In table (20) is a test of whether the above presented R^2 is significantly greater than zero ($p<0.05$). Meaning that the predictors are able to account for a significant amount of variance in long-term profitability of the company. In other words, the overall regression model was statistically significant, $F(3,176) = 43.567$, $p<0.001$, $R^2=0.43$.

The quality of projects is very important aspect, and unethical behavior decreases the quality of a project. This indicates that improving unethical behavior should be prioritized in order to improve project quality.

II. Ethics in the workplace

	Yes		No	
	Frequency	Percent	Frequency	Percent
A profession can lead to unethical behavior	156	83.9	30.0	16.1
“Personal ethics” is trumping "corporate ethics" in ERA construction projects in	150	80.6	36.0	19.4
Enhancing professional ethics could lead to better ethical performance in ERA construction projects	180	96.8	6.0	3.2
Special items are added outside the legal requirements for contracting	108	58.1	78.0	41.9

Source: SPSS output

Table 21: Organization ethics

Table 21 demonstrated ethics in the workplace, where 83.9 percent (156) of those surveyed agreed that a profession can lead to unethical behavior, while 80.6 percent (150) said that personal ethics are trumping corporate ethics. According to the results, 96.8% of respondents believe that enhancing professional ethics could lead to better ethical performance in ERA construction projects, and 58.1 percent (108) of respondents said their organization adds unique things to contracts that aren't required by law.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
What is the level of ethical awareness among your company’s employees?	186	3.00	5.00	3.6129	.65813
Valid N (listwise)	186				

Source: SPSS output

Table 22: Level of ethical awareness

Table 22 reveals that more than half of respondents rated their employees' ethical awareness as medium, implying that ethical behavior can be improved to reasonable standards.

III. Strategies to improve ethical behavior

	Yes		No	
	Frequency	Percent	Frequency	Percent
Presence of an ethical code of conduct in your Organization	150	81	36	19
Applying this ethical code of conduct	126	68	48	26
Strengthening professional ethics to enhance ethical performance in ERA construction projects	174	94	12	7
Reporting witnessed unethical behavior to top management	150	81	36	19

Source: SPSS output

Table 23: Strategies to improve ethical behavior

Table 23 illustrated that 81% (150) of respondents have acknowledged that their organization does have an ethical code of conduct, where as 19% (36)of respondents said the organization does not have an ethical code of conduct. 68% (126) of the respondents agreed that this code is applied, while 26% (48) of the respondents said it was not applied. This shows that there is a major gap in the communication and application of the ethical code of conduct in ERA.94% (174) respondents think Strengthening professional ethics could enhance ethical performance in ERA construction projects this is compatible with Olusegun et al. (2011), Azhar et al. (2011), Hassim et al. (2010), Mishra and Mittal (2011) and FIM, (2004) and CIOB, (2006). 81% (150)respondents believed in reporting any unethical behavior they might witness to top management, which is a great stepping stone to improving ethical practices all around.

4.4. Discussion from analysis

This chapter describes the findings of a field study that included 186 questionnaires. The first section contains the respondents' profiles as well as any necessary information. This section primarily serves to provide basic information on the respondents, such as their age, gender, role, years of experience, years with the organization, and qualifications.

The second section focuses on fulfilling the research's objectives. The goal of these aims is to look at the professional ethics of the construction industry. This section illustrated the results

of factor analysis for variables contributing to acting unethically and the most common form of unethical behavior in the construction industry, followed by factor interpretation for both and assigning a relative importance index for each.

The third section illustrated the implications of unethical behavior on the construction industry, ethics in the work place, and strategies to improve ethical behavior.

From the study, the following can be concluded:

Objective one: Investigate the variables contributing to acting unethically in ERA projects

Ten elements were divided into three groups using an exploratory factor analysis approach: (1) external circumstances, (2) personal characteristics, and (3) poor control, "*economic downturn", "delayed salaries of workers", "location of the project (boarder area)*"; for second group, *"professional indiscipline", "personal behavior", "excessive love for money (greed)";* for the third group, *"lack of strict contractual laws", "overlapping between personal and professional ethics",* are the main variables contributing to acting unethically.

Objective two: identify the most common form of unethical behavior among professionals observed in Ethiopian construction industry.

Thirteen factors were classified into three groups using a factor analysis approach: (1) unethical professional conduct, (2) lack of professional's dedication, (3) lack of professional's devotion. It is concluded that for the first group, "*the degree of unethical behavior in the construction industry as a whole", "desire to engage in unethical behavior while performing professional duties", "individuals or organizations engaging in the work without the necessary qualification, experience or training", "under bidding*"; for second group, *"professional's commitment conflicting with clients interest", "professionals not safeguarding the client's belongings from going missing or being stolen";* for the third group, *"professionals do not treat employees fairly", "professionals are devoted to their superiors and management",* are the most common form of unethical behaviors observed among professionals in Ethiopian construction industry.

Objective three: evaluate the implication of unethical behavior on project cost and quality in the construction industry, as well as potential improvements.

According to the research, unethical behavior has a negative influence on cost since it lowers the profitability of the business, as shown in tables 14 and 15. It also has an impact on project quality, as it has been observed that the quality of ERA projects varies from moderate to low;

therefore, in order to improve Ethiopian project quality, ethics awareness must be improved; as suggested by respondents, harsher penalties, the establishment of a code of ethics, and ethical awareness are seen to be the most effective means of monitoring unethical behavior in the construction industry.

In general, the above results gave us a clear picture of the extent of severity of professional Ethics, Unethical practices and behavior related to the construction industry which aligns with the findings of Charles Vee and Martin Skitmore's findings on the paper titled, "***Professional Ethics in the Construction Industry"*** that concluded 93% of the respondents agreed that "Business Ethics" should be driven or governed by "Personal Ethics", with 84% of respondents stating that a balance of both the requirements of the client and the impact on the public should be maintained. No respondents were aware of any cases of employers attempting to force their employees to initiate, or participate in, unethical conduct. Despite this, all the respondents had witnessed or experienced some degree of unethical conduct, in the form of unfair conduct (81%), negligence (67%), conflict of interest (48%), collusive tendering (44%), fraud (35%), confidentiality and propriety breach (32%), bribery(26%) and violation of environmental ethics (20%).

Current literature has highlighted the growing demand for good ethical practice and professional behavior in all forms of business, including the construction industry. The objective of this survey was to provide an indication of the current trends in the industry though a questionnaire survey of a sample of professionals in an Ethiopian construction industry - the choice of location being due to logistical, time and financial constraints rather than any expectation of atypical levels of un ethical practices.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

In all sectors of business, including the construction industry, the literature has underlined the growing necessity for good ethical conduct and professional behavior. The primary purpose of this research is to employ a questionnaire survey to investigate existing unethical practices among Ethiopian construction professionals. This chapter contains the findings and recommendations for improving techniques for resolving the challenges that have arisen in industry. The respondents' beliefs and values were extracted using a structural method in the study. The lack of cross-checking to confirm that the respondents' behaviors are consistent with their reporting is, of course, the source of uncertainty in this form of research.

Even though the company has its own ethical codes of conduct and its employees are members of professional associations that encourage good ethics, the survey showed that preventing unethical behavior is challenging. Regardless of professional affiliation, all participants must share a common sense of ethical and professional standards. Even the ethically decent will struggle to sustain moral standards as long as there is a lack of professionalism and ethics.

In the preceding chapter, major conclusions were given after analyzing data obtained from primary and secondary sources. The overall conclusions and recommendations based on the research findings are presented in this chapter. The study's findings revealed that Ethiopia's construction ethics problem has a lot of space for improvement. The primary purpose of this study is to investigate present unethical practices in the construction sector in ERA projects, as well as the factors that contribute to unethical behavior in construction projects.

This study had three main objectives, all of which were met through the use of survey techniques to collect data and detailed analysis of the survey results. The initial goal was to investigate the key variables that contribute to acting unethically in project Ethiopian construction industry, the second goal was to find out what the most common form of unethical behavior among professionals in the Ethiopian construction industry and the final goal was to assess the implications of unethical behavior on project cost and quality in the construction industry, as well as potential improvements. According to the findings of the questionnaire, Ethiopia's construction industry has ethical issues, and unethical behaviors do exist in the profession.

As a conclusion to this study, while simply having an ethical code of conduct in the construction business will not limit or eliminate unethical actions, effectively conveying it and putting it into practice will considerably improve the sector and its development. In order to accomplish their duties, professionals must possess particular features and assume certain obligations. When things get rough, professionals with a decent character and a full set of responsibilities will always understand what to do and will make every effort to avoid unethical practices. It is necessary to undertake self-development training and motivation on a regular basis in order to comprehend the professional's obligations and identity as an ethical professional. Because it is hard to check behavior on an individual basis due to the industry's heterogeneity, the most effective technique for changing behavior is to generate a favorable culture inside the company. They can't change practices on their own, but greater study could help them do so.

5.2. Recommendations

Recommendations set in this study are more integrative approaches that any organization should include to enhance ethics. First placing experienced and knowledgeable executives in the engineering and design department is important so that they would enhance communication between all parties and employees. All involved parties and employees should plan adequately before works start on site or bureau. Developing and forecasting unforeseen situations that would results in unethical work culture should be set prior to job or work assignment. Supervise the works with an experienced and dedicated supervisor and if the works were accomplished successfully recognize and reward employees so that their ethics would be improved and feel motivated.

The importance of ethics in the construction sector cannot be overstated. Therefore, in order to reduce the prevalence of unethical behavior, the best recommendation is to create an effective and widely communicated ethical code for the construction industry. To help communicate this information and establish a successful track record all through the entire project for all upcoming projects, this code of ethics will reflect fairness to the contractor, client, and all construction operations. For all professionals, a criterion for measuring professional ethics should be developed to guarantee that every professional uses the same methodology or approach in their performance and compliance, so that not only experts but also the average person is aware of the experts' ethical practices. To overcome the moral challenge, the Contractors Association, Engineering Syndicate, and other professional

associations should work with the government. Professional misconduct can be reduced if more people are engaged in seriously addressing the problem.

To ensure highest level of ethical processes, every project team should include a local quality control group. The Ethiopian contractor union's performance should be scrutinized. Governments can handle construction materials effectively and retain them clear of the implications of unethical acts by controlling local construction materials/products of international standards and quality.

In order to reduce variables contributing to acting unethically it is vital to establish a system to ensure that professionals have the necessary traits, tasks, attributes, and ethical conduct at all times. Two tactics that can be used to ensure that professionals are always aware of ethical behavior in their work are encouragement and education. In the case of recurrent infractions, effective consequences such as penalties or even license termination may be applied.

Recommendation for Further Study:

- Since this study concentrated on owner's professionals, it is proposed that future study focus on contractors professionals. This will facilitate the collection of a broader range of data as well as the representation of a greater number of bodies involved in the construction process.
- To gather data using a variety of methods. In this study, only a questionnaire survey is used. If several approaches are applied, the outcomes will be more versatile and precise data. Other procedures, such as interviews and data comparisons, should be used.

Finally, in order to adequately address this critical issue, research and development should be structured both in the private sector and by the government.

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Appendix

Questionnaire

Dear respondent

As part of partial fulfillment of the requirement for master's program, MBA in Management from Addis Ababa University College of Business and Economics, I am undertaking a research study titled, "***Analysis of Professional ethics in Ethiopian construction industry: the case of Ethiopian Roads Administration***". The aim of this research is to investigate the causes of the problems and to provide recommendations towards addressing the problem. It is my belief that the research, in addition to its academic significance to the researcher, will have a practical significance for the development of the Ethiopian Construction sector and initiates further research on the topic. Hence, I kindly request professionals to provide me their cooperation by completing this questionnaire.

Your response will be kept strictly confidential. Only my academic supervisor and I will have access to the information you give me and will be exclusively used for the research. Therefore, I sincerely request you to complete the questionnaire within a week time of your receipt of it in order to enable me to finalize the research as per the deadline.

Thank you very much for your time and cooperation, and looking forward to receiving your response.

Part 1: Personal Data

The questions below are related to your organization and yourself. Please indicate your response by ticking (X or √) the appropriate box (es) or by filling the blank spaces provided, as appropriate**.**

1. Gender: Male ☐ Female ☐

2. Age: 18-25 ☐ 26-30 ☐ 34-40 ☐ above 40 ☐

3. Educational Background:

Diploma ☐ BSC /BA ☐ MBA/ MSC ☐ PHD ☐

4. Years of experience in construction projects:

0- 2 years ☐ 2-5 years ☐ 6-10 years ☐ above 10 ☐

5. Years of employment in the organization

Less than 2 years ☐ 2- 5years ☐ 6-10 years ☐ More than 10 Years ☐

6. Position:

Office Engineer ☐ Resident Engineer ☐ Project Manager ☐

Contract Engineer ☐ Material Engineer ☐ Other ☐

Part 2: Variables contributing to acting unethically

A. Do you agree to consider these factors to affect ethical behavior?

Variables contributing to acting unethically	**Agreement Level**				
	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
A1. Personal Behavior					
A2. Construction industry culture					
A3. Poverty					
A4. Excessive love for money (greed)					
A5. Professional indiscipline					
A6. Location of the project(boarder area)					

A7. Job insecurity					
A8. Lack of high executive control					
A9. Under pay					
A10. Lack of strict contractual laws					
A11. Lack of transparency					
A12. Economic downturn					
A13. Delayed salaries of workers					
A14. Complexity & Size of the project					
A15. Non-availability of raw materials in market freely					
A16. Discrimination between workers					
A17. Overlapping between personal and professional ethics					

Part 3: Most common form of unethical behavior in construction industry

B. What are your thoughts on professionals' dedication to the following actions?

Forms of Unethical Behavior	**Level of prevalence**				
	Very High	**High**	**Moderate**	**Low**	**Very Low**
B1. The degree of unethical behavior in the construction industry as a whole.					
B2.Professional’s commitment conflicting with client's Interest					
B3. Professionals are not devoted to their jobs.					
B4. Professionals are devoted to their superiors and management.					
B5. Desire to engage in unethical behavior while performing professional duties.					

B6. Professionals not safeguarding the client's belongings from going missing or being stolen.					
B7. The goal of a professional is to establish trust and confidence with clients and coworkers.					
B8. Professionals do not deal with the workers fairly.					
B9. Illegal award to contractor					
B10. Under bidding					
B11. Bid rigging					
B12. Individuals or organizations engaging in the work without the necessary qualification, experience or training.					
B13. Leaking information about the project budget for some contractors					
B14.Employers do not prioritize the safety, health and wellbeing of workers on the job.					
B15. Employers try to compel their staff to engage in unethical behavior.					
B16. Make a quality compromise or raise the price.					
B17. Tax avoidance in the project.					

Part 4: The implications of unethical conduct on the construction industry

Economic effect of unethical behavior on a construction project
C1. Do you believe there is a positive relationship between ethical behavior and the organization's ultimate revenue growth? Yes No ☐ ☐
C2. Do you believe there is a positive relationship between ethical behavior and the company's short- term cash flow? Yes ☐ No ☐

Effect of unethical behavior on project quality
C3. How do you evaluate the quality of Ethiopian construction industry? Very low ☐ Low ☐ Moderate ☐ High ☐ Very High ☐
C4. Do you believe that unethical behaviors in the construction industry have an impact on quality and productivity? Yes ☐ No ☐
Ethics in the work place
C5. Do you believe that your profession can lead to unethical behavior? Yes ☐ No ☐
C6. Do you believe “personal ethics” is trumping "corporate ethics" in ERA construction projects? Yes ☐ No ☐
C7. Do you believe enhancing professional ethics could lead to better ethical performance in ERA construction projects? Yes ☐ No ☐
C8. Is it common for your company to add extras to contracts that aren't legally required? Yes ☐ No ☐
C9. What is the level of ethical awareness among your organization’s employees? Very low ☐ Low ☐ Moderate ☐ High ☐ Very high ☐
Strategies to improve ethical behavior
C10. Is there an ethical code of conduct in place at your company? Yes ☐ No ☐
C11. If your answer to question number 10 is yes, Is this code applied? Yes ☐ No ☐
C12. Do you think the existence of ethical code can improve the performance of the professionals in your Organization? Yes ☐ No ☐
C13. If you witness unethical behavior, will you try to report it to top management? Yes ☐ No ☐

If there is any additional information you want to add, please specify here;

_____

_____

_____

_____

_____

_____

Thank You for your Cooperation

Validity Test

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X1	Pearson Correlation	1	.325**	-.264**	.292**	.067	.114	.005	.058	-.099	-.119	.004	-.093
	Sig. (2-tailed)		.000	.000	.000	.364	.123	.947	.431	.180	.106	.955	.206
	N	186	186	186	186	186	186	186	186	186	186	186	186
X2	Pearson Correlation	.325**	1	-.008	.511**	.221**	.135	.125	.371**	.444**	.486**	.284**	.253**
	Sig. (2-tailed)	.000		.916	.000	.002	.066	.089	.000	.000	.000	.000	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186
X3	Pearson Correlation	-.264**	-.008	1	.180*	.067	.265**	.069	-.051	.149*	-.262**	-.105	.338**
	Sig. (2-tailed)	.000	.916		.014	.365	.000	.347	.490	.043	.000	.155	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X4	Pearson Correlation	.292**	.511**	.180*	1	.534**	.354**	.097	.559**	.411**	.155*	.356**	.305**
	Sig. (2-tailed)	.000	.000	.014		.000	.000	.190	.000	.000	.034	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X5	Pearson Correlation	.067	.221**	.067	.534**	1	.092	-.110	.281**	.300**	.060	.016	.045
	Sig. (2-tailed)	.364	.002	.365	.000		.210	.136	.000	.000	.414	.830	.544
	N	186	186	186	186	186	186	186	186	186	186	186	186
X6	Pearson Correlation	.114	.135	.265**	.354**	.092	1	.437**	.358**	-.017	.067	.192**	.363**
	Sig. (2-tailed)	.123	.066	.000	.000	.210		.000	.000	.822	.364	.009	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X7	Pearson Correlation	.005	.125	.069	.097	-.110	.437**	1	.523**	-.080	.192**	.214**	.468**
	Sig. (2-tailed)	.947	.089	.347	.190	.136	.000		.000	.278	.009	.003	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X8	Pearson Correlation	.058	.371**	-.051	.559**	.281**	.358**	.523**	1	.449**	.404**	.410**	.505**
	Sig. (2-tailed)	.431	.000	.490	.000	.000	.000	.000		.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X9	Pearson Correlation	-.099	.444**	.149*	.411**	.300**	-.017	-.080	.449**	1	.495**	.433**	.269**
	Sig. (2-tailed)	.180	.000	.043	.000	.000	.822	.278	.000		.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X10	Pearson Correlation	-.119	.486**	-.262**	.155*	.060	.067	.192**	.404**	.495**	1	.413**	.021
	Sig. (2-tailed)	.106	.000	.000	.034	.414	.364	.009	.000	.000		.000	.779
	N	186	186	186	186	186	186	186	186	186	186	186	186
X11	Pearson Correlation	.004	.284**	-.105	.356**	.016	.192**	.214**	.410**	.433**	.413**	1	.438**
	Sig. (2-tailed)	.955	.000	.155	.000	.830	.009	.003	.000	.000	.000		.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X12	Pearson Correlation	-.093	.253**	.338**	.305**	.045	.363**	.468**	.505**	.269**	.021	.438**	1
	Sig. (2-tailed)	.206	.001	.000	.000	.544	.000	.000	.000	.000	.779	.000	
	N	186	186	186	186	186	186	186	186	186	186	186	186
X13	Pearson Correlation	-.032	.256**	-.058	.296**	.293**	.373**	.529**	.545**	.167*	.231**	.382**	.616**
	Sig. (2-tailed)	.667	.000	.430	.000	.000	.000	.000	.000	.023	.002	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X14	Pearson Correlation	-.018	.133	.202**	.232**	.224**	.406**	.648**	.358**	.062	.080	.296**	.484**
	Sig. (2-tailed)	.808	.071	.006	.001	.002	.000	.000	.000	.403	.277	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X15	Pearson Correlation	-.139	.157*	.118	.235**	.141	.373**	.396**	.287**	.187*	.050	.308**	.541**
	Sig. (2-tailed)	.058	.032	.109	.001	.056	.000	.000	.000	.010	.497	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X16	Pearson Correlation	-.020	.135	-.339**	.354**	.261**	.292**	.360**	.652**	.277**	.475**	.488**	.086
	Sig. (2-tailed)	.785	.066	.000	.000	.000	.000	.000	.000	.000	.000	.000	.245
	N	186	186	186	186	186	186	186	186	186	186	186	186
X17	Pearson Correlation	-.162*	.047	-.036	.123	.091	.160*	.152*	.291**	.479**	.508**	.290**	.071
	Sig. (2-tailed)	.027	.524	.624	.095	.219	.029	.038	.000	.000	.000	.000	.335
	N	186	186	186	186	186	186	186	186	186	186	186	186
X18	Pearson Correlation	-.167*	-.125	.076	-.300**	-.264**	.079	.131	-.133	-.281**	-.196**	-.145*	.108
	Sig. (2-tailed)	.023	.088	.301	.000	.000	.282	.074	.070	.000	.007	.048	.141
	N	186	186	186	186	186	186	186	186	186	186	186	186
X19	Pearson Correlation	.336**	.475**	-.108	.515**	.004	.358**	.454**	.475**	.320**	.286**	.543**	.354**
	Sig. (2-tailed)	.000	.000	.143	.000	.954	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X20	Pearson Correlation	.310**	.214**	.095	.524**	.172*	.565**	.244**	.506**	.217**	.103	.243**	.145*
	Sig. (2-tailed)	.000	.003	.196	.000	.019	.000	.001	.000	.003	.160	.001	.049
	N	186	186	186	186	186	186	186	186	186	186	186	186
X21	Pearson Correlation	.351**	.136	-.006	.235**	-.015	.214**	.170*	.364**	.098	.198**	.248**	.203**
	Sig. (2-tailed)	.000	.063	.939	.001	.839	.003	.020	.000	.181	.007	.001	.005
	N	186	186	186	186	186	186	186	186	186	186	186	186
X22	Pearson Correlation	-.251**	-.372**	.143	-.381**	-.273**	-.121	.071	-.123	-.281**	-.111	-.286**	-.148*
	Sig. (2-tailed)	.001	.000	.052	.000	.000	.099	.334	.094	.000	.130	.000	.044
	N	186	186	186	186	186	186	186	186	186	186	186	186
X23	Pearson Correlation	.163*	.124	-.064	.399**	-.112	.599**	.285**	.425**	.254**	.285**	.439**	.313**
	Sig. (2-tailed)	.026	.092	.382	.000	.129	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X24	Pearson Correlation	.470**	.498**	-.171*	.572**	.204**	.427**	.322**	.542**	.204**	.271**	.340**	.324**
	Sig. (2-tailed)	.000	.000	.019	.000	.005	.000	.000	.000	.005	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X25	Pearson Correlation	.241**	.167*	-.103	.491**	.095	.298**	.346**	.411**	.092	.086	.088	.228**
	Sig. (2-tailed)	.001	.023	.162	.000	.198	.000	.000	.000	.212	.242	.233	.002
	N	186	186	186	186	186	186	186	186	186	186	186	186
X26	Pearson Correlation	-.271**	-.109	.203**	-.084	-.142	.131	.333**	.090	.065	.019	.083	.234**
	Sig. (2-tailed)	.000	.139	.005	.253	.053	.075	.000	.221	.377	.795	.259	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X27	Pearson Correlation	-.164*	-.043	.218**	-.194**	-.279**	.011	.358**	-.046	-.103	-.093	.022	.335**
	Sig. (2-tailed)	.026	.563	.003	.008	.000	.879	.000	.532	.161	.208	.766	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X28	Pearson Correlation	-.187*	.149*	.075	.157*	-.015	.442**	.458**	.347**	.248**	.289**	.278**	.458**
	Sig. (2-tailed)	.011	.043	.310	.032	.841	.000	.000	.000	.001	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X29	Pearson Correlation	-.167*	-.012	.224**	-.266**	-.353**	-.047	.306**	.009	-.047	.029	-.199**	.256**
	Sig. (2-tailed)	.023	.873	.002	.000	.000	.528	.000	.905	.525	.695	.006	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X30	Pearson Correlation	-.225**	.019	.393**	-.036	-.026	.200**	.300**	.275**	.114	-.052	-.185*	.366**
	Sig. (2-tailed)	.002	.796	.000	.626	.720	.006	.000	.000	.122	.483	.011	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X31	Pearson Correlation	-.194**	-.036	.136	-.173*	.051	-.172*	-.035	-.023	.011	-.192**	-.144*	.101
	Sig. (2-tailed)	.008	.623	.064	.018	.494	.019	.638	.750	.881	.009	.049	.169
	N	186	186	186	186	186	186	186	186	186	186	186	186
X32	Pearson Correlation	-.177*	-.251**	.242**	-.288**	-.414**	-.041	.226**	-.207**	-.229**	-.261**	-.167*	.234**
	Sig. (2-tailed)	.016	.001	.001	.000	.000	.578	.002	.004	.002	.000	.023	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X33	Pearson Correlation	-.224**	-.206**	.148*	-.361**	-.348**	.105	.301**	-.138	-.215**	-.207**	-.102	.211**
	Sig. (2-tailed)	.002	.005	.044	.000	.000	.156	.000	.060	.003	.005	.168	.004
	N	186	186	186	186	186	186	186	186	186	186	186	186
X34	Pearson Correlation	-.135	-.034	.075	-.264**	-.381**	.012	.409**	.023	-.279**	-.009	-.153*	.205**
	Sig. (2-tailed)	.066	.647	.307	.000	.000	.875	.000	.759	.000	.901	.037	.005
	N	186	186	186	186	186	186	186	186	186	186	186	186
X35	Pearson Correlation	.309**	.228**	.090	.486**	.054	.486**	.345**	.295**	-.110	-.120	.295**	.174*
	Sig. (2-tailed)	.000	.002	.224	.000	.465	.000	.000	.000	.136	.103	.000	.018
	N	186	186	186	186	186	186	186	186	186	186	186	186
X36	Pearson Correlation	.128	.408**	-.193**	.461**	.089	.328**	.209**	.400**	.191**	.280**	.294**	.317**
	Sig. (2-tailed)	.082	.000	.008	.000	.227	.000	.004	.000	.009	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X37	Pearson Correlation	.253**	.506**	.092	.478**	.087	.448**	.157*	.301**	.415**	.318**	.273**	.155*
	Sig. (2-tailed)	.000	.000	.214	.000	.240	.000	.032	.000	.000	.000	.000	.035
	N	186	186	186	186	186	186	186	186	186	186	186	186
X38	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)												
	N	186	186	186	186	186	186	186	186	186	186	186	186
X39	Pearson Correlation	.256**	-.052	.239**	.374**	.072	.113	-.050	.003	.016	-.251**	-.173*	.092
	Sig. (2-tailed)	.000	.482	.001	.000	.327	.125	.502	.966	.831	.001	.018	.212
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X40	Pearson Correlation	.352**	.242**	.217**	.573**	.358**	.393**	.422**	.533**	.200**	.073	.197**	.358**
	Sig. (2-tailed)	.000	.001	.003	.000	.000	.000	.000	.000	.006	.319	.007	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X41	Pearson Correlation	-.239**	-.022	.174*	.156*	.341**	.084	-.021	.164*	.007	.122	-.018	.170*
	Sig. (2-tailed)	.001	.770	.018	.034	.000	.253	.780	.025	.929	.098	.811	.020
	N	186	186	186	186	186	186	186	186	186	186	186	186
X42	Pearson Correlation	.214**	.219**	-.256**	.108	-.083	.325**	.209**	.108	-.188*	.026	-.180*	.005
	Sig. (2-tailed)	.003	.003	.000	.144	.263	.000	.004	.141	.010	.723	.014	.945
	N	186	186	186	186	186	186	186	186	186	186	186	186
X43	Pearson Correlation	.159*	-.250**	-.239**	-.007	.264**	-.029	-.182*	.037	.131	.038	-.057	-.219**
	Sig. (2-tailed)	.031	.001	.001	.919	.000	.693	.013	.614	.075	.610	.441	.003
	N	186	186	186	186	186	186	186	186	186	186	186	186
X44	Pearson Correlation	-.199**	-.158*	.051	.110	.081	.143	.040	.168*	.200**	.073	.197**	.162*
	Sig. (2-tailed)	.006	.031	.490	.137	.274	.052	.588	.022	.006	.319	.007	.028
	N	186	186	186	186	186	186	186	186	186	186	186	186
X45	Pearson Correlation	-.156*	.003	.166*	.198**	.114	-.034	.083	.236**	.255**	-.039	.140	.394**
	Sig. (2-tailed)	.033	.971	.024	.007	.123	.644	.259	.001	.000	.597	.057	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X46	Pearson Correlation	.189**	-.031	-.151*	-.024	-.180*	.121	-.030	-.057	-.283**	.039	-.222**	-.387**
	Sig. (2-tailed)	.010	.674	.040	.745	.014	.099	.687	.441	.000	.594	.002	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186
X47	Pearson Correlation	.021	-.058	-.199**	.110	.081	.393**	-.055	-.015	-.073	.073	-.169*	-.133
	Sig. (2-tailed)	.772	.432	.007	.137	.274	.000	.453	.842	.320	.319	.021	.070
	N	186	186	186	186	186	186	186	186	186	186	186	186
Total	Pearson Correlation	.037	.326**	.192**	.425**	.069	.555**	.638**	.621**	.305**	.280**	.361**	.622**
	Sig. (2-tailed)	.000	.000	.009	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X1	Pearson Correlation	-.032	-.018	-.139	-.020	-.162*	-.167*	.336**	.310**	.351**	-.251**	.163*	.470**	.241**	-.271**
	Sig. (2-tailed)	.667	.808	.058	.785	.027	.023	.000	.000	.000	.001	.026	.000	.001	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X2	Pearson Correlation	.256**	.133	.157*	.135	.047	-.125	.475**	.214**	.136	-.372**	.124	.498**	.167*	-.109
	Sig. (2-tailed)	.000	.071	.032	.066	.524	.088	.000	.003	.063	.000	.092	.000	.023	.139
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X3	Pearson Correlation	-.058	.202**	.118	-.339**	-.036	.076	-.108	.095	-.006	.143	-.064	-.171*	-.103	.203**
	Sig. (2-tailed)	.430	.006	.109	.000	.624	.301	.143	.196	.939	.052	.382	.019	.162	.005
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X4	Pearson Correlation	.296**	.232**	.235**	.354**	.123	-.300**	.515**	.524**	.235**	-.381**	.399**	.572**	.491**	-.084
	Sig. (2-tailed)	.000	.001	.001	.000	.095	.000	.000	.000	.001	.000	.000	.000	.000	.253
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X5	Pearson Correlation	.293**	.224**	.141	.261**	.091	-.264**	.004	.172*	-.015	-.273**	-.112	.204**	.095	-.142
	Sig. (2-tailed)	.000	.002	.056	.000	.219	.000	.954	.019	.839	.000	.129	.005	.198	.053
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X6	Pearson Correlation	.373**	.406**	.373**	.292**	.160*	.079	.358**	.565**	.214**	-.121	.599**	.427**	.298**	.131
	Sig. (2-tailed)	.000	.000	.000	.000	.029	.282	.000	.000	.003	.099	.000	.000	.000	.075
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X7	Pearson Correlation	.529**	.648**	.396**	.360**	.152*	.131	.454**	.244**	.170*	.071	.285**	.322**	.346**	.333**
	Sig. (2-tailed)	.000	.000	.000	.000	.038	.074	.000	.001	.020	.334	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X8	Pearson Correlation	.545**	.358**	.287**	.652**	.291**	-.133	.475**	.506**	.364**	-.123	.425**	.542**	.411**	.090
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.070	.000	.000	.000	.094	.000	.000	.000	.221
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X9	Pearson Correlation	.167*	.062	.187*	.277**	.479**	-.281**	.320**	.217**	.098	-.281**	.254**	.204**	.092	.065
	Sig. (2-tailed)	.023	.403	.010	.000	.000	.000	.000	.003	.181	.000	.000	.005	.212	.377
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X10	Pearson Correlation	.231**	.080	.050	.475**	.508**	-.196**	.286**	.103	.198**	-.111	.285**	.271**	.086	.019
	Sig. (2-tailed)	.002	.277	.497	.000	.000	.007	.000	.160	.007	.130	.000	.000	.242	.795
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X11	Pearson Correlation	.382**	.296**	.308**	.488**	.290**	-.145*	.543**	.243**	.248**	-.286**	.439**	.340**	.088	.083
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.048	.000	.001	.001	.000	.000	.000	.233	.259
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X12	Pearson Correlation	.616**	.484**	.541**	.086	.071	.108	.354**	.145*	.203**	-.148*	.313**	.324**	.228**	.234**
	Sig. (2-tailed)	.000	.000	.000	.245	.335	.141	.000	.049	.005	.044	.000	.000	.002	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X13	Pearson Correlation	1	.476**	.492**	.550**	.302**	.033	.440**	.206**	.154*	-.245**	.350**	.338**	.248**	.207**
	Sig. (2-tailed)		.000	.000	.000	.000	.657	.000	.005	.035	.001	.000	.000	.001	.005
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X14	Pearson Correlation	.476**	1	.544**	.301**	.178*	.254**	.385**	.395**	.254**	.023	.290**	.547**	.441**	.318**
	Sig. (2-tailed)	.000		.000	.000	.015	.000	.000	.000	.000	.758	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X15	Pearson Correlation	.492**	.544**	1	.250**	.130	-.093	.351**	.399**	.113	-.154*	.367**	.281**	.255**	.199**
	Sig. (2-tailed)	.000	.000		.001	.077	.206	.000	.000	.123	.036	.000	.000	.000	.006
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X16	Pearson Correlation	.550**	.301**	.250**	1	.629**	-.228**	.558**	.495**	.179*	-.325**	.526**	.393**	.266**	.101
	Sig. (2-tailed)	.000	.000	.001		.000	.002	.000	.000	.014	.000	.000	.000	.000	.168
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X17	Pearson Correlation	.302**	.178*	.130	.629**	1	-.217**	.430**	.356**	-.047	-.172*	.423**	.160*	.047	.189**
	Sig. (2-tailed)	.000	.015	.077	.000		.003	.000	.000	.524	.019	.000	.029	.525	.010
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X18	Pearson Correlation	.033	.254**	-.093	-.228**	-.217**	1	-.178*	-.165*	-.197**	.550**	-.074	-.052	-.014	.531**
	Sig. (2-tailed)	.657	.000	.206	.002	.003		.015	.025	.007	.000	.318	.478	.852	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X19	Pearson Correlation	.440**	.385**	.351**	.558**	.430**	-.178*	1	.540**	.233**	-.412**	.681**	.598**	.373**	.162*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.015		.000	.001	.000	.000	.000	.000	.027
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X20	Pearson Correlation	.206**	.395**	.399**	.495**	.356**	-.165*	.540**	1	.417**	-.097	.544**	.671**	.560**	.042
	Sig. (2-tailed)	.005	.000	.000	.000	.000	.025	.000		.000	.187	.000	.000	.000	.572
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X21	Pearson Correlation	.154*	.254**	.113	.179*	-.047	-.197**	.233**	.417**	1	-.104	.342**	.494**	.392**	-.323**
	Sig. (2-tailed)	.035	.000	.123	.014	.524	.007	.001	.000		.156	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X22	Pearson Correlation	-.245**	.023	-.154*	-.325**	-.172*	.550**	-.412**	-.097	-.104	1	-.170*	-.325**	-.196**	.491**
	Sig. (2-tailed)	.001	.758	.036	.000	.019	.000	.000	.187	.156		.020	.000	.007	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X23	Pearson Correlation	.350**	.290**	.367**	.526**	.423**	-.074	.681**	.544**	.342**	-.170*	1	.489**	.355**	.147*
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.318	.000	.000	.000	.020		.000	.000	.046
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X24	Pearson Correlation	.338**	.547**	.281**	.393**	.160*	-.052	.598**	.671**	.494**	-.325**	.489**	1	.723**	-.163*
	Sig. (2-tailed)	.000	.000	.000	.000	.029	.478	.000	.000	.000	.000	.000		.000	.026
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X25	Pearson Correlation	.248**	.441**	.255**	.266**	.047	-.014	.373**	.560**	.392**	-.196**	.355**	.723**	1	-.102
	Sig. (2-tailed)	.001	.000	.000	.000	.525	.852	.000	.000	.000	.007	.000	.000		.165
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X26	Pearson Correlation	.207**	.318**	.199**	.101	.189**	.531**	.162*	.042	-.323**	.491**	.147*	-.163*	-.102	1
	Sig. (2-tailed)	.005	.000	.006	.168	.010	.000	.027	.572	.000	.000	.046	.026	.165	
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X27	Pearson Correlation	.201**	.451**	.309**	-.221**	-.198**	.493**	-.006	-.147*	-.131	.441**	.003	-.047	-.038	.666**
	Sig. (2-tailed)	.006	.000	.000	.002	.007	.000	.940	.045	.074	.000	.967	.525	.605	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X28	Pearson Correlation	.516**	.515**	.765**	.327**	.210**	.196**	.230**	.279**	.056	-.057	.388**	.304**	.320**	.364**
	Sig. (2-tailed)	.000	.000	.000	.000	.004	.007	.002	.000	.452	.441	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X29	Pearson Correlation	.043	.186*	.022	-.269**	.022	.550**	-.098	-.175*	-.177*	.686**	-.043	-.213**	-.138	.716**
	Sig. (2-tailed)	.556	.011	.765	.000	.761	.000	.184	.017	.016	.000	.563	.003	.060	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X30	Pearson Correlation	.200**	.333**	.112	-.074	-.026	.492**	.004	.140	.071	.450**	-.020	.063	.119	.603**
	Sig. (2-tailed)	.006	.000	.127	.314	.727	.000	.955	.057	.338	.000	.785	.395	.105	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X31	Pearson Correlation	.059	.045	-.059	-.211**	-.223**	.356**	-.225**	-.294**	-.270**	.508**	-.259**	-.329**	-.291**	.573**
	Sig. (2-tailed)	.427	.544	.424	.004	.002	.000	.002	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X32	Pearson Correlation	-.038	.395**	.062	-.321**	-.032	.665**	-.096	-.129	-.247**	.592**	.003	-.067	.065	.650**
	Sig. (2-tailed)	.606	.000	.404	.000	.665	.000	.195	.079	.001	.000	.971	.367	.376	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X33	Pearson Correlation	.122	.462**	.226**	-.113	-.011	.777**	-.049	.015	-.168*	.567**	.080	-.059	.107	.695**
	Sig. (2-tailed)	.097	.000	.002	.123	.882	.000	.507	.842	.022	.000	.279	.425	.145	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X34	Pearson Correlation	.100	.439**	.198**	-.066	.022	.699**	.081	.036	-.122	.610**	.073	.037	.060	.650**
	Sig. (2-tailed)	.176	.000	.007	.374	.767	.000	.274	.621	.096	.000	.324	.613	.413	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X35	Pearson Correlation	.239**	.251**	.026	.263**	-.180*	.089	.521**	.358**	.377**	-.242**	.463**	.374**	.352**	-.009
	Sig. (2-tailed)	.001	.001	.722	.000	.014	.227	.000	.000	.000	.001	.000	.000	.000	.898
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X36	Pearson Correlation	.394**	.140	.356**	.249**	.032	-.298**	.516**	.370**	.404**	-.215**	.451**	.486**	.454**	-.016
	Sig. (2-tailed)	.000	.056	.000	.001	.666	.000	.000	.000	.000	.003	.000	.000	.000	.833
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X37	Pearson Correlation	.134	-.030	.322**	.306**	.238**	-.379**	.543**	.465**	.168*	-.496**	.442**	.354**	.341**	-.126
	Sig. (2-tailed)	.069	.682	.000	.000	.001	.000	.000	.000	.022	.000	.000	.000	.000	.088
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X38	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)														
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X39	Pearson Correlation	-.058	.087	.090	-.156*	.008	-.075	.130	.448**	.381**	.096	.103	.292**	.530**	.066
	Sig. (2-tailed)	.433	.236	.223	.033	.913	.307	.076	.000	.000	.193	.161	.000	.000	.374
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X40	Pearson Correlation	.357**	.376**	.039	.226**	.079	-.302**	.383**	.361**	.391**	-.111	.332**	.476**	.285**	-.014
	Sig. (2-tailed)	.000	.000	.594	.002	.286	.000	.000	.000	.000	.132	.000	.000	.000	.849
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X41	Pearson Correlation	-.063	.075	-.099	-.102	-.100	-.031	-.300**	-.126	.081	.115	-.078	.084	-.105	-.168*
	Sig. (2-tailed)	.390	.307	.179	.165	.173	.671	.000	.087	.270	.118	.289	.253	.153	.022
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X42	Pearson Correlation	.197**	.211**	.333**	.125	.090	.115	.268**	.323**	-.038	.132	.287**	.325**	.288**	.092
	Sig. (2-tailed)	.007	.004	.000	.089	.222	.118	.000	.000	.606	.072	.000	.000	.000	.211
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X43	Pearson Correlation	-.099	-.071	.185*	.272**	.234**	-.232**	-.075	.224**	-.103	-.184*	.019	.071	.099	-.017
	Sig. (2-tailed)	.179	.336	.011	.000	.001	.001	.309	.002	.164	.012	.794	.334	.179	.818
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X44	Pearson Correlation	.006	.115	.039	.059	.079	-.084	-.211**	-.076	.218**	-.111	.061	-.024	.042	-.087
	Sig. (2-tailed)	.939	.118	.594	.422	.286	.253	.004	.302	.003	.132	.407	.743	.571	.238
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X45	Pearson Correlation	.206**	.358**	.335**	.036	.111	-.027	-.046	.040	.234**	-.133	.086	.177*	.218**	-.081
	Sig. (2-tailed)	.005	.000	.000	.622	.133	.718	.534	.583	.001	.071	.242	.015	.003	.269
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X13	X14	X15	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26
X46	Pearson Correlation	-.374**	-.171*	-.020	-.013	.042	-.045	.046	.240**	-.162*	.165*	.033	-.013	-.151*	-.008
	Sig. (2-tailed)	.000	.019	.789	.860	.568	.541	.531	.001	.027	.024	.657	.860	.039	.918
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X47	Pearson Correlation	.006	.028	.421**	.143	.195**	.025	.086	.273**	-.215**	-.027	.332**	.143	.123	.059
	Sig. (2-tailed)	.939	.704	.000	.052	.008	.739	.242	.000	.003	.714	.000	.052	.095	.426
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
Total	Pearson Correlation	.584**	.743**	.595**	.415**	.323**	.280**	.568**	.572**	.265**	.124	.579**	.580**	.493**	.560**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X1	Pearson Correlation	-.164*	-.187*	-.167*	-.225**	-.194**	-.177*	-.224**	-.135	.309**	.128	.253**	.c	.256**	.352**
	Sig. (2-tailed)	.026	.011	.023	.002	.008	.016	.002	.066	.000	.082	.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X2	Pearson Correlation	-.043	.149*	-.012	.019	-.036	-.251**	-.206**	-.034	.228**	.408**	.506**	.c	-.052	.242**
	Sig. (2-tailed)	.563	.043	.873	.796	.623	.001	.005	.647	.002	.000	.000		.482	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X3	Pearson Correlation	.218**	.075	.224**	.393**	.136	.242**	.148*	.075	.090	-.193**	.092	.c	.239**	.217**
	Sig. (2-tailed)	.003	.310	.002	.000	.064	.001	.044	.307	.224	.008	.214		.001	.003
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X4	Pearson Correlation	-.194**	.157*	-.266**	-.036	-.173*	-.288**	-.361**	-.264**	.486**	.461**	.478**	.c	.374**	.573**
	Sig. (2-tailed)	.008	.032	.000	.626	.018	.000	.000	.000	.000	.000	.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X5	Pearson Correlation	-.279**	-.015	-.353**	-.026	.051	-.414**	-.348**	-.381**	.054	.089	.087	.c	.072	.358**
	Sig. (2-tailed)	.000	.841	.000	.720	.494	.000	.000	.000	.465	.227	.240		.327	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X6	Pearson Correlation	.011	.442**	-.047	.200**	-.172*	-.041	.105	.012	.486**	.328**	.448**	.c	.113	.393**
	Sig. (2-tailed)	.879	.000	.528	.006	.019	.578	.156	.875	.000	.000	.000		.125	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X7	Pearson Correlation	.358**	.458**	.306**	.300**	-.035	.226**	.301**	.409**	.345**	.209**	.157*	.c	-.050	.422**
	Sig. (2-tailed)	.000	.000	.000	.000	.638	.002	.000	.000	.000	.004	.032		.502	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X8	Pearson Correlation	-.046	.347**	.009	.275**	-.023	-.207**	-.138	.023	.295**	.400**	.301**	.c	.003	.533**
	Sig. (2-tailed)	.532	.000	.905	.000	.750	.004	.060	.759	.000	.000	.000		.966	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X9	Pearson Correlation	-.103	.248**	-.047	.114	.011	-.229**	-.215**	-.279**	-.110	.191**	.415**	.c	.016	.200**
	Sig. (2-tailed)	.161	.001	.525	.122	.881	.002	.003	.000	.136	.009	.000		.831	.006
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X10	Pearson Correlation	-.093	.289**	.029	-.052	-.192**	-.261**	-.207**	-.009	-.120	.280**	.318**	.c	-.251**	.073
	Sig. (2-tailed)	.208	.000	.695	.483	.009	.000	.005	.901	.103	.000	.000		.001	.319
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X11	Pearson Correlation	.022	.278**	-.199**	-.185*	-.144*	-.167*	-.102	-.153*	.295**	.294**	.273**	.c	-.173*	.197**
	Sig. (2-tailed)	.766	.000	.006	.011	.049	.023	.168	.037	.000	.000	.000		.018	.007
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X12	Pearson Correlation	.335**	.458**	.256**	.366**	.101	.234**	.211**	.205**	.174*	.317**	.155*	.c	.092	.358**
	Sig. (2-tailed)	.000	.000	.000	.000	.169	.001	.004	.005	.018	.000	.035		.212	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X13	Pearson Correlation	.201**	.516**	.043	.200**	.059	-.038	.122	.100	.239**	.394**	.134	.c	-.058	.357**
	Sig. (2-tailed)	.006	.000	.556	.006	.427	.606	.097	.176	.001	.000	.069		.433	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X14	Pearson Correlation	.451**	.515**	.186*	.333**	.045	.395**	.462**	.439**	.251**	.140	-.030	.c	.087	.376**
	Sig. (2-tailed)	.000	.000	.011	.000	.544	.000	.000	.000	.001	.056	.682		.236	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X15	Pearson Correlation	.309**	.765**	.022	.112	-.059	.062	.226**	.198**	.026	.356**	.322**	.c	.090	.039
	Sig. (2-tailed)	.000	.000	.765	.127	.424	.404	.002	.007	.722	.000	.000		.223	.594
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X16	Pearson Correlation	-.221**	.327**	-.269**	-.074	-.211**	-.321**	-.113	-.066	.263**	.249**	.306**	.c	-.156*	.226**
	Sig. (2-tailed)	.002	.000	.000	.314	.004	.000	.123	.374	.000	.001	.000		.033	.002
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X17	Pearson Correlation	-.198**	.210**	.022	-.026	-.223**	-.032	-.011	.022	-.180*	.032	.238**	.c	.008	.079
	Sig. (2-tailed)	.007	.004	.761	.727	.002	.665	.882	.767	.014	.666	.001		.913	.286
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X18	Pearson Correlation	.493**	.196**	.550**	.492**	.356**	.665**	.777**	.699**	.089	-.298**	-.379**	.c	-.075	-.302**
	Sig. (2-tailed)	.000	.007	.000	.000	.000	.000	.000	.000	.227	.000	.000		.307	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X19	Pearson Correlation	-.006	.230**	-.098	.004	-.225**	-.096	-.049	.081	.521**	.516**	.543**	.c	.130	.383**
	Sig. (2-tailed)	.940	.002	.184	.955	.002	.195	.507	.274	.000	.000	.000		.076	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X20	Pearson Correlation	-.147*	.279**	-.175*	.140	-.294**	-.129	.015	.036	.358**	.370**	.465**	.c	.448**	.361**
	Sig. (2-tailed)	.045	.000	.017	.057	.000	.079	.842	.621	.000	.000	.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X21	Pearson Correlation	-.131	.056	-.177*	.071	-.270**	-.247**	-.168*	-.122	.377**	.404**	.168*	.c	.381**	.391**
	Sig. (2-tailed)	.074	.452	.016	.338	.000	.001	.022	.096	.000	.000	.022		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X22	Pearson Correlation	.441**	-.057	.686**	.450**	.508**	.592**	.567**	.610**	-.242**	-.215**	-.496**	.c	.096	-.111
	Sig. (2-tailed)	.000	.441	.000	.000	.000	.000	.000	.000	.001	.003	.000		.193	.132
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X23	Pearson Correlation	.003	.388**	-.043	-.020	-.259**	.003	.080	.073	.463**	.451**	.442**	.c	.103	.332**
	Sig. (2-tailed)	.967	.000	.563	.785	.000	.971	.279	.324	.000	.000	.000		.161	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X24	Pearson Correlation	-.047	.304**	-.213**	.063	-.329**	-.067	-.059	.037	.374**	.486**	.354**	.c	.292**	.476**
	Sig. (2-tailed)	.525	.000	.003	.395	.000	.367	.425	.613	.000	.000	.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X25	Pearson Correlation	-.038	.320**	-.138	.119	-.291**	.065	.107	.060	.352**	.454**	.341**	.c	.530**	.285**
	Sig. (2-tailed)	.605	.000	.060	.105	.000	.376	.145	.413	.000	.000	.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X26	Pearson Correlation	.666**	.364**	.716**	.603**	.573**	.650**	.695**	.650**	-.009	-.016	-.126	.c	.066	-.014
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.898	.833	.088		.374	.849
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X27	Pearson Correlation	1	.436**	.661**	.531**	.543**	.723**	.639**	.671**	-.118	-.081	-.358**	.c	-.055	.111
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.109	.271	.000		.457	.130
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X28	Pearson Correlation	.436**	1	.186*	.267**	-.026	.208**	.374**	.319**	-.047	.157*	.329**	.c	-.022	-.013
	Sig. (2-tailed)	.000		.011	.000	.725	.004	.000	.000	.526	.033	.000		.768	.861
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X29	Pearson Correlation	.661**	.186*	1	.671**	.626**	.769**	.700**	.796**	-.216**	-.075	-.331**	.c	.055	.020
	Sig. (2-tailed)	.000	.011		.000	.000	.000	.000	.000	.003	.306	.000		.457	.787
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X30	Pearson Correlation	.531**	.267**	.671**	1	.623**	.486**	.546**	.569**	-.038	.087	-.147*	.c	.216**	.215**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.606	.238	.045		.003	.003
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X31	Pearson Correlation	.543**	-.026	.626**	.623**	1	.476**	.469**	.381**	-.230**	.018	-.345**	.c	-.030	.044
	Sig. (2-tailed)	.000	.725	.000	.000		.000	.000	.000	.002	.810	.000		.682	.552
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X32	Pearson Correlation	.723**	.208**	.769**	.486**	.476**	1	.848**	.802**	-.188*	-.190**	-.421**	.c	.155*	-.092
	Sig. (2-tailed)	.000	.004	.000	.000	.000		.000	.000	.010	.009	.000		.034	.214
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X33	Pearson Correlation	.639**	.374**	.700**	.546**	.469**	.848**	1	.815**	-.029	-.154*	-.260**	.c	.082	-.246**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.694	.036	.000		.267	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X34	Pearson Correlation	.671**	.319**	.796**	.569**	.381**	.802**	.815**	1	-.093	-.134	-.327**	.c	-.011	-.140
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.205	.068	.000		.881	.057
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X35	Pearson Correlation	-.118	-.047	-.216**	-.038	-.230**	-.188*	-.029	-.093	1	.345**	.299**	.c	.153*	.392**
	Sig. (2-tailed)	.109	.526	.003	.606	.002	.010	.694	.205		.000	.000		.037	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X36	Pearson Correlation	-.081	.157*	-.075	.087	.018	-.190**	-.154*	-.134	.345**	1	.419**	.c	.392**	.321**
	Sig. (2-tailed)	.271	.033	.306	.238	.810	.009	.036	.068	.000		.000		.000	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X37	Pearson Correlation	-.358**	.329**	-.331**	-.147*	-.345**	-.421**	-.260**	-.327**	.299**	.419**	1	.c	.232**	.095
	Sig. (2-tailed)	.000	.000	.000	.045	.000	.000	.000	.000	.000	.000			.001	.198
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X38	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)														
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X39	Pearson Correlation	-.055	-.022	.055	.216**	-.030	.155*	.082	-.011	.153*	.392**	.232**	.c	1	.229**
	Sig. (2-tailed)	.457	.768	.457	.003	.682	.034	.267	.881	.037	.000	.001			.002
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X27	X28	X29	X30	X31	X32	X33	VX34	X35	X36	X37	X38	X39	X40
X40	Pearson Correlation	.111	-.013	.020	.215**	.044	-.092	-.246**	-.140	.392**	.321**	.095	.c	.229**	1
	Sig. (2-tailed)	.130	.861	.787	.003	.552	.214	.001	.057	.000	.000	.198		.002	
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X41	Pearson Correlation	.042	-.111	-.069	.029	-.056	-.105	-.268**	-.147*	-.060	-.099	-.271**	.c	-.080	.373**
	Sig. (2-tailed)	.574	.131	.346	.691	.448	.155	.000	.045	.418	.181	.000		.277	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X42	Pearson Correlation	.251**	.305**	.227**	.191**	.206**	.220**	.267**	.386**	-.057	.323**	.149*	.c	.161*	.080
	Sig. (2-tailed)	.001	.000	.002	.009	.005	.003	.000	.000	.439	.000	.043		.029	.277
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X43	Pearson Correlation	-.169*	.259**	-.266**	-.109	-.123	-.186*	-.134	-.168*	-.359**	-.201**	.185*	.c	.009	-.165*
	Sig. (2-tailed)	.021	.000	.000	.137	.096	.011	.069	.022	.000	.006	.012		.907	.025
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X44	Pearson Correlation	-.032	.158*	-.049	-.125	-.150*	-.092	-.111	-.267**	.116	-.069	-.140	.c	.007	.173*
	Sig. (2-tailed)	.660	.031	.508	.090	.041	.214	.132	.000	.115	.347	.056		.923	.018
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X45	Pearson Correlation	.218**	.303**	.086	.054	-.048	.138	.072	.036	.008	-.043	-.231**	.c	.073	.186*
	Sig. (2-tailed)	.003	.000	.242	.467	.519	.061	.331	.621	.919	.564	.002		.325	.011
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X46	Pearson Correlation	-.056	-.068	.011	-.176*	-.237**	-.049	-.168*	.198**	-.086	-.142	-.012	.c	-.115	-.129
	Sig. (2-tailed)	.448	.356	.885	.016	.001	.506	.022	.007	.243	.053	.869		.118	.080
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
X47	Pearson Correlation	-.032	.444**	-.049	-.057	-.150*	-.028	.024	.115	-.160*	.126	.212**	.c	.007	-.240**
	Sig. (2-tailed)	.660	.000	.508	.440	.041	.700	.746	.118	.029	.087	.004		.923	.001
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186
Total	Pearson Correlation	.491**	.697**	.437**	.565**	.188*	.395**	.489**	.529**	.273**	.397**	.268**	.c	.245**	.423**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.001	.000
	N	186	186	186	186	186	186	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X1	Pearson Correlation	-.239**	.214**	.159*	-.199**	-.156*	.189**	.021	.037
	Sig. (2-tailed)	.001	.003	.031	.006	.033	.010	.772	.000
	N	186	186	186	186	186	186	186	186
X2	Pearson Correlation	-.022	.219**	-.250**	-.158*	.003	-.031	-.058	.326**
	Sig. (2-tailed)	.770	.003	.001	.031	.971	.674	.432	.000
	N	186	186	186	186	186	186	186	186
X3	Pearson Correlation	.174*	-.256**	-.239**	.051	.166*	-.151*	-.199**	.192**
	Sig. (2-tailed)	.018	.000	.001	.490	.024	.040	.007	.000
	N	186	186	186	186	186	186	186	186
X4	Pearson Correlation	.156*	.108	-.007	.110	.198**	-.024	.110	.425**
	Sig. (2-tailed)	.034	.144	.919	.137	.007	.745	.137	.000
	N	186	186	186	186	186	186	186	186
X5	Pearson Correlation	.341**	-.083	.264**	.081	.114	-.180*	.081	.069
	Sig. (2-tailed)	.000	.263	.000	.274	.123	.014	.274	.000
	N	186	186	186	186	186	186	186	186
X6	Pearson Correlation	.084	.325**	-.029	.143	-.034	.121	.393**	.555**
	Sig. (2-tailed)	.253	.000	.693	.052	.644	.099	.000	.000
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X7	Pearson Correlation	-.021	.209**	-.182*	.040	.083	-.030	-.055	.638**
	Sig. (2-tailed)	.780	.004	.013	.588	.259	.687	.453	.000
	N	186	186	186	186	186	186	186	186
X8	Pearson Correlation	.164*	.108	.037	.168*	.236**	-.057	-.015	.621**
	Sig. (2-tailed)	.025	.141	.614	.022	.001	.441	.842	.000
	N	186	186	186	186	186	186	186	186
X9	Pearson Correlation	.007	-.188*	.131	.200**	.255**	-.283**	-.073	.305**
	Sig. (2-tailed)	.929	.010	.075	.006	.000	.000	.320	.000
	N	186	186	186	186	186	186	186	186
X10	Pearson Correlation	.122	.026	.038	.073	-.039	.039	.073	.280**
	Sig. (2-tailed)	.098	.723	.610	.319	.597	.594	.319	.000
	N	186	186	186	186	186	186	186	186
X11	Pearson Correlation	-.018	-.180*	-.057	.197**	.140	-.222**	-.169*	.361**
	Sig. (2-tailed)	.811	.014	.441	.007	.057	.002	.021	.000
	N	186	186	186	186	186	186	186	186
X12	Pearson Correlation	.170*	.005	-.219**	.162*	.394**	-.387**	-.133	.622**
	Sig. (2-tailed)	.020	.945	.003	.028	.000	.000	.070	.000
	N	186	186	186	186	186	186	186	186
X13	Pearson Correlation	-.063	.197**	-.099	.006	.206**	-.374**	.006	.584**
	Sig. (2-tailed)	.390	.007	.179	.939	.005	.000	.939	.000
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X14	Pearson Correlation	.075	.211**	-.071	.115	.358**	-.171*	.028	.743**
	Sig. (2-tailed)	.307	.004	.336	.118	.000	.019	.704	.000
	N	186	186	186	186	186	186	186	186
X15	Pearson Correlation	-.099	.333**	.185*	.039	.335**	-.020	.421**	.595**
	Sig. (2-tailed)	.179	.000	.011	.594	.000	.789	.000	.000
	N	186	186	186	186	186	186	186	186
X16	Pearson Correlation	-.102	.125	.272**	.059	.036	-.013	.143	.415**
	Sig. (2-tailed)	.165	.089	.000	.422	.622	.860	.052	.000
	N	186	186	186	186	186	186	186	186
X17	Pearson Correlation	-.100	.090	.234**	.079	.111	.042	.195**	.323**
	Sig. (2-tailed)	.173	.222	.001	.286	.133	.568	.008	.000
	N	186	186	186	186	186	186	186	186
X18	Pearson Correlation	-.031	.115	-.232**	-.084	-.027	-.045	.025	.280**
	Sig. (2-tailed)	.671	.118	.001	.253	.718	.541	.739	.000
	N	186	186	186	186	186	186	186	186
X19	Pearson Correlation	-.300**	.268**	-.075	-.211**	-.046	.046	.086	.568**
	Sig. (2-tailed)	.000	.000	.309	.004	.534	.531	.242	.000
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X20	Pearson Correlation	-.126	.323**	.224**	-.076	.040	.240**	.273**	.572**
	Sig. (2-tailed)	.087	.000	.002	.302	.583	.001	.000	.000
	N	186	186	186	186	186	186	186	186
X21	Pearson Correlation	.081	-.038	-.103	.218**	.234**	-.162*	-.215**	.265**
	Sig. (2-tailed)	.270	.606	.164	.003	.001	.027	.003	.000
	N	186	186	186	186	186	186	186	186
X22	Pearson Correlation	.115	.132	-.184*	-.111	-.133	.165*	-.027	.124
	Sig. (2-tailed)	.118	.072	.012	.132	.071	.024	.714	.000
	N	186	186	186	186	186	186	186	186
X23	Pearson Correlation	-.078	.287**	.019	.061	.086	.033	.332**	.579**
	Sig. (2-tailed)	.289	.000	.794	.407	.242	.657	.000	.000
	N	186	186	186	186	186	186	186	186
X24	Pearson Correlation	.084	.325**	.071	-.024	.177*	-.013	.143	.580**
	Sig. (2-tailed)	.253	.000	.334	.743	.015	.860	.052	.000
	N	186	186	186	186	186	186	186	186
X25	Pearson Correlation	-.105	.288**	.099	.042	.218**	-.151*	.123	.493**
	Sig. (2-tailed)	.153	.000	.179	.571	.003	.039	.095	.000
	N	186	186	186	186	186	186	186	186
X26	Pearson Correlation	-.168*	.092	-.017	-.087	-.081	-.008	.059	.560**
	Sig. (2-tailed)	.022	.211	.818	.238	.269	.918	.426	.000
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X27	Pearson Correlation	.042	.251**	-.169*	-.032	.218**	-.056	-.032	.491**
	Sig. (2-tailed)	.574	.001	.021	.660	.003	.448	.660	.000
	N	186	186	186	186	186	186	186	186
X28	Pearson Correlation	-.111	.305**	.259**	.158*	.303**	-.068	.444**	.697**
	Sig. (2-tailed)	.131	.000	.000	.031	.000	.356	.000	.000
	N	186	186	186	186	186	186	186	186
X29	Pearson Correlation	-.069	.227**	-.266**	-.049	.086	.011	-.049	.437**
	Sig. (2-tailed)	.346	.002	.000	.508	.242	.885	.508	.000
	N	186	186	186	186	186	186	186	186
X30	Pearson Correlation	.029	.191**	-.109	-.125	.054	-.176*	-.057	.565**
	Sig. (2-tailed)	.691	.009	.137	.090	.467	.016	.440	.000
	N	186	186	186	186	186	186	186	186
X31	Pearson Correlation	-.056	.206**	-.123	-.150*	-.048	-.237**	-.150*	.188*
	Sig. (2-tailed)	.448	.005	.096	.041	.519	.001	.041	.000
	N	186	186	186	186	186	186	186	186
X32	Pearson Correlation	-.105	.220**	-.186*	-.092	.138	-.049	-.028	.395**
	Sig. (2-tailed)	.155	.003	.011	.214	.061	.506	.700	.000
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X33	Pearson Correlation	-.268**	.267**	-.134	-.111	.072	-.168*	.024	.489**
	Sig. (2-tailed)	.000	.000	.069	.132	.331	.022	.746	.000
	N	186	186	186	186	186	186	186	186
X34	Pearson Correlation	-.147*	.386**	-.168*	-.267**	.036	.198**	.115	.529**
	Sig. (2-tailed)	.045	.000	.022	.000	.621	.007	.118	.000
	N	186	186	186	186	186	186	186	186
X35	Pearson Correlation	-.060	-.057	-.359**	.116	.008	-.086	-.160*	.273**
	Sig. (2-tailed)	.418	.439	.000	.115	.919	.243	.029	.000
	N	186	186	186	186	186	186	186	186
X36	Pearson Correlation	-.099	.323**	-.201**	-.069	-.043	-.142	.126	.397**
	Sig. (2-tailed)	.181	.000	.006	.347	.564	.053	.087	.000
	N	186	186	186	186	186	186	186	186
X37	Pearson Correlation	-.271**	.149*	.185*	-.140	-.231**	-.012	.212**	.268**
	Sig. (2-tailed)	.000	.043	.012	.056	.002	.869	.004	.000
	N	186	186	186	186	186	186	186	186
X38	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)								
	N	186	186	186	186	186	186	186	186
X39	Pearson Correlation	-.080	.161*	.009	.007	.073	-.115	.007	.245**
	Sig. (2-tailed)	.277	.029	.907	.923	.325	.118	.923	.001
	N	186	186	186	186	186	186	186	186

		X41	X42	X43	X44	X45	X46	X47	Total
X40	Pearson Correlation	.373**	.080	-.165*	.173*	.186*	-.129	-.240**	.423**
	Sig. (2-tailed)	.000	.277	.025	.018	.011	.080	.001	.000
	N	186	186	186	186	186	186	186	186
X41	Pearson Correlation	1	-.155*	-.108	.373**	.265**	-.048	-.089	-.042
	Sig. (2-tailed)		.034	.144	.000	.000	.516	.225	.000
	N	186	186	186	186	186	186	186	186
X42	Pearson Correlation	-.155*	1	-.003	-.251**	-.027	.309**	.576**	.409**
	Sig. (2-tailed)	.034		.965	.001	.714	.000	.000	.000
	N	186	186	186	186	186	186	186	186
X43	Pearson Correlation	-.108	-.003	1	-.040	.014	.245**	.457**	-.019
	Sig. (2-tailed)	.144	.965		.587	.854	.001	.000	.000
	N	186	186	186	186	186	186	186	186
X44	Pearson Correlation	.373**	-.251**	-.040	1	.710**	-.129	-.033	.040
	Sig. (2-tailed)	.000	.001	.587		.000	.080	.652	.000
	N	186	186	186	186	186	186	186	186
X45	Pearson Correlation	.265**	-.027	.014	.710**	1	-.181*	.011	.277**
	Sig. (2-tailed)	.000	.714	.854	.000		.013	.879	.000
	N	186	186	186	186	186	186	186	186
X46	Pearson Correlation	-.048	.309**	.245**	-.129	-.181*	1	.536**	-.085
	Sig. (2-tailed)	.516	.000	.001	.080	.013		.000	.000
	N	186	186	186	186	186	186	186	186
X47	Pearson Correlation	-.089	.576**	.457**	-.033	.011	.536**	1	.199**
	Sig. (2-tailed)	.225	.000	.000	.652	.879	.000		.000
	N	186	186	186	186	186	186	186	186
Total	Pearson Correlation	-.042	.409**	-.019	.040	.277**	-.085	.199**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000
	N	186	186	186	186	186	186	186	186

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).