Developing Structural Relationship of Motivational Factors and Their Impact on Labor's Relative Efficiency: A Case GMM Garment PLC

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Author's Declaration

I hereby declare that this thesis entitled **Developing Structural Relationship of Motivational Factors and Their Impact on Labour's Relative Efficiency: A Case GMM Garment PLC** is my own research work. It has not been, and will not be, submitted in whole or in part to another University for the award of any other degree.

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Abstract

Creating motivated employee is one way of optimizing labor efficiency in any industrial sector. Employee motivation can be enhanced either by external or internal factors. Now a day's Ethiopian apparel industry is one path for export earnings. The government facilitates industry parks to attract potential foreign investors. Manufacturers in the industry park raised the issue of recruiting, employee turnover, and worker demotivation as a key concern. This paper aims to identify theoretical relationship of motivation factors and to analyze their impact on labor relative efficiency at GMM Garment PLC. Structured questionnaire, informal interview, data records and related literatures are used as a data collection tools. Structural Equation Modeling is used for confirmatory factor analysis. The finding show extrinsic motivation factor such as monetary incentive, non-monetary incentives, job related incentives and company related motivational factors are highly significant factor for productivity. Fuzzy expert system is also used for ranking motivation factors. The result is similar to confirmatory factor analysis which is extrinsic motivation factors have high significant impact on productivity. Data envelopment analysis used to measure operator's relative efficiency and motivational factors are considered as input and output variables. The result shows that both intrinsic and extrinsic motivation factors have significant impact on labor's relative efficiency. Sensitivity analysis result indicates monetary incentive is the highest significant factor among the other identified motivation factors.

Key Words: DEA, Motivation factors, Productivity, labor Relative Efficiency.

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List of Acronyms

AMOS – Analysis of Moments Structures

BCC – Banker, Charnes, and Cooper

BCC IO - Banker, Charnes, and Cooper Input Oriented

BCC OO - Banker, Charnes, and Cooper Output Oriented

CCR - Charnes, Cooper, and Rhodes

CCR IO - Charnes, Cooper, and Rhodes Input Oriented

CCR OO - Charnes, Cooper, and Rhodes Output Oriented

CFA – Confirmatory Factor Analysis

CFI – Comparative Fit Index

CR – Company Related

CRS – Constant Returns to Scale

CVR – Content Validity Ration

DEA – Data Envelopment Analysis

DMU – Decision Making Unit

EPM - Electronic Performance Monitoring

EM – Extrinsic Motivation

ES – Efficiency Score

FA – Factor Analysis

GDP – Gross Domestic Product

IM – Intrinsic Motivation

IPDC – Industry Park Development Corporation

Max DEA – Max Data Envelopment Analysis

MFP - Multifactor Productivity Measures

MI – Monetary Incentive

NMI – Non-Monetary Incentive

OECD – Organization for Economic Co-operation and Development

OLS – Ordinary Least Square

PLC – Private Limited Company

PRO – Productivity

RMSEA – Root Mean Square Error of Approximation

RTS – Returns to Scale

SEM -Structural Equation Modeling

SFA – Stochastic Frontier Analysis

SFM – Stochastic Frontier Method

SFP – Single Factor Productivity

SPSS – Statistical Package for Social Science

TFP – Total Factor Productivity

TLI – Tucker-Lewis's Index

VRS – Variable Returns to Scale

List of Symbols

Af – Average efficiency when all Factors are involved

Ao – Average efficiency score when factor is omitted.

θo – Efficiency Score

λ_j – Scale Constraint

ur – Output Coefficient

Vi - Input Coefficient

X2 – Chi-Square

xij – Input for jth DMUs

yrj–Output-for-jth-DMUs

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Chapter One: Introduction

1.1 Background of the Study

Motivation is an art of inducing one to behave in a particular manner to achieve a task and is an art targeted to getting people work willingly and accordingly towards common organizations goal (Chukwuma Edwin Maduka 2014). Mee-Edoiye (2002), Viewed motivation as a human engineering approached being triggered by the individual needs. Employees do not work with full potential unless they are interested and motivated on their work with in any organization. Workers motivation is very essential for both service and manufacturing sectors mainly for labor intensive companies. Daniel (2016), concludes that apathetic employee offends the productivity of any company while lack of motivation can be a reason for turnover, absenteeism, frequent lateness and low performance.

Human is the driving wheel of labor intensive industries. The study conducted over the personal features and their influence on the working process concludes that one of the most important factors for productive employee is Motivation (Konstantina Georgieva 2015). Being effective, efficient and productive is the dream of every start up business in any of organization, one of organizations asset is labor, it has a great impact on company's success and failure. The purpose of industrial and human resource management is optimizing labor resource efficiency to exploit company productivity (Ali Azadeh et al., 2016). According to Mullins (2005), labor's working moral loss, low motivation, poorly rewarded; absence of positive team spirit and lack of sense of belonging is preliminary reason for productivity loss. When it comes to assessing the catalyst for employee performance, labor motivation is very critical and essential factor. Creating a motivated worker is one path for the company successes in other side lack of employee motivation negatively affect company's productivity. Armstrong (2006), revealed that what factor is best to individual's motivation must be identified.

Textile and apparel industries' productivity is highly dependent on labors performance. Efficiencies' of garment and apparel industries are achieved by high output of labor, so chief executives play vital role on human resource development and company goal achievement through direct and forward labor performance augmentation techniques. Generic and practical

literatures designate that motivation is an indispensable (Salim 2014) in the work place to increase the level of productivity. Motivated employees have a sense of belonging, achievement and recognition, and perform with full potential (Osabiya 2015). According to Bhattacharyya (2007), productivity and performance can be achieved by internally and externally motivated employees in the organization. It indicates determining motivation factor is one path for labor efficiency.

World acknowledged and leading companies are known that they have internal and external satisfied customers. Most developing countries give attention for satisfying, motivating and initiating their internal customers (employees). However, in developing countries employee motivation is not regarding issue as product quality but they are eager to introduce new technology. Due to internal customer dissatisfaction labor intensive apparel industries lost their major competitive edge; satisfying internal customer. From Colin and Robin (1999), 74 experiment review financial incentives cannot always improve performance. This shows that employee motivation can be realized with two external and internal motivation factors interdependently. However, different experiential and descriptive researches work on two factors separately.

Global apparel industry market is around US$1 trillion market and is expected to reach US$2.1 trillion by 2025 (Verma 2017). Sub-Saharan Africa share only 0.55% of global exports and Ethiopia is placed in the lower half of that ranking. Nevertheless, Ethiopia was identified in the top future global sourcing locations by a survey conducted by McKinsey in 2015 (Achim Berg 2017) In Ethiopia a lot of foreign investors join textile and garment industries. The government facilitates Industry Parks and industry zones in different Ethiopian Regions. Some of the industry parks and Industry Zones are Hawassa Industry Park, Bole Lemi Industry Park, Dire Dawa Industry Park Lebu Industry Zone and others. Even if the opportunity is good to invest in the industry parks and industry zones, majority of garment and textile industries are suffering due to high turnover rate (40-70%), operating under capacity, cost of operator replacement and 17.6% absenteeism on average (IPDC 2015). Even if the industries have high technological practice, but their production is below 50% (IPDC 2015).

This research bench marks this problem why employee's absenteeism, turn over, lateness is raised out and how it affects the productivity. This paper analyzes the correlation of different external and internal motivation factors with labor productivity and efficiency. Internal Motivation factor is related to psychological (Intangible) rewards while external motivation factors are associated with tangible rewards. This paper aims to assess the impact of internal and external motivation factors on productivity and to analyze the efficiency of human resource in order to indicate efficient and inefficient staffs as well as factors which lead to inefficiency. Integrated analysis is conducted to make the aim viable; descriptive analysis, reliability analysis, correlation analysis, and non-parametric approach. Data Envelopment Analysis Model is a non-parametric optimization method based on mathematical linear programming and it can handle multiple input and multiple output. Analysis and discussion is given based on the listed analysis and decision-making tools.

1.2 Problem Statement

Ethiopian's apparel industry is one path for export earnings. The government facilitates Industrial Parks and industry zones for apparel industries in different Ethiopian Regions and build 191 new apparel factories between 2007 and 2016 to reach US$1 billion by 2020 (IPDC et al., 2015). Some of the industry parks and Industry Zones are located in Hawassa (Hawassa Industry Park), near to Addis Ababa (Bole Lemi Industry Park), and (Addis Ababa) Lebu Industry Zone. Enormous investments are invested in the industry zones. The above listed industry parks are designed for apparel industries.

The opportunity is good for Ethiopian Gross Domestic Product (GDP) and economy augmentation. The government agencies such as Ethiopia Investment Commission publicize conditions advantageous for foreign manufacturer, including low salaries (Sommer 2007), an abundant employee (IPDC 2015), and potential suppliers for cotton production and processing (Maasho 2014). Duty-free access to the European Union, United States, and other global markets and Duty-Free Quota Free trade agreements offer supplementary encouragement to invest (Partnesr 2016). The government's striving promotion campaign has tumbled short of targets export earnings of US$41.1 million in 2015 less than the US$60.7 million targets set by the Ethiopian Textile Industry Development Institute (Shields 2017).

Manufacturers in the industry zone raised the issue of employing, training and retraining workers as a key anxiety. Majority of employees want to earn advance in the industry but they don't have initiation for their work. 90% of employees worked directly on production lines. Preliminary research conducted by BSR project (Shields 2017), stated that working environment, management systems, wage, relationships with management all impact the quality of employee's work as well as to their motivation level workplace. Suppliers provide technical and soft skill training, hire skilled labor from foreign countries such as Sri Lanka to enhance operator's performance but the losses (estimated US$2,000 losses per month per factory due to low productivity, high turnover and low pre-production efficiency) remain steady. Due to a stressful working environment, low wages, few opportunities to promotion and growth, they produce low quality, and poor performance. Manufacturer's profitability is depending upon identifying worker's motivational factors. Major alarming problems are described below;

The theme of low salaries was immensely stated as a stumpy to employee motivation. Workers are salaried on average 800-1200 ETB per month (US$35-$55) (IPDC 2015). Their salary goes towards housing only but they can't cover other basic necessities until they start looking for another roommate. The housing expense for one operator is not affordable by the current salary and they have not any salary augmentation to survive lifetime. Due to this they are not motivated to stay in their work they start looking for another job with better payment. This affects their concentration in the work place and result in poor performance and sudden walkout.

In addition, majority of industry managers are foreigners. It is a source of language problem, working culture tension, misunderstandings, disrespectful management approach, insensitive and sometimes abusive working relationships in the workplace. Workers consistently cited miserable relationships with management and supervisors as a significant reason for not achieving their key performance indicators and carelessness about their work at all.

Experienced workers look for other job opportunity outside the factory because of late promotion. Senior staffs mentioned that they didn't get any position growth for the consecutive three years. This discourage work moral and they lose trust on company. Late promotion is mainly raised issue for being demotivated and negligence in the workplace.

There is discomfort on the workplace; such as cutter station workers face leg pain due to spending their whole day standing up and neck, arm, and back pain for operators their working day at sewing machines, and personal protective equipment was not available. Generally, manufacturers didn't survey the reason for high turnover, absenteeism, and lateness in the workplace. There is no identified motivation factor used to address employee compliance.

1.3 Research Questions

1. Which factors impacting motivation and labor productivity at GMM Garment PLC?
2. What is the significant motivation factor that affects labor productivity of GMM Garment PLC employee's?
3. Which motivation factor is predominantly affect labors relative efficiency of GMM Garment PLC employee's?

1.4 Objective of the Study

1.4.1 General Objective

- The main objective of the research is to identify theoretical relationship of motivation factors and their impact on labor relative efficiency at GMM Garment PLC.

1.4.2 Specific Objective

- To identify the impact of motivation factors with productivity of GMM Garment PLC employees.
- To identify significant motivational factor that affects labor productivity of GMM Garment PLC employees.
- To indicate significant motivation factor which result in labor relative efficiency increment of GMM Garment PLC.

1.5 Scope and Delimitation of the Study

The study focuses on internal and external motivational factors to analyze the relation between productivity and impact on labor efficiencies in one of Lebu Industry Zone's garment industry. This research mainly focuses on identifying the critical motivational factors that affect the productivity it is not merge with another human factor. It cannot cover the whole industry park's and industry zone's garment industry due to time, data availability and limited resource. The study is restricted to validate the identified motivation factors and techniques because it is extremely depending on the manufacturer willingness and preparedness.

1.6 Significance of the Study

The finding from this research gives clear insight on how labor efficiency is highly affected by their motivation level and to draw feasible augmentation on labor performance. Related garment and textile industries inside the industry zone and parks can adopt this research finding to handle their problem. The study helps to reveal the correlation of motivation factor and labor performance so the industrial management can consider as one aspect for efficient labor utilization. The administrative staffs can be aware of reason for the suffering problems and consequently can take feasible solution. It is expected that assumptions behind the proposed solution will grant to address the raised problems. It is significant to identify relevant motivation factor to rise employee motivation and for efficient labor utilization.

1.7 Organization of the Study

This thesis sectioned into 5 chapters. Each chapter contains sub sections and illustrate main chapter. Chapter 1 gives overall introduction on the thesis and covers background of the study, problem, research question, objective, scope & delimitation, and significance of the study. Chapter 2 contains theoretical and empirical literatures. Chapter 3 mentions methodology to address the research objectives and to answer research questions. Data source, analysis method, data description, sample size, type of research design, and target populations are stated. Chapter 4 describes data analysis and interpretation based on the methodology describes in chapter three and result discussion with other related studies. The last section, chapter five summarize, conclude, recommend and further research areas are cited.

Chapter Two: Literature Review

2.1 Introduction

Generating satisfied and motivated people is one means of attaining organization goals. Particularly labor-intensive organization must look for motivating employee for better manpower resource utilization. Even though motivating factors are varying from employee's level. In this chapter concept of motivation and productivity, type of motivation, techniques of motivation and motivation factors will be discussed. This literature summary is compiled from different articles, journals, reports, books, thesis, and so on. The study referenced different authors' analysis and explanations.

2.2 Motivation

In 1930s different work motivation theoretical models are promoted to estimate motivated behavior in organizational settings(2001). The term motivation taken from the Latin word *movere*, means "to move"(Kreitner 2008). According to Coetsee (2002), motivation refers to the interaction between individual and environmental forces to arouse and create persistent behavior. According to Helepota (2005), motivation is complicated there is no unique strategy; motivation strategies are different from organization to organizations. Different subjects cover motivation because it is a basic term if we start discussing on human resource effectiveness. There is no literal definition to describe the word motivation but it is interrelated with different human behavior concepts and with psychology.

2.3 Types of Motivation

Intrinsic motivation and extrinsic motivations are the two-basic classification of motivation. To make one employee motivated both intrinsic and extrinsic motivation factors are relevant, they are interdependent without internal motivation external motivation factors can't beat one's inspiration. There are also another two types of motivation; positive motivation the possibility of increased motive satisfaction, negative motivation is possibility of decrease motive satisfaction it also called fear motivation(Vicar Bisen 2010).

2.3.1 Intrinsic Motivation

According to Joyce (2012), intrinsic motivation is related to psychological rewards such as the opportunity to use one's mental ability. Psychological rewards determined by action and behavior of individual. Responsibility, positive recognition, sense of challenge and achievement, participation, esteem, and others are some of intrinsic motivation factors. Eagerness for the achievement of intrinsic needs drive an individual to perform a task well. The task by self can be means of motivation; it provides initiation, interest, commitment, and opportunity for personal growth.

2.3.2 Extrinsic Motivation

It is associated to tangible rewards such as promotion, holiday, vacation, health insurance, financial rewards, benefits, wage, safety and security, working condition comfort zone are some of extrinsic factors. Work motivation by itself can't be satisfied by extrinsic motives (Njambi 2014). It implies there could be some external factors that stimulus individual's performance to do something.

2.4 Theories of Motivation

Different theorists state work motivation principles, each principle have cons and pros. applying of the combination of two or more theories will be fruitful to fill the demotivation gap. Some of motivational theories are listed.

Table 2. 1: Motivation Theories and their Principles

No.	Motivation Theories	By	Principle
1	Equity Theory	(Adams 1963 & 1965)	Individuals are motivated to attain fairness or equity within the exchange process in terms of the outcomes they receive relative to the input they provide.
2	Expectancy Theory	(Tolman 1932), Vroom, 1964	Individuals produce motivation by combining three perceptions in the decision-making process; expectancy, instrumentally, and valence. Expectancy refers to the perceived likelihood that engaging in a given behavior will lead to a particular set of outcomes. Instrumentality refers

			relation between attaining first and second level of outcomes. Valence represents the affective orientation that an individual hold towards the second level outcomes.
3	Cognitive Evaluation Theory	Deci, 1972	Rewards exert their influence on intrinsic motivation through their ability to satisfy higher order needs in individuals, the need for competence and the need for self-determination.
4	Goal-Setting Theory	Locke & Latham	Difficult goals enhance performance because such goals clearly define acceptable levels of performance, increase the amount of effort an individual exerts towards goal related knowledge and activities.
5	Control Theory	Campion & Lord	It focuses on how individuals gather and evaluate environmental feedback to regulate behavior.
6	Social Cognitive Theory	Bandura, 1986	The self-regulation of behavior entails four interrelated process; goal establishment, self-observation, self-evaluation, and self-reaction.
7	McClelland Achievement Motivation Theory	(McClelland 1988, Maslow 1943)	Four main motives; the achievement motive, the power motive, the affiliate motive, the avoidance motive was developed. This theory mainly focused on relationship between hunger needs and the extent to which imagery of food dominated thought process. The three motives are related to Maslow's self-actualization, esteem and love needs

2.5 Principles of Motivation

Way of motivating target group should be tactical and strategic, unplanned way of motivation can't meet the desired output (Andrzej Borowski 2014). Some of principle if motivations are listed below;

- Proportionality: - the reward should be awarded for the higher and more energetic effort made by the one to get it.
- Diversity: - the reward should not be dependent on job position rather it should be dependent on the worker's actual performance.
- Positive motivation for achievement: - when there is positive achievement monetary or non-monetary bonus should be given at that occurrence time if not the employee feel grievance.

- Psychological Distance: - the motivating tool should not be idle or postponed at a time this will build employee trust.
- Correct Orientation: - employees should be aware of which event consequence punishment and what event will reward them.
- Simplicity and Transparency: - employee motivating techniques should be clear, simple and unbiased.
- Internalization of Organizational objectives: - motivation techniques should be benchmark organizations objective and should promote company success or achievement.
- Sense of Uniqueness: - the employee should feel the incentive unique and can everyone feel exceptional and sign for different from other employees.

2.6 Motivation Factors

Motivation is one broad branch of psychology since motivation can be applicable to variety behaviors(John Arnold 2002). Herzberg (1968), identified eight different motivation ways for management to employee intention. Fringe benefits, reducing time spent at work, Communication, Human relation training, Employee counselling. Sensitivity training, Job participation, and Increase wages.

Herzberg (1987), classifies motivation factors in two; the growth factors or motivators are; Achievement, Recognition of achievement, the work itself, Responsibility, and Growth and advancement.

The Dissatisfaction – Avoidance or Hygiene factors are Company policy and administration, Supervision, Interpersonal relationships, Working condition, Salary, Status, and Security. These factors were presented to 1685 employees in a survey to conclude that all of the factors contributing to job satisfaction, 81% were motivators and of all the factors contributing to employee dissatisfaction, 69% were hygiene related (Herzberg 1968 & 1987). The table below contains different motivation factors on different research area by various researchers. Majority of researchers are concerned on external motivation factors. However, this paper argues that motivation can’t be triggered by one factor only it should be tested by both of internal and

external factors. Total of 27 motivation factors are identified from practically investigated journal articles and studies.

1. **Job Satisfaction**

Clegg (2001), mention job satisfaction is deep aspiration that an employee has towards the dedicated job. Working condition discomfort is main reason for employee's job satisfaction (Faragher EB 2005, Berry et. al. 1993). Job satisfaction is an augmentation feature for work stress; theories supported the fact that worker's satisfaction directly affects productivity (Munich 2008). From different studies job dissatisfaction have negative impact on employee performance.

2. **Job safety**

It is a guarantee for employee to feel stable in the company and get free from fear of being unemployed. If employees feel unsecure in the work place they do not perform with full effort. Scientific researches justified that job insecurity has negative impact on employee performance (Loi 2011). Job security exists when an organization provides permanent employment for employees (Yousef 1998 and Meltz et al.,1989).

3. **Appreciation and Recognition**

Appreciation from managers gets the workers committed to their work and drives them to work for success of organization's goal and objectives. Duly recognized employees are responsible, committed and motivated in the organization also the can work efficiently by realizing the appreciation get from their host company (Chukwuma. Edwin Maduka 2014). Employees performance is dependent on their motivation level not only their ability so simple boss appreciation and organizational recognition can enhance their motivation level.

4. **Working condition**

Organizational climate is one related issue for employee motivation and performance. Employee behavior is affected by the environmental working condition (Ashraf A. shikdar 2003). Creating

smooth organizational condition is one technique for increasing employee motivation to maximize their performance. Good working climate can be teamwork, good communication and strong work habit. Environmental conditions can be described by temperature (humidity and air movements affect the laboriousness of individual workers task and their adoption of the working condition), Noise (noise above 90db for more than 9 hours at a time cause hearing damage and employees are distracted by the unwanted noise), Lighting (proper lighting system can create sight comfort for employee and the color content of the light and the amount of glare is basic), and ventilation (Tumwine et al., 2016).

5. **Empowerment**

Empowerment can be described by giving worker authority to decide their work status by themselves with another supervisor decision. It is helpful to build sense of achievement and responsibilities. Empowerment is one way of retaining efficient workers and motivated workers (David Conrad 2015, Masood et al., 2014).

6. **Opportunity for Education and Training**

Soft skill, technical, and technological training is one way of changing employee's attitude. Opportunity for training and education is one benefit that every employee's look forward. Sponsor employees for further training and academic scholar at the expense of the company are one path for creating loyal and productivity employee (Omollo et al.,2015).

7. **Wage**

Motivating workers can be achieved by waging employees highly. Money is one means of creating initiation of worker's moral and feeling of being in on things (Gharene 2010). People value money therefore monetary reward system can be functional if there is performance-based salary increment, short tern salary increments and long-term salary increment (Merchant 2007).

8. Bonus, Rewards and Incentives

Reward is the benefits come from performing tasks more than expected target. It is a significant and motivating factor. If workers are not satisfied with the rewarding and bonus package they start complaining which lead to dissatisfaction (Pitts 1995). Incentives are a great way to reward employee that the company wants to encourage work performance. Incentive packages include bonus, profit sharing, beneficial loans, free meal and others related to money (David Conrad 2015, Lucia Murioz-Pascual et al., 2017).

9. Job design

The main to job enrichment is relying on job design; the job must be designed to fit to workers not a worker to fit to the job. Employee's job structure has substantial impact on their motivation (Fried 2008). Proper job design is one path for employee satisfaction, and higher performance and productivity can be achieved (Grant 2007 & 2009).

10. Promotion and Growth

An appropriate promotion system is an approval for employee's job safety and security (Masood 2014). Employee motivation is affected by company's promotion system. Time based promotion creates sense of loyalty on employee's mind (Omollo 2015). Late promotion and unfair growth are the major factor for employee dissatisfaction (Chukwuma Edwin Maduka et al.,2014).

11. Leadership Style

Knowledge about management style and empirical performance is different. Theoretical principle on how to manage employee is knowledge but it is impractical without skill. Employees are highly affected by the company leadership style. Biasness in the management style affects employee's motivation as well as their performance. The management style should be participative it should not be unfair (Kalyani et al.,2006).

12. Flexible Working Hour

Schedule and hour flexibility, is one means of creating convenience to employee. The study conducted on fast food restaurant 55% of employees are strongly interested by flexible shift schedule and it eradicate tiered ness in the work place (Nawaz et al.,2011). Employee motivation can be achieved by facilitating working hours for shop floor workers. (Daniel 2016).

13. Facilities and Packages

Supportive facilities offered by the company are one means of rising employee motivation. The research conducted in McDonalds on 60 employees, more than 30 were highly encouraged by free meal (Nawaz et al.,2011). Offering free transportation, free medical service, insurance, free sanitary materials, and related packages enhances employee motivation level (Banerjee et al.,2015).

14. Communication

Organizational communication can be defined as "the process of creating and exchanging messages within a network of interdependent relationship to cope with environmental uncertainty" (Goldhaber 1979). Harsh communication between supervisors and operators is main reason for demotivation. In other side creating smooth communication is one way of handling employee motivation (Ali ShaemiBarzoki et al.,2012).

15. Guidance and Support

It is a comprehensive, developmental program designed to support employees in work related practice as well as daily life related issues. It is one way of motivating peoples by giving support on routine activities (Ismail et al., 2008).

16. Fair Assessment

There is continuous assessment in the company to measure workers performances. During assessment the examiner perception should be bias free or it should be concerned on their job only. If employees get fair assessment during work evaluation their trust will increased but if they didn't get bias free evaluation they will be demotivated in the work place (Gharene 2010).

17. Work Life Balance

It describes balance between employees between time, money devoted for their job and other aspect of life such as time for family, social life, and relaxation activities. Employee's motivation is highly affected by work life balance. They need to taste their life flavor beside their work so companies should consider this as a motivating recipe (David Conrad et al.,2015).

18. Clear Goal and Organization Policies

Company's objective can be realistic if employees are aware of it. Employees need to have deep understanding on their company vision, mission and policies. If there is ambiguity in understanding of company goal their motivation will be negatively affected (Ali ShaemiBarzoki et al.,2012).

19. Entertainment

It is one way of motivating employees given by the company. Entertainment can be art, recreation, cultural trip, team game, and so on. Different studies prove that entertainment in the work place is the major thing to motivate employees (Lucia Murioz-Pascual et al.,2017).

20. Company Loyalty

Key to employee retention is company loyalty, employees feel important and they start struggle for company goal achievement. Company loyalty can be profit sharing but it should not be forgotten (Muhammad Nadeem et al.,2014).

21. Commitment and Participation

Commitment in the company can be described as the gradation of employee involvement in company goal and objective's. It categorized from internal motivation due to emotional attachment and involvement (Ghose et al.,2014).

22. Attitude and Self-Realization

Employee attitude is influenced by manager's interaction and response. Safe and comfortable working environment result positive attitude. However, disrespect by manager negatively affect employee attitude and it lead to less initiation in the workplace (William et al.,2010).

23. Responsibility

Responsibility is directly related with level of employee motivation. Managers can use the techniques of giving responsibility to their employees (Alrahlah et al.,2016).

Table 2. 2: Different Motivation Factors in different Studies

No.	Authors	Case Study	Extrinsic Motivation Factors								
			Interesting Work	Job Safety & Security	Appreciation and Recognition	Empowerment	Wage and Allowance	Working &environmental Condition	Guidance and special support	Communication with peer	Promotion
1	(Rajesh Bheda 2003)	Apparel Manufacturing	√								
2	(Cheser 1998)	Manufacturing						√			
3	(David Conrad 2015)	Physicians Hospital	√	√	√	√	√	√			√
4	(Jon-Chao Hong 1995)	Welfare Corporation									
5	(Panagiotakopoulos 2013)	Small Firms									
6	(Lucia Murioz-Pascual 2017)	Manufacturing Industry, Research Activity, Communication		√			√				
7	(Rao 2006)	Manufacturing Sector									
8	(Chukwuma Edwin Maduka 2014)	Manufacturing Unit		√	√		√	√			√
9	(Omollo 2015)	Bank			√		√	√			√
10	(Amin Akhavan Tabassi	Construction Firm									

	2012)										
11	(Elizabeth Boye Kuranchie-Mensah 2016)	Mining Companies	√								
12	(Ismail 2008)	Airlines, Academics, Bank	√	√			√	√	√		√
13	(Nawaz 2011)	Food Restaurant					√			√	
14	(Masood 2014)	Private Sector Organization	√	√		√	√	√			√
15	(Ali ShaemiBarzoki 2012)	Saipa Industrial Complex Corporation		√			√	√		√	
16	(Ali Azadeh 2016)	Petro Chemical Plant	√	√							
17	(Muhammad Nadeem 2014)	Private Firms			√				√	√	
18	(Masood 2014)	Education Sector									√
19	(Imran Khan 2014)	Textile Industry	√								
20	(Md. Nurun Nabi 2017)	Bank		√	√		√	√		√	
21	(Safiullah 2015)	Telecommunication	√	√	√		√	√		√	√
22	Kul B. Luintel	Bank					√				
23	(I.K. Antwi 1993)	Academic Libraries	√		√		√	√		√	
24	(Gharene 2010)	Textile Industry	√	√		√	√	√			√
25	(James Christopher	Research Scientist	√				√				

	Ryan 2016)										
26	(MHR Sandeepanie 2015)	Apparel Manufacturing			√		√			√	√
27	(Ashraf A. shikdar 2003)	Metal, Plastic & Food sector						√			
28	(Daniel 2016)	Bank					√	√			√
29	(Terziovski 2003)	Bank				√					
30	(U. R. Uzonna 2013)	Bank		√	√		√				√
31	(T. T.-H. Waheed 2011)	Retail Sector	√	√	√		√	√		√	√
No.	Authors	Case Study	Extrinsic Motivation Factors								
			Fair assessment	Work-life Balance	Clear goals, Organization Policies	Entertainment	Facilities and Packages	Opportunity for education	Bonus, Incentives &rewards	Flexible Working time	Job Design
1	(Rajesh Bheda 2003)	Apparel Manufacturing									√
2	(Cheser 1998)	Manufacturing									

3	(David Conrad 2015)	Physicians Hospital	√	√	√						
4	(Jon-Chao Hong 1995)	Welfare Corporation				√	√	√	√	√	
5	(Panagiotakopoulos 2013)	Small Firms									√
6	(Lucia Murioz-Pascual 2017)	Manufacturing Industry, Research Activity, Communication									
7	(Rao 2006)	Manufacturing Sector							√		
8	(Chukwuma Edwin Maduka 2014)	Manufacturing Unit						√	√		
9	(Omollo 2015)	Bank					√	√	√		
10	(Amin Akhavan Tabassi 2012)	Construction Firm						√			
11	(Elizabeth Boye Kuranchie-Mensah 2016)	Mining Companies									

12	(Ismail 2008)	Airlines, Academics, Bank									
13	(Nawaz 2011)	Food Restaurant					√		√	√	
14	(Masood 2014)	Private Sector Organization						√			√
15	(Ali ShaemiBarzoki 2012)	Saipa Industrial Complex Corporation			√				√		
16	(Ali Azadeh 2016)	Petro Chemical Plant									√
17	(Muhammad Nadeem 2014)	Private Firms			√						
18	(Masood 2014)	Education Sector						√	√		
19	(Imran Khan 2014)	Textile Industry						√			
20	(Md. Nurun Nabi 2017)	Bank					√				

21	(Safiullah 2015)	Telecommunication							√	√	
22	Kul B. Luintel	Bank					√		√		
23	(I.K. Antwi 1993)	Academic Libraries	√						√		
24	(Gharene 2010)	Textile Industry	√				√		√		
25	(James Christopher Ryan 2016)	Research Scientist			√				√		
26	(MHR Sandeepanie 2015)	Apparel Manufacturing							√		√
27	(Ashraf A. shikdar 2003)	Metal, Plastic & Food sector									
28	(Daniel 2016)	Bank					√	√	√	√	
29	(Terziovski 2003)	Bank									

30	(U. R. Uzonna 2013)	Bank					√		√		√
31	(T. T.-H. Waheed 2011)	Retail Sector			√		√		√		
No.	Authors	Case Study	Extrinsic Motivation Factors		Intrinsic Motivation Factors						
			Management style	Company Loyalty	Relationships	Wishes, Interest	Participation	Self-Realization	Opportunity for personal growth	Responsibility	Attitude
1	(Rajesh Bheda 2003)	Apparel Manufacturing									
2	(Cheser 1998)	Manufacturing									
3	(David Conrad 2015)	Physicians Hospital								√	
4	(Jon-Chao Hong 1995)	Welfare Corporation									
5	(Panagiotakopoulos 2013)	Small Firms	√								

6	(Lucia Murioz-Pascual 2017)	Manufacturing Industry, Research Activity, Communication			√	√	√	√	√		
7	(Rao 2006)	Manufacturing Sector									
8	(Chukwuma Edwin Maduka 2014)	Manufacturing Unit	√								
9	(Omollo 2015)	Bank									
10	(Amin Akhavan Tabassi 2012)	Construction Firm									
11	(Elizabeth Boye Kuranchie-Mensah 2016)	Mining Companies									
12	(Ismail 2008)	Airlines, Academics, Bank		√						√	
13	(Nawaz 2011)	Food Restaurant									
14	(Masood 2014)	Private Sector Organization									
15	(Ali ShaemiBarzoki 2012)	Saipa Industrial Complex Corporation	√								
16	(Ali Azadeh	Petro Chemical									

	2016)	Plant									
17	(Muhammad Nadeem 2014)	Private Firms		√							
18	(Masood 2014)	Education Sector									
19	(Imran Khan 2014)	Textile Industry									√
20	(Md. Nurun Nabi 2017)	Bank									
21	(Safiullah 2015)	Telecommunication									
22	Kul B. Luintel	Bank									
23	(I.K. Antwi 1993)	Academic Libraries									√
24	(Gharene 2010)	Textile Industry	√								
25	(James Christopher Ryan 2016)	Research Scientist									√
26	(MHR Sandeepanie 2015)	Apparel Manufacturing	√			√					√

27	(Ashraf A. shikdar 2003)	Metal, Plastic & Food sector	√								
28	(Daniel 2016)	Bank									
29	(Terziovski 2003)	Bank									
30	(U. R. Uzonna 2013)	Bank									
31	(T. T.-H. Waheed 2011)	Retail Sector									

2.7 Defining Productivity

Being productive is dream for every startup business. Productivity defined by various streams and measuring calculations was developed. According to Marco (2014), productivity factors are multidimensional; it can have various factors like manpower productivity, production system productivity, direct material utilization degree, energy and auxiliary materials productivity, and investments productivity. Increasing theses productivity factors can decline the cost of total production this will help to raise gross profit margin. Productivity is "the power of being productive, efficiency and the rate at which goods are produced" (Drucker 1974). Based on the definition three concepts can be raised; the first is power of being productive, second is efficiency how the resources are utilized, the third one is measure the ration of output rate (Olomolaiye 1988). Anna (1997), defines productivity as application of input of any manufacturing or service sector to achieve targeted output. In the techno-economic approach productivity measure output/input, Productivity is a combination of effectiveness and efficiency, and a wide approach make organization function better are the three productivity definition categories(Pritchard 1995, Paula Linna 2010).

Productivity definition interchangeably described by the meaning of effectiveness and efficiency but it couldn't be replaced. According to Paula (2010), the idea behind efficiency and productivity rely on quantitative change and assume that no qualitative changes take place in the process though effectiveness dedicated to qualitative changes. Industrial productivity is a wide subject and interacted with various factors like personal factors, job related factors, project related factors (Edwards 1982).

2.8 Measuring Productivity

Productivity can be measured in different ways and differ according to the organizations. Labor intensive organization's like textile industry, manual assembly works productivity is most often measures by labors productivity(Paula Linna 2010). Before measuring productivity in any organization, the major productivity factors should be identified. If there is no clear map on productivity framework it could not be measured. According to Elliot (Grossman 1984), productivity measurement is a powerful management tool, it serves as an indicator or a gauge for

organizations effectiveness and efficiency. Measuring actual value added is chiefly concerned on measuring productivity which is net output (Balakrishnan 2004).

Productivity measure relies on availability of data and purpose of productivity measurement (Schreyer 2001). The two-broad classification of productivity measurement is single factor productivity measure or partial productivity measure (total output per unit of single input type) and multifactor productivity measure or total factor productivity measure (total output to a multiple of input) (Lieberman n.d., Coelli et al., 1998)

Organization productivity can be analyzed and measured by labor productivity, machine productivity, row material productivity, utilities productivity, purchaser's productivity, distributor's productivity, and so on (Olomolaiye 1988) et al., Among the different productivity domains labor intensive industries are sensitive to labor productivity. From Mafizul (1990) journal to measuring and analyzing labor productivity, input and output variables are identified. Labor input considered as production worker directly engaged in any manufacturing process where as labor output variables are final apparel made by production employees. Even if input and output variables are identified all employees are both production and non-production staffs actual working hours are used to measure productivity. Labor input flexibility is a major determinant of labor efficiency (Edward J. and Susan H. 1997). Manufacturing productivity differ from service productivity. Despite service productivity has direct touch with human motivational and psychological theories (Banerjee, Integrating Human Motivation in Service Productivity 2015). In order to monitor employee performance different technologies were introduced; Electronic Performance Monitoring (EPM) is one tool for monitoring employee working performance (Kolb 1995).

Table 2. 3: Overview of Productivity Measures

Types of output measure	Types of input measures			
	Labor	Capital	Capital and Labor	Capital, labor and intermediate inputs (energy, materials, services)
Gross Output	Labor productivity (Based on gross output)	Capital productivity (Based on gross output)	Capital-labor MFP (based on gross output)	KLEMS multifactor productivity
Value added	Labor productivity (Based on value added)	Capital productivity (Based on value added)	Capital-labor MFP (based on value added)	-
	Single factor productivity measures		Multifactor productivity (MFP) measures	

Source: From www.SourceOECD.org Organization for Economic Co-Operation and Development Manual, accessed on 24th December, 2017.

2.9 Employee Motivation and Productivity

Relationship between motivation and productivity has been studied for long period of time. Producing motivated employee is the key weapon to boost manufacturing as well as service sectors productivity. Without knowing how to motivating employee no system moves without obstacles, no organization achieves its objective, no customer satisfaction (Chukwuma E. Maduka 2014, Roos 2005). Among different organization resources, employee motivation affects labor productivity particularly (Olomolaiye 1988) and job satisfaction has relation with job performance (Timothy A. Judge 2001). Employee motivation has direct influence on quality of service and company profits (William 2010, Keijzers 2010). It is very decisive factor on

employee performance (Gichure 2014) and influenced by outward and inward factor (Ajang n.d.). From Stella (Stella 2008), research paper motivation of workers can lead to better labor productivity, while lack of motivation can result inadequate or poor worker's performance. In order to speed up employee performance availability of motivational package is very essential (Mohamedi 2013).

2.10 Empirical Literature Review

Different authors explore the impact of motivation on productivity in different sectors. Motivation theories are investigated on variety case studies. For instance, Herzberg's hygiene factors and motivators inspected on Malaysian retail sector; achievement, advancement, work itself, recognition and growth are recorded as a motivator whereas company policy, relationship with peers, work security, relationships with supervisor, money and working conditions are itemized as a hygiene factor, the result shows that hygiene factors dominated motivators (T.-H. T. Waheed 2011). Dieleman (2003) study shows that financial and non-financial incentives influence employee motivation.

2.10.1 Motivation in Manufacturing

Diverse studies are conducted in various manufacturing service sectors to identify the impact of motivation on productivity. In any manufacturing industry employee motivation is associated with the firm productivity. Motivation factors whether separately or dependently affect the worker's productivity. The influence of work environment on worker's productivity explored by Taiwo (2010) determine that building conducive and comfortable working environment is appropriate method to enhance employee performance and lead to productivity. Service productivity can be represented as the input of personnel behavior, organization goal to output of quality service with respect to customer satisfaction (Vourinen 1988, Zeithaml et al.,1996). In apparel industry workforce motivation determines the quality of service delivered (Duckwitz Sönke 2012) it indicates workfofrce motivation is determinant factor (Banerjee 2015). The research carried on dental faculty members by Alrahlah (2016), conclude lack of research related trainings, deficient awareness on how the research will be conducted and its benefit, is major obstacle for the research productivity. Research and in-depth interview accompanied in Credit

West Bank motivation tools like recognition, promotion, and rewards are effective and cost-efficient motivators to nurture the worker's performance (R. U. Uzonna 2013).

2.11 Performance Measurement

Organizational performance measurement is beginning with single unit (entity) performance assessment. Labor performance can be measured though their quantitative element in order to obtain its qualitative measurement this is one way of monitoring business (A. Noraziah 2011). Single unit performance or efficiency is measured based on the ration of input or resource used to produce expected outcome or output. The output formation process may be affected with different factors like environmental factor, socio-economic factor, political factor, behavioral factor and so on. Identification of input-output factor and level is very decisive factor to measure performance and determine the efficiency rate. There are two types of performance measurement methods namely; parametric and non-parametric methods.

2.11.1 Parametric Performance Measurement Method

Parametric methods are best when there is single input or single input, no explicit allowance for any inefficiency by the units being measured. Using ordinary least square regression (OLS regression) the observed single input-single output can be assessed. When there is explicit allowance in the model to be developed for inefficiency by the single decision-making unit Stochastic Frontier Method (SFM) is used to assess the performance and it requires specifications of functional form and assumptions regarding distribution of the error term (Ahmad 2016). the above two methods are shortsighted because; when no explicit allowance is made in the model for decision making unit inefficiency they estimate average rather than efficient levels of single input for single output, and they trait all differences between projected and observed level of input to inefficiency (Thanassoulis 2001). Generally parametric performance measurement method is suitable to create good understanding of the production process of the single input-output efficiency measurement and it guide to summarize performance measurement rather than multidimensional efficiency and performance indication for a unit input or single output.

2.11.2 Non-parametric Performance Measurement Method

In this method multiple inputs and multiple outputs comparative performance measurement can be resolved. One of influential quantitative, analytic tool for measuring and evaluating entities' performance when there is multiple inputs and multiple outputs.

2.11.2.1 Data Envelopment Analysis (DEA)

Continuous improvement will not be held until performance of entities are measured and evaluated (J. Zhu 2009). Data Envelopment Analysis is data-oriented approach for evaluating different Decision-Making Units performance by considering multiple inputs and multiple outputs (William W. Cooper 2004). Verma (2015) define DEA as; 'It is a non-parametric method as it does not require any assumption and it is a methodology directed at the frontier rather than at central tendency, while statistical producers are based on central tendency' (Milan M. Martic 2009). It was initiated by Charnes Cooper and Rhodes (CCR) in 1978 in their seminal paper (A. Charnes 1978) and developed as a method for assesing different organizations unit efficiency (Thanassoulis 2001). Farrell (1957) extended and operationalized twenty years before Charnes's paper work using mathematical linear programming method. DEA evaluates relative efficiency of DMU with common input and output also it is used for ranking and analyzing efficiency in different sectors (M. E. Azadeh 2002 & et al.,2004). Decision Making Units (DMUs) are diverse based on the application area such as bank, petrochemical plant, education sector, service sector and manufacturing sectors. DEA has also been granted tool to approve the entities performance measured by any other method or tool (Cooper 2000).

2.11.2.2 Application of DEA Empirical Review

Application of DEA is broad and multipurpose tool with respect to measuring efficiency of proportion of output to input. Using DEA inefficient resource can be identified and efficient performance can be indicated. Edward (C. Edward 2017), create DEA model to rank 358 business journals using data from five different Thomson Reuters Journal Citations Reports. The ranking is based on the journals citation reports, business publication efficiencies and its positive impact. Greta (2017), apply Malmquist index to the judiciary for better understanding of the

impact of specific policy on the productivity of Italian tax judiciary. The result shows that there is strong variety among courts depending on their geographic location; with North-West and North-East of Italy and settlement of a labor-intensive activity improves the productivity of the court. From the different DEA approaches Greta uses output-oriented model and assumes Variable Returns to Scale (VRS). DEA also applicable in different power electric generation management companies, (Alireza Fallahi 2011) provide an empirical analysis of the determinants of energy efficiency in 32 power electric generation management companies between 2005-2009 periods.

Stability test was conducted by varying the number of input to verify the DEA model also Spearman correlation coefficient are calculated to assess the impact of individual decision-making units. Rom 32 case companies 21 companies increased total factor productivity whereas the other 11 companies decrease their total factor productivity. From 2002-2009 21 Turkish electric distribution companies' performance was analyzed with the help of DEA and Tobit model (Celen 2013). The analysis indicates that efficiencies are positively affected by customer density of the region and the private ownership. Iranian thermal power plants have been assessed with respect to job security, satisfaction and work stress by DEA (A. Azadeh 2014). Pearson and Spearman correlation coefficients are used for ranking power plants. From the DEA job security has been found as the most effective human factor in Iranian power plants. Using regression modeling worker's productivity assessment is conducted and significant factors are showed statistically in Iranian Petrochemical Industry (A. C. Naser Hoboubi 2017). Further analysis goes to service giving industries on banks, Peter (2016) proposes new Fuzzy-DEA alpha level model to assess underlying uncertainty and further bootstrapping truncated regressions with fixed factors are used to measure the impact of each model on the efficiency scores and to identify the most relevant decision-making unit efficiency. The result indicates that price of labor, price of capital, and market-share were found to be the significant factor in measuring bank efficiency. In Smita's paper (2015), DEA-CCR model was applied for analyzing the best practice over 2012 and 2013 period of Indian Textile Industry, input variables are cost of raw material, cost of fuel and power, cost of employee whereas the output variables are cost of products that can produce by mills and net profit. Based on the analysis 7 efficient mills are identified in 2013, while 5 mills were efficient in 2012, the DEA analysis helps to identify effective resource utilization

over the given period. Comparative efficiency analysis is conducted using input-oriented BCC (Banker, Charnes and Cooper) model under variable return to scale case study on Turkish textile and apparel industry for period of 2003 and 2008 (Canan Saricam 2012). The analysis shows that average efficiency score of Turkish apparel industry was higher than textile industry, the conclusion raised that apparel industry should overcome the lack of insufficient level of exports whereas the textile industry needs to increase gross value added in order to be more efficient.

Summary

Different theorists raise the issue of human engineering (motivation) and set their principles and theory. Based on the theory various experiments are conducted and motivation factors are raise. Types of motivations are disused with respect to employee performances in different sectors throughout the world. This study outlined the major motivational problems appear in the apparel industries which is a great cause of productivity loss. Different researchers work on the extrinsic and intrinsic factors and they prove motivation is a heartbeat of employee performance. Employees are influenced by their motivation level. Monetary and non-monetary incentives are mainly discussed topics. There is no uniqueness or there is no single factor mentioned as a best motivating factor. Whether it is financial incentive or non-financial incentives it is depending on the employee interests. From the above literature combining different motivation factor is fruitful to boost employee performance. In Another way motivational factors can be used as to measure labor relative efficiencies. Using non-parametric approach, one can identify and rank the critical motivation factor by taking operator as a decision-making unit. Generally, workforce performance is highly dependent on their motivation level. Internal and external motivation factors have significant impact on employee performance. Motivation factors and labor productivity can be analyzed and discussed in both quantitative and qualitative approach.

Literature Gap

Total of 14 reference books, 120 journal articles, 15 thesis and dissertations, and other related literatures, are look over to accomplish this research. From the above declared empirical review, it can be seen that there is no research that integrate both intrinsic and extrinsic motivation factors to show the impact on labor's relative efficiency. Azadeh (2014), conduct research on

impact of job security, satisfaction and stress on performance assessment and optimization of Iranian thermal power plants. In this paper only three human factors are considered to indicate the impact on Generation Company's performance. However, it is not adequate to generalize human factors impact with specific three factors. Also related studies conducted in Iranian Petrochemical Industry entitles as the impact of job stress and job satisfaction on workforce productivity (A. C. Naser Hoboubi 2017), in this paper the regression modeling is demonstrated. To fill the research gap integrated conceptual model is developed and data envelopment analysis is used to show the impact of integrated internal and external factors on decision making units (staff) relative efficiency. Based on the conceptual model the highly significant or correlated factor will be identified using confirmatory factor analysis then significant factor is identified.

CHAPTER THREE: RESEARCH METHODOLOGY

Based on the literature survey this research aimed to explore the impact of employee motivation on productivity. This will be figure out by examining the relationship between motivation factors and employee performance, the effects of worker demotivation on productivity, and by ranking motivation factors according to the employee attention. Different motivation factors will be measured and prioritized according to the employee's work position, so as to identify which motivation factors is more sensitive and have impact on the worker's performance.

3.1 Research Design

This research selects on type of research design which is investigative or exploratory research design. This is because to gain insight on how motivation factors affect employee performance rather than product quality. This research design helps to explore the impact of worker's motivation on employee performance and productivity. It is help full to answer research questions by denoting motivation theories and factors studied by different authors. However, the research selects exploratory research design it starts with a description of worker's motivation, motivation theories, motivation techniques, and relationship with productivity. In addition, combination of quantitative and qualitative research method is selected. Qualitative research method is proposed because it can answer the question of 'why' and for cause and effect analysis. Whereas quantitative research method is proposed because to measure and quantify motivation parameters also it helps the research to be free from personal judgments.

3.2 Sources of Data

Source of data is very essential factor to make the research reliable and applicable. Primary and secondary data sources are used to gather evidence, facts, factors, information, truth, proofs and others. The data used for this research is the combination of first hand and second-hand sources. The primary sources are direct observation, informal interview and questionnaires. Secondary data sources are articles, journals, reports, websites, published and unpublished thesis, reference books, and case company's compiled document.

3.3 Data Collection Method

From the above-mentioned data sources data collection were carried out. One of primary data source mention is a questionnaire which is mostly used for both qualitative as well as quantitative data analysis. The questionnaires prepared were both open ended and close ended because to dig out the respondent opinion on the research topic. Observations and informal interview with top level managements were used to triangulate the respondent's response. Different motivational factors survey, motivation factor ranking, employee intrinsic and extrinsic motivation and productivity assessment questions and statements are used to know the impact of motivation on employee performance. The questionnaire contains four parts.

The first part consists of general information about the respondent. It requests information on gender, age, marital status, level of education, job position and work experience. This will help to find out the effect on motivation, and influence on performance and productivity. Those questions are replied by all employee classes.

Part two is prepared as a statement to assess the participant agreement on motivation factors. The statements are measured by different agreement level (strongly disagree, disagree, no response, agree and strongly agree).

Part three is equipped as multiple choose, it also contains open ended questions to give a chance on further explanation on the raised question. This part is major part of the research to gather data on employee reaction on motivation and to examine the consequence of demotivation on employee productivity. Co-relation and regression analysis are based on this concrete data. It also related with employee demographic data and the agreement on the raised statements.

Part four is developed to rank the motivation factors. Motivation factors are two types named as intrinsic and extrinsic motivation. Some of intrinsic motivation factors are responsibility, recognition, esteem, participation and so on. Some of extrinsic motivation factors are promotion, holiday, vacation, health insurance, financial rewards, benefits and others. Motivation factors are differing from employee to employee, some may be attracted by monetary benefits some other by non-monetary benefits. Even if the motivation factors are different they have some

commonalities and majorities are belonging to one factor so this part gives the opportunity to prioritize different motivation factors. From the ranking it is easy to point the sensitive motivation factor on productivity.

3.4 Population

The research is conducted on Lebu Industry Zone Addis Ababa, Ethiopia. There are different textile and garment industries with in the shed. This study conducted on GMM Garment PLC. The total populations counted are 259 employees from the raw material feeder to gate keeper. The target populations are shop floor workers, supervisors and different department managers.

3.4.1 Sampling and Sample Size

The total population doesn't constitute a homogeneous group so stratified random sampling is chosen and sample size will be determined based on the total population formula at 5% level of significance. By considering time and cost total populations stratified according to sub groups based on their work position (top level managers, supervisors and low-level workers). The assumption is motivation factor is different from level management. This can have used to explore the impact of motivation on performance at different employee position. Simple random sampling method was used for each stratified sub groups because it is free from bias.

Supervisors = 14 employees

Operators = 259 employees

Sample formula $n = N / 1+N (e)^2$

Where n = desired sample size

N = size of total population

e = Limit of error tolerance level of significance 10% (0.1)

Based on the above formula sample size were calculated for each subgroup;

Supervisors N = 14, e = 0.15, n = 11

Operator N = 259, e = 0.15, n = 38

Total of 49 questioners distributed for the stratified sub groups.

3.4.2 Reliability Test

Based on the Cranach's alpha coefficient method the designed questionnaires reliability is evaluated. The theoretical value of this index varies from 0 to 1 and higher values of alpha are more desirable because it shows the high level of internal consistency among questions. The Cranach alpha standard is greater than or equal to 0.7.

3.4.3 Validity Test

This test identifies the questions viability to the real-world conditions. Among the different types content validity will be applied, it will validate whether the question capable of measuring its defined purpose or not. Content validity ration calculated using the following formula (Kelley 1942).

$CVR = (n_e - N/2)/ N/2$

Where n_e = the number of subject matter expert representing essential

N = total number of subject matter expert representing

CVR ranges from +1 to -1, positive shows at least half subject matter experts evaluated the item essential

3.4.4 Method of Data Analysis

Qualitative and quantitative data analysis method used to analyze the qualitative and quantitative data. Informal interview and close ended questionnaires were analyzed qualitatively. Statistical Package for Social Science (SPSS) is used to analyze questionnaires. Regression analysis is used to show the impact of motivation on productivity. Co-relation analysis is used to show the relation of motivation factors and employee performance. Analysis of Moments Structures (AMOS) is used to analyze the confirmatory factor analysis, reliability test, descriptive statistics, Pearson Correlation, and path analysis. Data Envelopment Analysis is used for evaluating the staff's relative efficiency with multiple input and multiple outputs. Four types of DEA are used to measure operator's relative efficiency. MaxDEA Basic software is used. It is professional DEA software for student. Sensitivity analysis is applied to indicate the impact of motivational factors. The result is presented by figures, tables and percentages. In addition, alpha cut and center of area fuzzy expert system is used to rank motivational factors.

Factor Analysis

It is widely used statistical method to trigger unobserved variables which can account for the covariance among the large set of observed variables (Spearman 1904). There are two types of factor analysis, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA assumed that each common factor affects every observed variable. And it does not permit correlated residuals (Pui-Wa Lei 2007). CFA is a special case of the structural equation modeling and it is theory driven (Statmath 2008) but EFA is data driven. Structural Equation Modeling is statistical modeling tool that used to validate practical theories with empirical data (Pui-Wa Lei 2007). Confirmatory factor model can be summarized by the equation;

$$\mathbf{Y} = \lambda\boldsymbol{\xi} + \delta$$

Y is observed variable vectors; λ (Lambda) is the matrix of loadings connecting to the vector's common variable and δ is the vector unique factors.

Estimation

When the y variables are measure as deviation from their meant it is easy to show that the sample covariance matrix for y represented by ∑ (sigma), can be decomposed as follows:

$$\Sigma = \Lambda\Phi\Lambda' + \Theta \text{……..(2)}$$

Where Φ (phi) represents the covariance matrix of the **ξ** factors and Θ (theta) is the covariance matrix of the unique factors δ (K. a. Bollen 1989). Regression weight is parameter to measure estimates, standard error (S.E), critical ration (C.R) = estimate / standard error, probability value (P). Estimate predict unstandardized regression coefficient in the dependent variable for each one unit change in independent variable. For instance, A←B estimate value is (-0.85) it means A decrease -0.85 for each 1.000 increase in B. When Critical Ration (CR) is > 1.96, the factor covariance is significant and when p-value is (***) it means the path is significant at the 0.05 level or better than that (Hoyle 1995, Raykov 2000).

Test of Relative and Goodness Fit

Goodness to fit means measuring how well the model fit with the observed data (Pui-Wa Lei 2007). Root Mean Square Error of Approximation (RMSEA), indicates a close fit of the model in relation to the degree of freedom and it is based on subjective judgment and cannot be regarded as infallible (Steriger 1980). RMSEA value about 0.06 or less would indicate a close fit of the model (Arbuckle 2006). Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) compare the absolute fit of specified model to independence model (Bollen 1993 et al.,). The model fitness is measured by Tucker-Lewis's goodness-of-Fit-Index (TLI) value >= 0.95 (Tucker 1973), Comparative-Fit-Index (CFI) >= 0.95 (Bentler 1990), Root Mean Square Error of Approximation (RMSEA) value <= 0.06 (Hu 1999). The greater the inconsistency between the overall ft. of the two models, the larger the values of these descriptive statistics

Fuzzy Expert System

Lukasiewicz in the 1920s was the first to propose Fuzzy sets in an attempt to produce systems which were able to represent a range of truth values covering all real numbers from 0 to 1. There are two approaches to construct fuzzy sets; data driven or expert driven. Since this research is based on employee response based on this data driven fuzzy set approach is selected. It uses the degrees of membership in sets rather than strict true/false membership. Using fuzzy logic, sets may be defined on vague, linguistic terms. These terms cannot be defined meaningfully with a precise single value; but fuzzy set theory provides a means by which these terms may be formally defined in mathematical logic. Each element has a value called membership or grade that indicates to what degree the element belongs to the set. A high value, usually in the range of the real numbers [0:1], indicates a strong membership, and a low value indicates a weak membership. These values reflect a subjective judgement/rating. So, even though the transfer functions is in colloquial language quantification it allows for numerically exact output values (Karavezyris et al., 2002).

A triangular fuzzy number A can be defined as a triplet [a, b, c]. Its membership function is defined as:

$$\mu_A(x) = \begin{cases} \dfrac{x - a}{b - a}, a \le x \le b \\ \dfrac{c - x}{c - b}, b \le x \le c \end{cases}$$

If *A* and *B* is two triangular fuzzy numbers, denoted as *A (x, a, m, b)* and *B (x, c, n, d)* then their α-cuts are determined as:

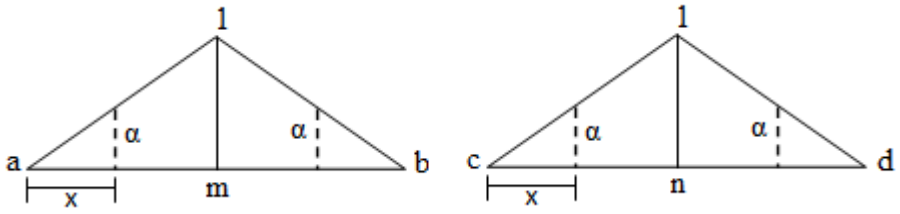


Figure 3. 1: Triangular Fuzzy Number

Source: Dissertation by (Ermias Tesfaye, Modelling the Effects of Road Construction Project Risk Factors On Project Cost and Time in Ethiopia 2017) accessed on June 5th, 2018

$$A_\alpha = [(m-a)\alpha + a, (m-b)\alpha + b]$$

$$B_\alpha = [(n-c)\alpha + c, (n-d)\alpha + d]$$

Basic Data Envelopment Analysis models

For ranking the efficiencies, a ratio of the weighted sum of outputs to the weighted sum of inputs is used. Assuming that the numbers of DMUs are jth, each DMU has same 'xij' inputs and same 'yij' outputs. The relative efficiency score of a test DMU h_o is acquired using the following model proposed by (Charnes 1978):

$$\text{Max } h_o = \frac{\sum_{r=1}^{s} Ur\Upsilon ro}{\sum_{i=1}^{m} Vi\text{X}io}$$

Subjected to: (1)

$$\frac{\sum_{r=1}^{s} Ur\Upsilon rj}{\sum_{i=1}^{m} Vi\text{X}ij} \leq 1; \quad j=1,\ldots, n,$$

$$Ur, Vi \geq 0; \quad r=1\ldots s; \quad i=1,\ldots, m.$$

Here the y_{rj}, x_{ij} all are positive. It is represented in functional, for optimization as well as in the constraints form. The CCR models assume constant returns to scale. DMU operates under

constant return to scale if an increase in the inputs results in a balanced increase in the output levels. The BCC models assume that DMU operates under variable returns to scale if it is assumed that an increase in input doesn't result in a relative change in the outputs. The input and output measurements are always the same in the CCR model, but frequently differ in the BCC model. While if we are using the CCR model, we can solve one model and give either interpretation. If we solve the BCC input model, we can only give an input interpretation. To replace these no convex nonlinear formulations of the model with an ordinary linear programming problem we can write the output-oriented CCR model as follows (A. Charnes 1978);

$$Max\ \theta o = \sum_{r=1}^{s} ur\Upsilon ro$$

Subjected to $\sum_{r=1}^{s} ur\Upsilon rj - \sum_{i=1}^{m} Vi\,\mathrm{X}ij \leq 0$; i = 1,…, m, (2)

$\sum_{i=1}^{m} Vi\,\mathrm{X}ij = 1$; i = 1, m,

Vj, Ur ≥ 0; j = 1, m and r = 1,…, s

In the model (2) θo is the efficiency score of DMUo optimized by solving the model. Also, the model can evaluate the relative efficiencies of n DMU (j = 1 … n), accordingly by minimizing the weighted sum of inputs while the weighted sum of output is constant. The input-oriented CCR model is as follows (Charnes 1978);

$$Min\ \theta o = \sum_{i=1}^{m} Vi\,\mathrm{X}ij$$

Subjected to $\sum_{r=1}^{s} ur\Upsilon rj - \sum_{i=1}^{m} Vi\,\mathrm{X}ij \leq 0$; i = 1,…, m, (3)

$\sum_{r=1}^{s} ur\Upsilon rj = 1$; i = 1, m,

Vj, Ur ≥ 0; j = 1, m and r = 1,…, s

Constant returns to scale (CRS) models are useful when all units are operating at optimal scale. CCR model divides the units into two groups containing efficient and inefficient. There are several DEA models, BCC-model and CCR-model are used repeatedly. In case of variable return to scale convexity condition is added in to the constraint of the CCR model $\sum_{j=1}^{n} \lambda_j = 1$ (R. C. Banker 1984). BCC Output-oriented (3) and BCC Input-Oriented model (4) is as follows;

$$M_{ax}\theta_0 = \sum_{k=1}^{s} \lambda_k y_{kO}$$

Subjected to $\sum_{k=1}^{m} \lambda_k y\kappa_i \leq 1$ I = 1,…, m (3)

$$\sum_{k=1}^{n} \lambda_k = 1$$

$\lambda_k \geq 0$; k= 1,…, s

$$Min\ \theta o = \sum_{j=1}^{m} v_J x_{Jo}$$

Subjected to $\sum_{j=1}^{m} \lambda_j X j_i \geq 1$ i= 1,…,m (4)

$$\sum_{j=1}^{m} \lambda_j = 1$$

$\lambda_j \geq 0$; j= 1,…,m

The main difference between the two models is the treatment of return-to-scale. CCR assumes that each DMU operates with constant return to scale whereas BCC assumes that DMU operate with variable return-to-scale. In CCR model the efficient units are those with efficiency score is equal to 1. Since there are no constraints for the weights in CCR model, other than the positivity conditions in the problem, it implies CRS (Banker 2004, R. C. Banker 1984).

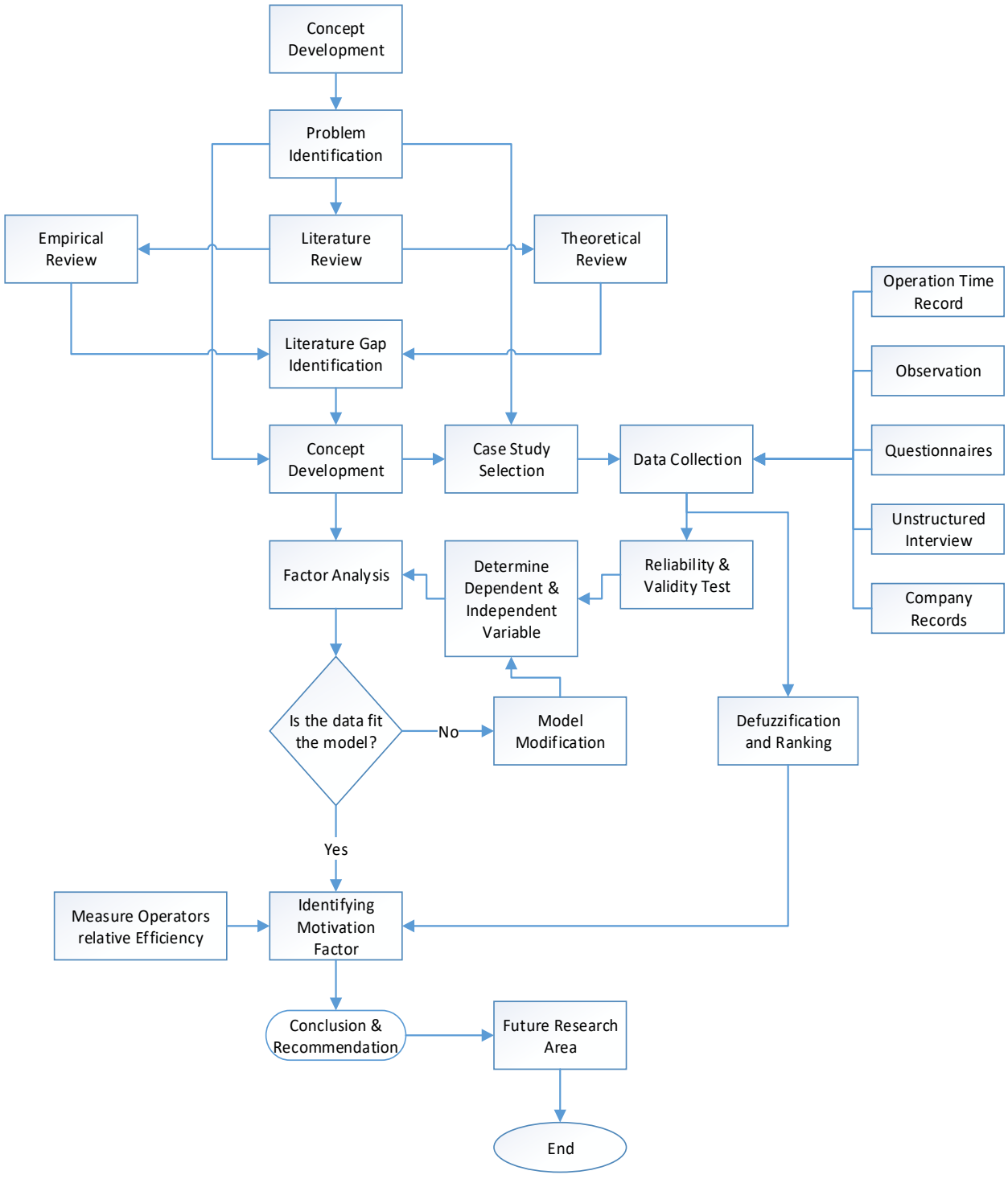


Figure 3. 2: Diagrammatical Representation of Research Methodology

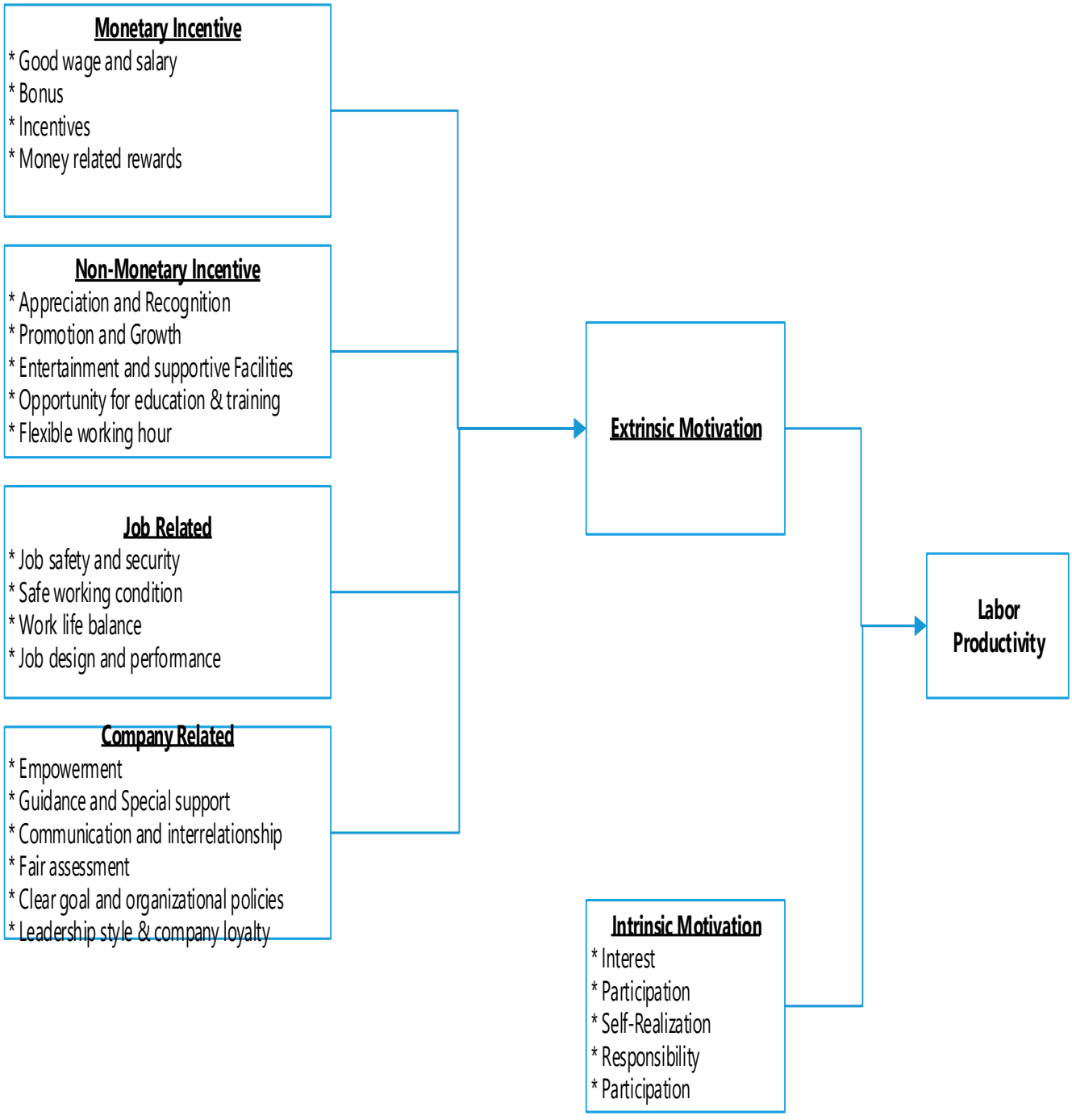


Figure 3. 3: Conceptual Model for Integrated Motivation Factors and Productivity

Source: Adopted from (David Conrad 2015))

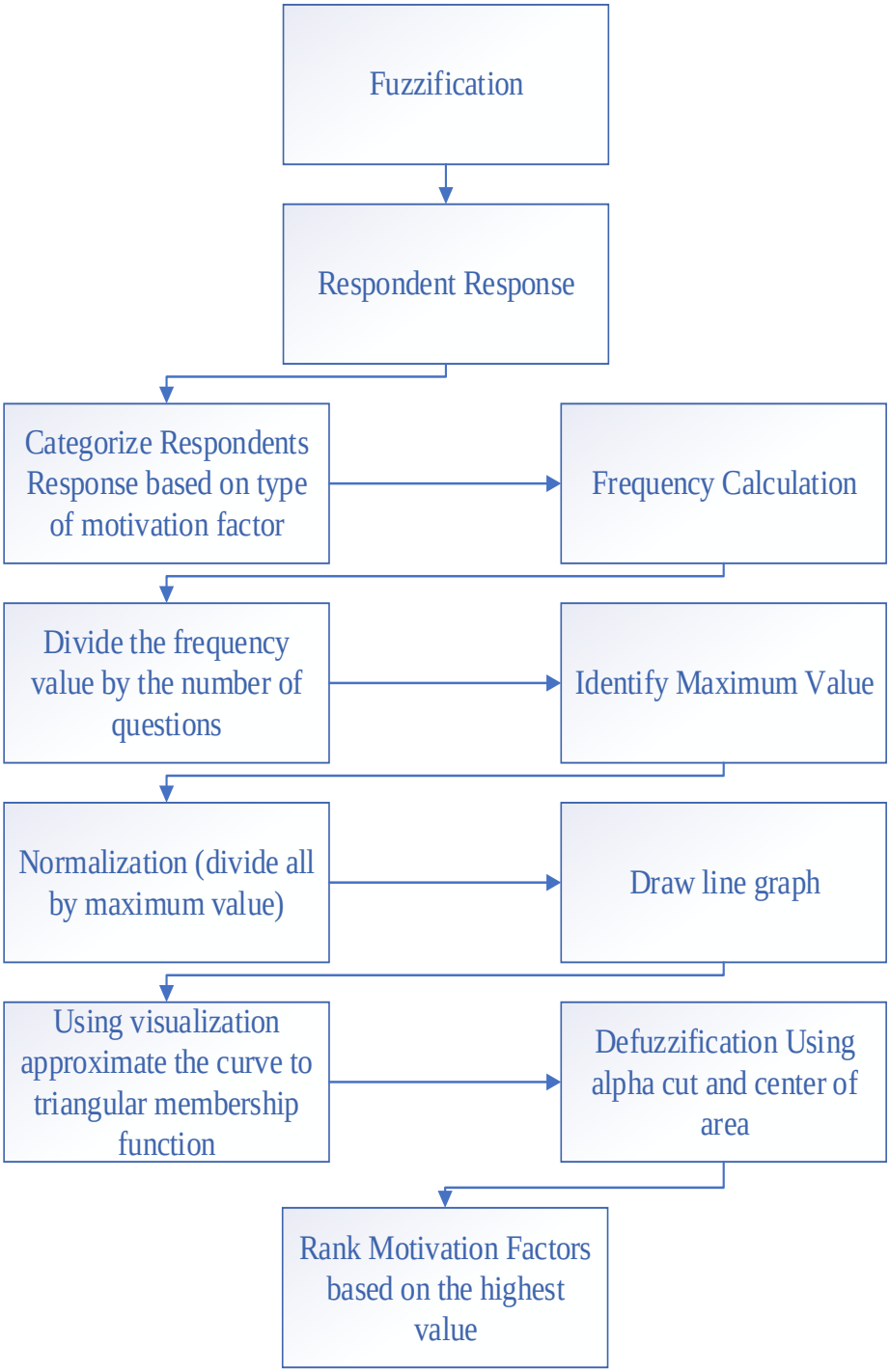


Figure 3. 4: Steps for Ranking Motivation factors Using Fuzzy Expert System

Source: Adopted from (Tesfaye, Modelling the Effects of Road Construction Project Risk Factors On Project Cost and Time in Ethiopia 2017)

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

Based on the research methodology the data were collected from both first hand and second hand. The data analysis mainly consists of the reliability test, correlation between extrinsic and intrinsic motivation factor with productivity, efficiency measure based on the high correlated factor. Total of 27 motivational factors are sort out from different literatures. Extrinsic motivation factors are categorized into four namely; monetary incentive, non-monetary incentive, job related and company related. This helps to possibly analyze strong correlation between variables. Pre-test of questionnaire is tested on five respondents and revised then the revised questionnaire was distributed for 49 respondents that were randomly selected from the stratified subgroups. From the total distributed questionnaire 25 questionnaires are filled and returned successfully the respond rate is 52%.

4.1 Descriptive Analysis

4.1.1 Demographic Profile of the Respondent

To describe the demographic profile six questions are prepared namely; gender, age, family size, level of education, job position and work experience.

Table 4. 1: Demographic Profile of Respondent

Feature	Options	Frequency	Percentage
Gender	Male	1	4
	Female	24	96
	Total	25	100
Age	Below 20 years	3	12
	20 – 30 years	20	80
	31 – 40 years	2	8
	41 – 50 years	0	0

	Above 50 years	0	0
	Total	25	100
Family Size	Single	15	60
	1 – 4	8	32
	5 – 8	2	8
	Above 8	0	0
	Total	25	100
Level of Education	Under grade 10	14	56
	10+1 – 10+3	5	20
	Grade 12 completed	2	8
	Diploma	2	8
	Degree	2	8
	Total	25	100
Job Position	Operator	23	92
	Supervisor	2	8
	Manager	0	0
	Total	25	100
Work Experience	Below 6 months	1	4
	6 – 12 months	8	32
	1 – 2 years	6	24
	Above 2 years	10	40
	Total	25	100

From the 25 respondents 96% are female, while 4% are male, this shows majority of company workers are female. Age also included in demographic profile of the respondent because it has influence on the ability to work and energy. 80% of the respondents are between the age of 20-30, 8% are between 31-40 years, 12% are below 20years this shows majority of the company workers are young. Family size has its own impact on worker's performance and related with motivation as well as daily productivity. The more family size is stressed with daily life activity and may not be effective as single workers as compare the impact of social life. However, 60% of company workers are single, 32% have 1-4 family size and 8% of the respondents have5-8 family size. Rather the more family size is more interested on free packages like health insurance given by the company so family size has its own impact on the respondent's motivation factor. Respondent's education level shows that 56% of respondents are below grade 10, 20% are between 10+1 and 10+3, 8% complete grade 12, 8% are diploma holder and 8% are degree holder. From Table 4.1, frequency majority of company workers are below grade 10. The sample selected respondents job position described that 92% are operators engaged in garment operations whereas 8% are supervisors. From the total sample 40% of are stayed more than two years in the company. This help the study to emphasis more analysis on the topic. 32% are stayed between 6-12months, 24% stay between 1-2 years, and only 1 respondent or 4% are below 6 months which we can call trainee.

4.1.2 Result of Reliability Test

A reliability coefficient demonstrates whether the test designer was correct in expecting a certain collection of items to yield interpretable statements about individual differences (Kelley 1942, Cronbach 1951). Internal consistency of structures questionnaires is tested using Cranach Alpha. This research based on measurement considered with accuracy or reliability. Total of 97 questionnaires were prepared and distributed however the questions are categorized into six (namely; Monetary related, Non-monetary related, Job related, company related, productivity related and intrinsic motivation) and reliability test conducted based on the Cranach Alpha target value (0.7).

Table 4. 2: Reliability Test of Questionnaires

Factors	Number of Item before deleted	Cranach Alpha before deleted	Number of Item after deleted	Cranach Alpha after deleted	Item Means	Item Variance
Monetary Incentive	11	0.526	6	0.744	4.290	1.076
Non-Monetary Incentive	12	0.621	9	0.886	3.740	1.194
Job-Related	14	0.451	4	0.750	4.047	1.103
Company-Related	18	0.855	15	0.875	3.940	1.007
Intrinsic Motivation	18	0.425	12	0.735	4.370	0.451
Productivity Related	9	0.851	5	0.859	4.053	1.675

4.2 Analysis of Empirical findings

This part contains results of empirical findings. The analysis is depending on the conceptual model developed from theoretical review. The respondent demographic profile and reliability test is described on the Table 4.2 subtitle. In this analysis descriptive analysis, correlation and regression analysis are emphasized. From literature theoretical model was developed; motivation factors are grouped into two intrinsic and extrinsic. Again, extrinsic factors are grouped into four; monetary incentive, non-monetary incentive, job related and company related. Also, each sub group contains another factor; in monetary sub-group there are two factors good wage &

allowance, and Bonus, incentives and rewards. Non-monetary incentive contains 7 factors namely; appreciation and recognition, promotion and growth, entertainment, supportive facilities and additional packages, opportunity for education and growth, and flexible working time. Job-related sub-group contains 5 factors namely; interesting work, job safety and security, working and environmental condition, work life balance, and job design. Company related has 7 factors namely; empowerment, guidance and special support, communication with managers, fair treatment and assessment, clear company goals and policies, management style, and company loyalty. Intrinsic motivations have 7 factors namely; positive relationship, interest, participation, self-realization, trust, responsibility and attitude. From the informal interview conducted with the company general manager different motivation techniques are adopted to raise worker's inspiration. Existing motivation techniques is surveyed based on the above listed factors as a criteria; the employees wage and salary is based on industry zone industries' agreement however the company add some incentives like attendance bonus 150birr per month, for operators who are working in ironing station extra 200 birr per month, 3000birr per year for medical service excluding card fee, and 1 birr bonus per piece rate, the company has annual promotion request based on 6months performance evaluation to eradicate biasness, workers day celebration fully sponsored by the company for one day including free meal drink and 2 months' salary, incentive programs for outstanding workers, and posting top 3 workers picture. In the future the company plan to support free lunch, dormitory service, bakery service with cheap price, lounge for operators and management staff, and free education fee for interested and potential operators. Employees' reaction is described and analyzed to explain the impact. Descriptive statistics for survey of Absenteeism, lateness, turnover and existing motivation techniques adopted by the company are listed below;

Table 4. 3: Frequency Table for indication of Problem Statement

Questions	Liker Scale Frequency									
	Strongly Disagree		Disagree		No Opinion		Agree		Strongly Agree	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Absenteeism is reason for demotivation.	1	4	0	0	0	0	10	40	**14**	**56**
Lateness comes from word demotivation.	2	8	3	12	0	0	8	32	**12**	**48**
Dissatisfaction is major reason for Turnover	1	4	1	4	1	4	**11**	**44**	**11**	**44**
Existing MT	4	16	**12**	**48**	2	8	3	12	4	16

As shown in Table 4.3, 56% of the respondent strongly agreed that daily absenteeism is come from lack of motivation in the work place, 40% of the respondents agree on it, 4% are strongly disagree that absenteeism is a reason for demotivation. However, majority of the respondents mentioned absenteeism is come from demotivation. 48% of the respondent strongly agreed on lateness is sign of demotivation, 32% of the respondents agree on lateness come from discouragement, 12% of the respondent disagree that lateness is a sign of demotivation, 8% disagree that lateness is a reason for demotivation even though majority of the respondent response indicate that there is lack of initiation lead to lateness during working hour. In addition, turnover is the leading problem raised in the problem statement. The finding shows that 88% of the sample respondent agreed that turnover comes from demotivation in the work place, 4% have no opinion, 8% disagree that turnover is a reason for demotivation. Three problems additional question was raised regarding on company's existing motivation techniques the response shows

that 64% of the respondent are not satisfied by the existing motivation techniques however 28% of the respondent mention that they are satisfied with the existing motivation techniques adopted by the case company.

4.2.1 Conceptual Model Factor Analysis

From the different literatures conceptual models is developed to show the impact of motivation on productivity by considering extrinsic and intrinsic motivation factors simultaneously. The model comprehends the interaction of monetary incentive with non-monetary incentive, job related and company related; non-monetary incentive with job related and company related; job related with company related; monetary incentive, non-monetary incentive, job related and company related with extrinsic motivation; extrinsic motivation with intrinsic motivation; extrinsic motivation and intrinsic motivation with productivity. Before validating conceptual model fit individual factor analysis is conducted for each factor. From literature composite and conceptual model contains dependent and independent variables.

Dependent Variable

From figure 1, productivity is affected by intrinsic and extrinsic motivation. The analysis is based on the respondent response on individual factors evaluation of Liker scale (1-strongley=disagree, 2=disagree, 3=no opinion, 4=agree, 5=strongly agree). For the conceptual model dependent variable is productivity.

Independent Variable

Independent variables indicate the level of productivity to what extent those variables can affect the productivity or they determine the level of productivity will be influenced by those factors listed below;

- Extrinsic Motivation
- Intrinsic Motivation

However, the above independent factor analysis is changed for individual factor analysis. In case of Extrinsic Motivation confirmatory factor analysis, it will be encounter as dependent variables are monetary incentive, non-monetary incentive, job-related and company related are independent variable for this scenario.

4.2.1.1 Extrinsic Motivation Factor Analysis

As mentioned in previous session extrinsic motivation is dependent on monetary incentive, non-monetary incentive, job related and company related. Confirmatory factor analysis is calculated for individual factors. The code MI1, NMI1, JR1, CR1, PRO1, and others are indicated in Annex I.

1. **Monetary Incentive**

This is one part of conceptual model connected under extrinsic motivation. Among 27 factors Good wage, allowance, bonus, incentives and rewards are categorized under extrinsic motivation and it is related to money. Frequency table for monetary incentive related questions are described in Figure 4. 1.

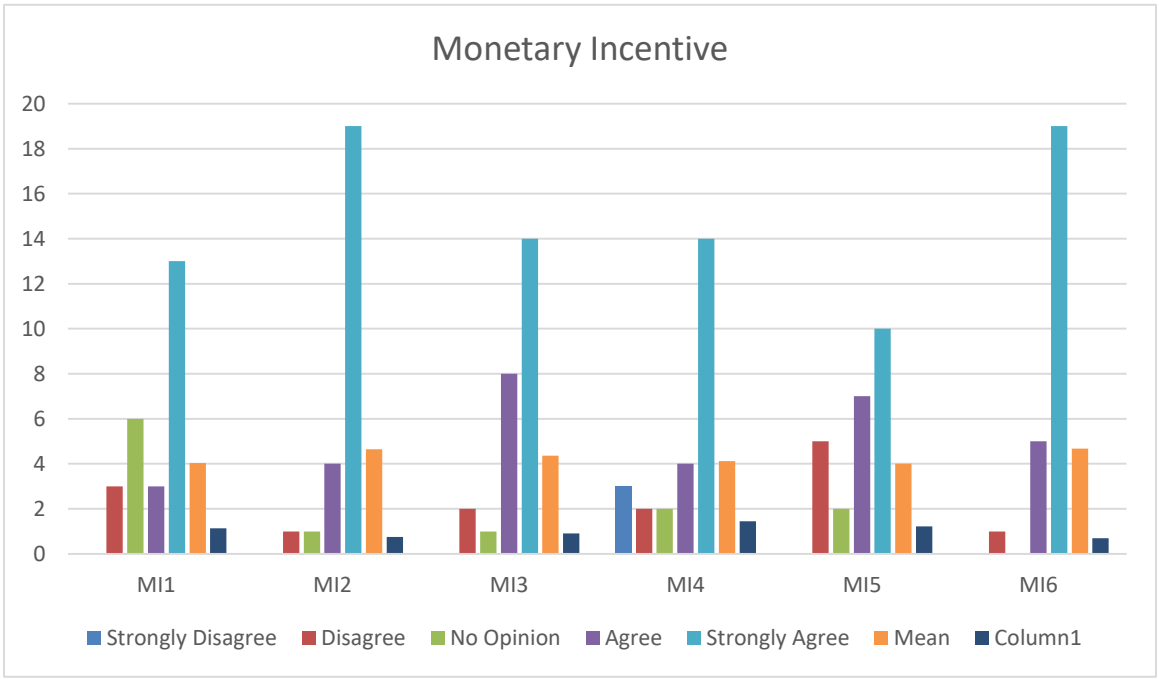


Figure 4. 1: Frequency Distribution for Monetary Incentives

From the Figure 4. 2frequency, majority of the respondents agreed on monetary incentive affect their motivation as well their efficiency. The highest rated mean (4.68) is and lowest standard deviation (0.690) encountered by MI-6 this question is specifically deals with the reward and incentives given by the company. Different research highlight there is no unique or better motivational factor, rather it is depending on the case study or it relies on the respondents' sound. Before proceed to conceptual model fit, the result of Structural Equation Model Testing is presented in table below.

Table 4. 4: Result of Structural Equation Model Test for Monetary Incentive

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
MI6 ←Monetary	1			
MI5 ←Monetary	1.392	0.422	3.301	***
MI4 ←Monetary	0.555	0.274	2.028	0.043
MI3 ←Monetary	0.637	0.241	2.643	0.008
MI2 ←Monetary	0.219	0.156	1.405	0.160
MI1 ←Monetary	0.491	0.231	2.124	0.034

The result shows 4 observed variables define monetary incentive strongly. MI5 define MI very strongly but MI2 define this factor weakly. When we say observed variable define a factor weakly, it means unobserved variable can define the factor more than the observed variable defines. MI-5 deals about the preferably of monetary incentive than non-monetary incentive. Based on the model fitness measuring parameter standards discussed on the methodology, the result indicates the data didn't fit the model it needs modification (CFI = 0.885, TLI = 0.809, RMSEA = 0.186). Further model modification is done by deleting variables. The modified model finding shows the data fit the model.

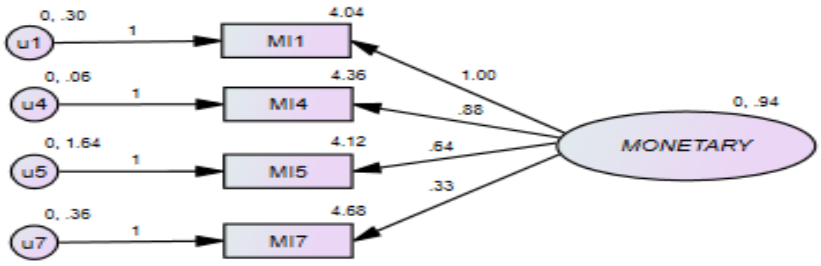


Figure 4. 2: Modified SME for Monetary Incentives

Based on the deletion and review of model the FA suggests four factors. All factors p value is less than 0.05, Chi-square = 0.159, Degree of freedom = 2, Probability level = 0.924, NFI = 0.996, RFI = 0.988, TLI = 1.167, CFI = 1.000 and RMSEA = 0.000. The finding of FA indicates the good fit with model.

2. Non-Monetary Incentive

This is one part of extrinsic motivation and it contains appreciation, recognition, promotion & growth, entertainment, additional facilities, opportunity for education and training, and flexible working time from extracted 27 motivational factors. Mean, standard deviation, frequency and percentage is specified for individual non-monetary incentive related questions.

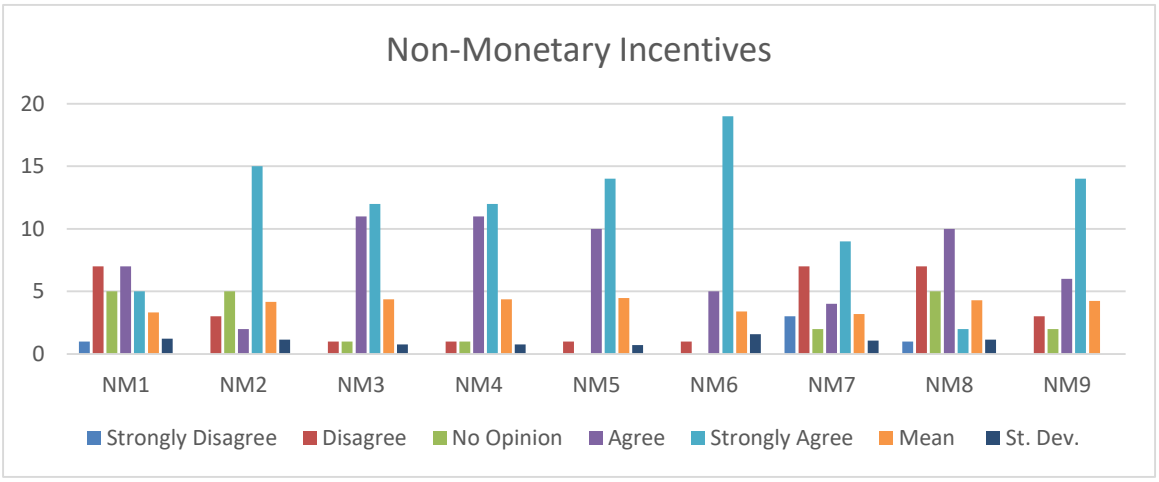


Figure 4. 3: Frequency Distribution for Non-Monetary Incentives

Majority of respondents are convinced and agreed the type of non-monetary incentive for their performance improvement. The highest mean value (4.48) and least standard deviation (0.714) are scored by NMI-5 which is deal with appreciation and recognitions given by the managers or Host Company to alter operators' performance.

Table 4. 5: Result of Structural Equation Model Test for Non-Monetary Incentive

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
NMI9 ←Non-Monetary	1	-	-	-
NMI8 ←Non-Monetary	1.327	0.483	2.747	0.006
NMI7 ←Non-Monetary	1.666	0.577	2.886	0.004
NMI6 ←Non-Monetary	2.059	0.656	3.137	0.002
NMI5 ←Non-Monetary	0.454	0.394	1.152	0.249
NMI4 ←Non-Monetary	1.010	0.312	3.238	0.001
NMI3 ←Non-Monetary	0.833	0.367	2.272	0.023
NMI2 ←Non-Monetary	1.295	0.464	2.791	0.005
NMI1 ←Non-Monetary	1.575	0.524	3.005	0.003

Table 10 describe NMI-5 (appreciation and recognition) describe non-monetary incentive weakly because p>0.05 but the other observed variable describes strongly i.e.it describe more than exogenous variable describe. The result indicates the data didn't fit the model and it needs modification (CFI = 0.912, TLI = 0.883, RMSEA = 0.122). Further model modification is done by deleting variables. The modified model finding shows the data fit the model.

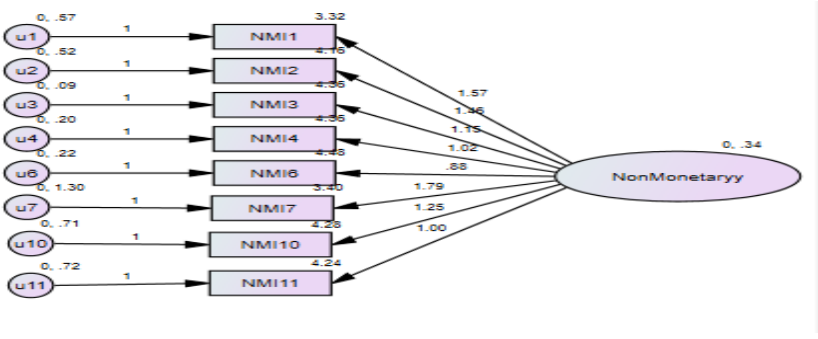


Figure 4. 4: Modified SME for Non-Monetary Incentives

Based on the deletion and review of model the FA suggests eight factors. All factors p value is less than 0.05, Chi-square = 19.647, Degree of freedom = 20, Probability level = 0.480, NFI = 0.841, RFI = 0.778, TLI = 1.005, CFI = 1.000 and RMSEA = 0.000. The finding of FA indicates the good fit with model.

3. Job Related

It deals with type of job and related issues; interesting work, job safety and security, working and environmental conditions, work life balance, job design, and job performance. Five factors are categorized in this sub group. This factor is deals with the type of job, job status, job output, and employee understanding and employee reaction with the job. The frequency table describes the rating of Liker scale.

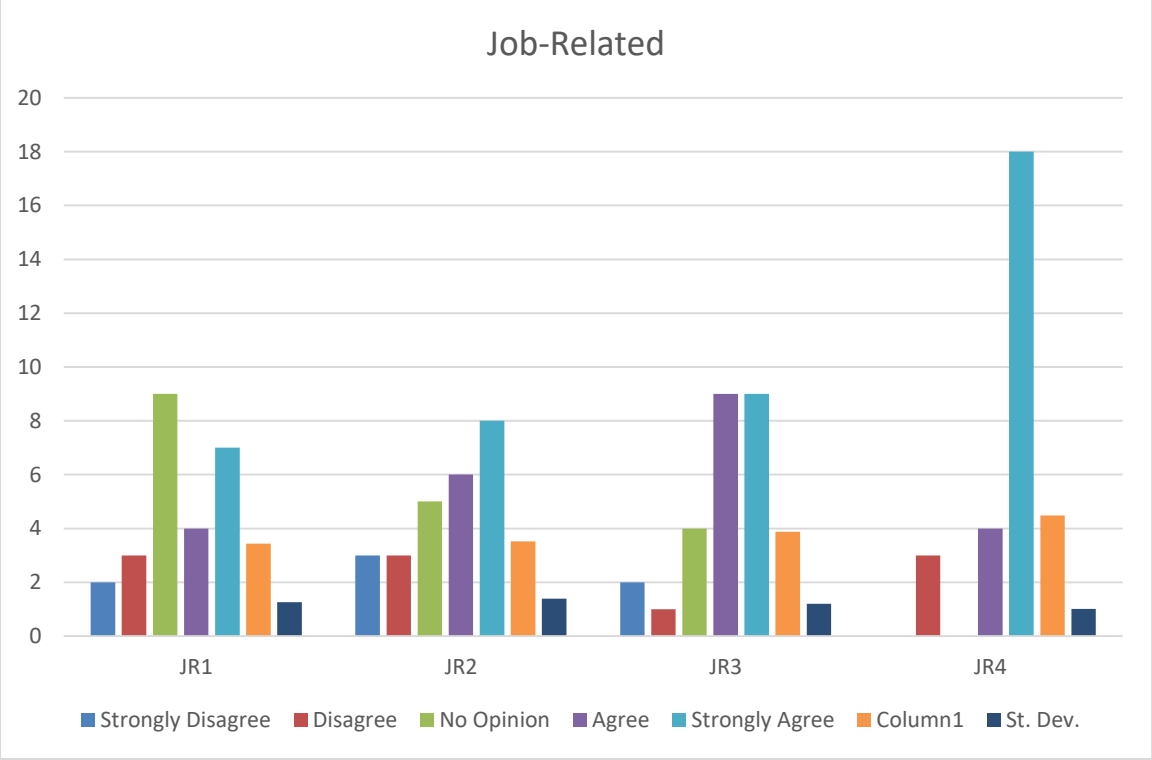


Figure 4. 5: Frequency Distribution for Job-Related Motivational Factors

From the Figure 4. 5 frequency distribution figure, JR-4 encounter 4.48 the highest mean value and least standard deviation (1.005). Job satisfaction is described by JR-4 which is one category of job related.

Table 4. 6: Result of Structural Equation Modeling for Job Related

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
JR4 ←Job Related	0.385	0.221	1.744	0.081
JR3 ← Job Related	1.025	0.314	3.268	0.001
JR2 ← Job Related	1			
JR4 ← Job Related	1.566	0.510	3.068	0.002

JR-4 defines JR factor weakly than exogenous variable define it. The result, shows work life balance can't describe JR factor than any other observed variable describes. The result indicates the data didn't fit the model and it needs modification (CFI = 0.766, TLI = -0.766, RMSEA-0.310). Further model modification is done by deleting variables. The modified model finding shows the data fit the model.

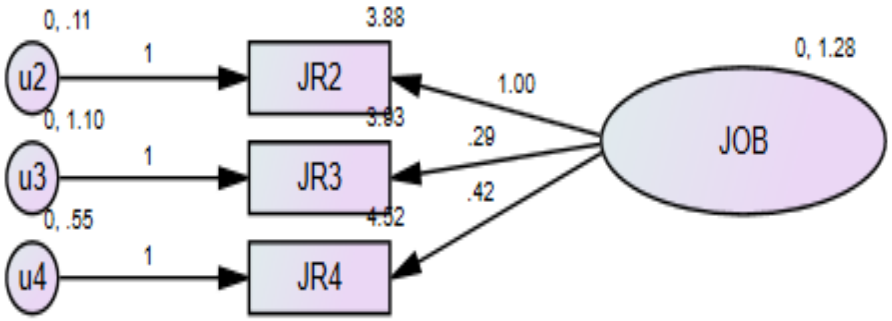


Figure 4. 6: Modified SME for Job Related

Based on the deletion and review of model the FA suggests three factors. The model fit the data perfectly, all factor's p value is less than 0.05, Chi-square = 0, Degree of freedom = 0, NFI = 1.000, RFI = 1, TLI = 1.005, CFI = 1.000 and RMSEA = 0.000. The finding of FA indicates good fit with model.

4. Company Related

This category contains seven motivational factors; empowerment, guidance and special support, communication and relationship, fair assessment, clear organization goals and policies, leadership or management style, and company loyalty. Frequency distribution is described in the Table 4.7.

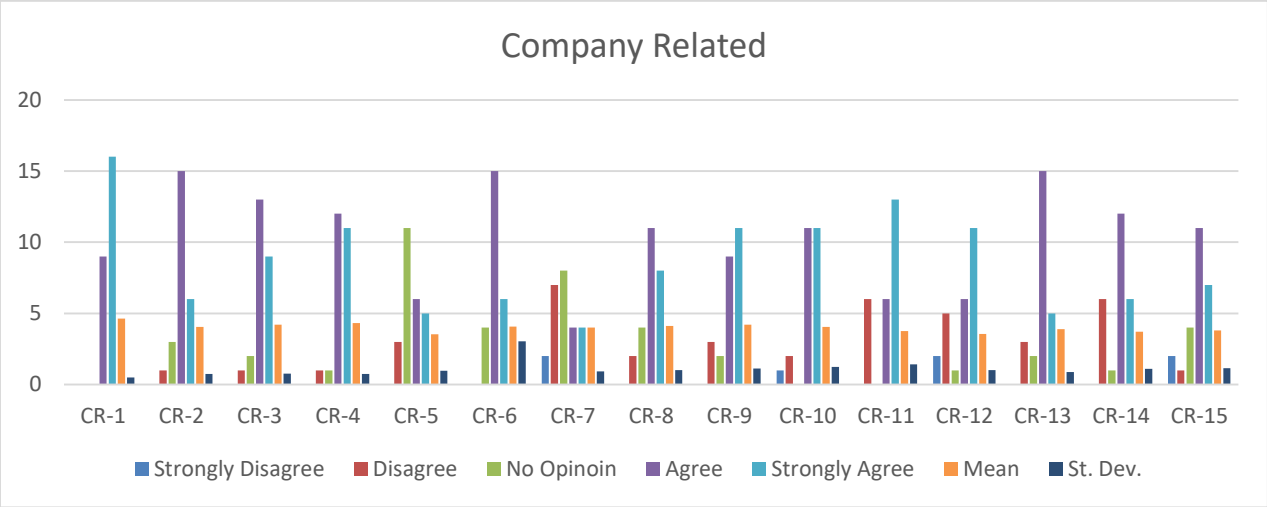


Figure 4. 7: Frequency Distribution for Company Related Motivational Factors

The first question CR1 has highest average value of 4.64 and the lowest standard deviation value is 0.49 as compare to the related questions. In this question employee-employer relationship is deal and majority of the respondents are agreeing that they have good communication with peers and it has its own impact for daily operation.

Table 4. 7: Result of Structural Equation Modeling for Company Related

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
CR16 ← Company Related	1.000			
CR15 ← Company Related	0.829	0.417	1.988	0.047
CR14 ← Company Related	0.587	0.279	2.106	0.035
CR13 ← Company Related	0.844	0.350	2.415	0.016
CR12 ← Company Related	1.048	0.431	2.433	0.015
CR11 ← Company Related	1.187	0.426	2.788	0.005
CR10 ← Company Related	0.730	0.319	2.292	0.022

CR9 ← Company Related	0.839	0.327	2.567	0.010
CR8 ← Company Related	0.475	0.287	1.654	0.098
CR7 ← Company Related	0.894	0.382	2.340	0.019
CR6 ← Company Related	0.383	0.230	1.670	0.095
CR5 ← Company Related	1.100	0.387	2.839	0.005
CR4 ← Company Related	0.681	0.283	2.407	0.016
CR3 ← Company Related	0.434	0.222	1.957	0.050
CR2 ← Company Related	0.541	0.232	2.331	0.020
CR1 ← Company Related	0.252	0.396	0.636	0.525

Among 16 Observed variable CR8, CR6, and CR1 didn't describe CR factor because the p value is greater than 0.05. For further factor analysis 3 observed variables will be left out. The result indicates the data didn't fit the model and it needs modification (CFI = 0.426, TLI = 0.338, RMSEA = 0.310). Further model modification is done by deleting variables. The modified model finding shows the data fit the model.

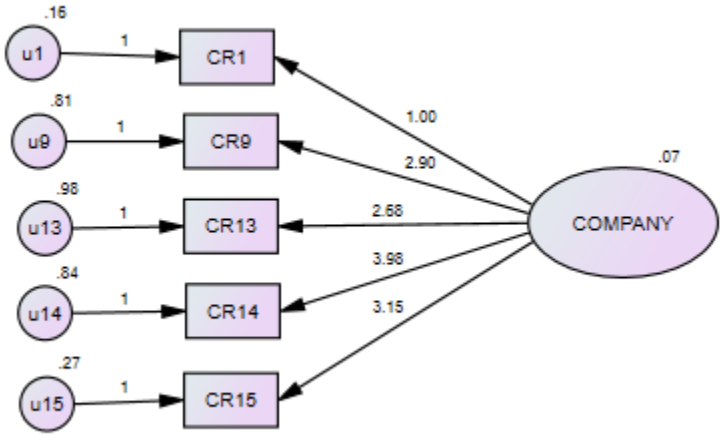


Figure 4. 8: Modified SEM for Company Related

Based on the deletion and review of model the FA suggests five factors. The model fit the data perfectly, all factor's p value is less than 0.05, Chi-square = 5.829, Degree of freedom = 5, Probability Level = 0.323, NFI = 0.864, RFI = 0.728, TLI = 0.949, CFI = 0.975 and RMSEA = 0.083. The finding of FA indicates the data is not good fit with the model.

Table 4. 8: Factor Analysis between extrinsic motivation factors

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
Monetary Incentive<-> Company Related	0.075	0.066	1.136	0.256
Company Related <-> Non-Monetary	0.261	0.075	3.466	***
Company Related <-> Job Related	0.210	0.074	2.819	0.005
Monetary Incentive <-> Job Related	-0.126	0.101	-1.255	0.210
Non-Monetary <-> Job Related	0.217	0.102	2.125	0.034
Monetary Incentive <-> Non-Monetary Incentive	0.180	0.098	1.846	0.065

Their strong relations between company related and non-monetary incentive, company related with job related, and non-monetary incentive with job related.

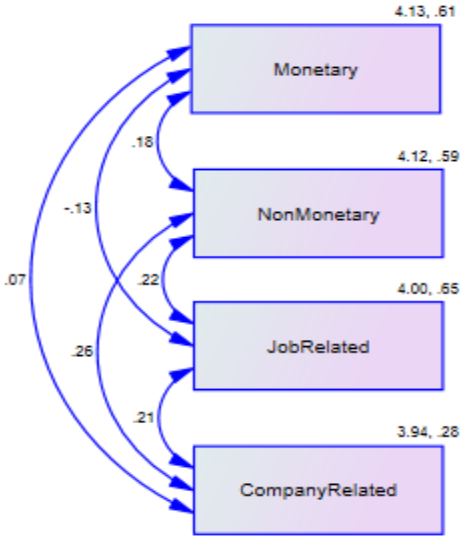


Figure 4. 9: SEM for External Motivation Factors

The model fit the data perfectly, all factor's p value is less than 0.05, Chi-square = 5.0, Degree of freedom = 0, NFI = 1.000, CFI = 1.000 and RMSEA = 0.270. The finding of FA indicates the data is good fit with the model except the RMSEA value.

4.2.1.2 Intrinsic Motivation Factor Analysis

Intrinsic motivation is different from instrumental motivation. Instrumental or extrinsic motivation created through tangible outcomes but intrinsic motivation is a motivation through the enjoyment of the activity itself (James Christopher Ryan 2016). Conceptual model remark relationships, interest, participation, self-realization, trust, responsibility and attitude as part of internal motivation. Before go to confirmatory factor analysis frequency distribution is analyzed to determine which factor is highly rated by the respondents.

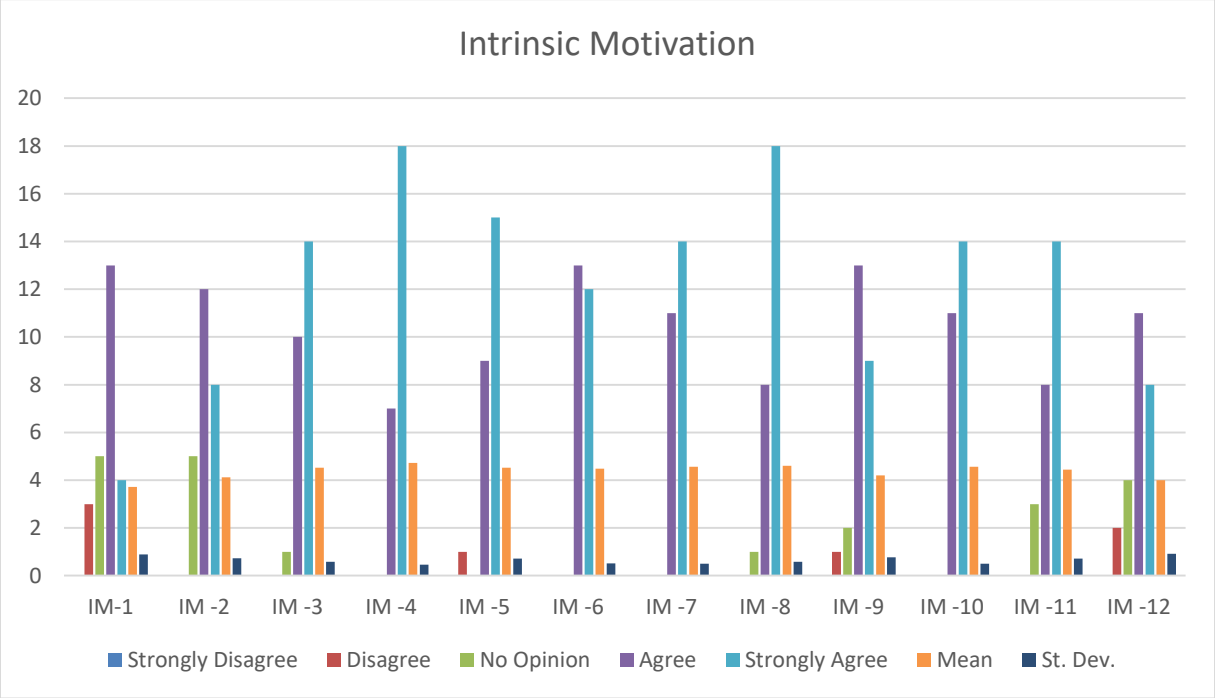


Figure 4. 10: Frequency Distribution for Intrinsic Motivation Factors

Mean value indicate that IM-4 recorded a highest mean value (4.72) and the lowest standard deviation value (0.458) relative to the other factors. Responsibility for the given task is denoted as IM-4, this analysis indicate that majority of respondent are responsible for their job this can be one sign for they are internally motivated in one dimension. Even though the confirmatory factor analysis is deterministic for each factor and their magnitude of their ability to describe the dependent variable.

Table 4. 9: Result of Structural Equation Modeling for Intrinsic Motivation

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
IM11←Intrinsic Motivation	1.000			
IM9←Intrinsic Motivation	0.683	0.196	3.481	***
IM8←Intrinsic Motivation	0.329	0.167	1.975	0.048
IM5←Intrinsic Motivation	1.215	0.241	5.036	***
IM2←Intrinsic Motivation	0.655	0.236	2.770	0.006
IM1←Intrinsic Motivation	0.502	0.255	1.973	0.048

The estimate summary indicates 6 observed variables describe IM factor. All of p values are on the standard (P<=0.05). However, IM4,3,6,12,10 and 7 observed variables can't describe IM factor like the other describes or it will be feasible if exogenous variables can describe. Responsibility, interest, confidence and sense of challenge will no more describe internal motivation.

4.2.1.3 Factor Analysis for Productivity

The main objective of the developed conceptual model is to dig out the relation between intrinsic and extrinsic motivation with productivity. The previous confirmatory analysis is an input for the final model fit test. There are 9 questions distributed for respondent but after the reliability test 4 questions are deleted because of poor internal consistency. Frequency table is summarized based on the refined questions before further confirmatory analysis is conducted.

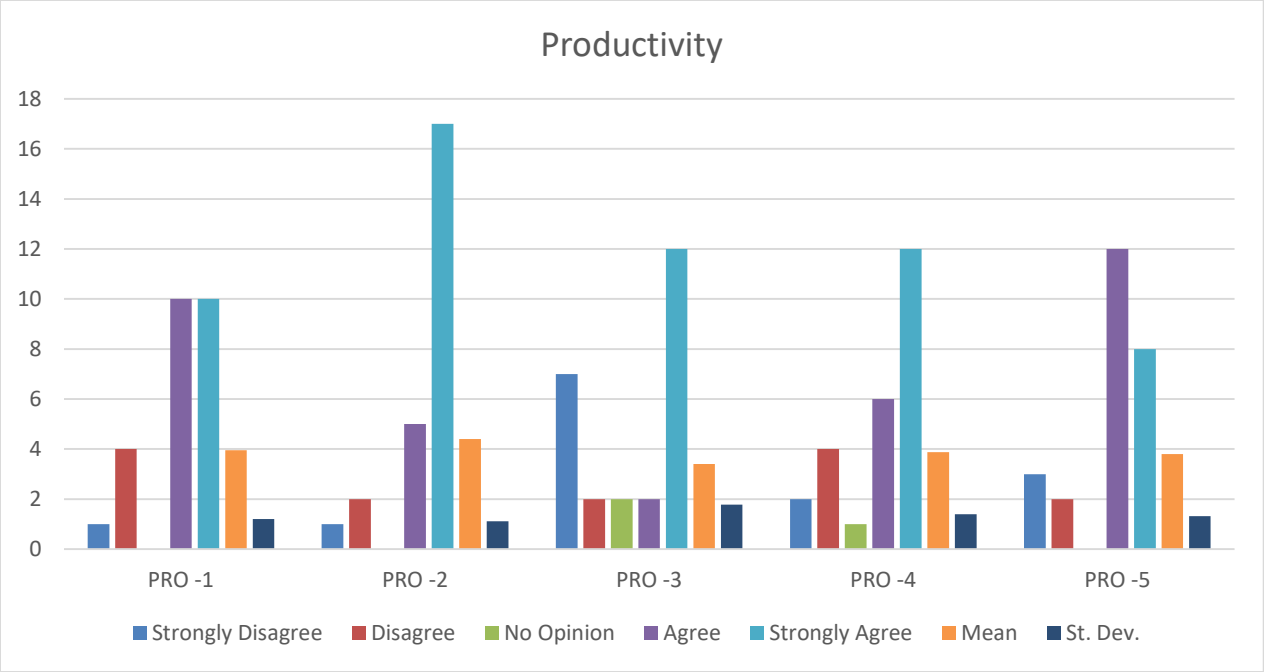


Figure 4. 11: Frequency Distribution for Productivity

From the Figure 4. 12, PRO-2 ranks the highest mean (4.40) and lowest standard deviation (1.118); this question is deals with unsafe working conditions and operators' productivity. 68% of the respondents reflect that their efficiency is highly affected by the working or environmental conditions within the company. This implies external motivation factors affect employee performance directly.

Table 4. 10: Result of Structural Equation Modeling for Productivity

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
PRO5←PRODUCTIVITY	1.000			
PRO4←PRODUCTIVITY	0.847	0.236	3.596	***
PRO3←PRODUCTIVITY	1.135	0.280	4.051	***
PRO2←PRODUCTIVITY	0.921	0.157	5.858	***
PRO1←PRODUCTIVITY	0.937	0.176	5.337	***

All observed variables strangely describe the factor productivity. P value is very strong which is the observed variables describe better than unobserved variables. The result indicates the data didn't fit the model and it needs modification (CFI = 0.908, TLI = 0.723, RMSEA = 0.192). Further model modification is done by deleting variables. The modified model finding shows the data fit the model.

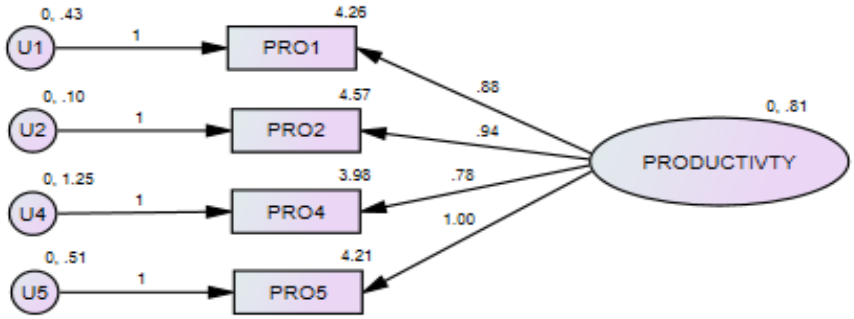


Figure 4. 12: Modified SEM for Productivity

Based on the deletion and review of model the FA suggests four factors. The model fit the data perfectly, all factor's p value is less than 0.05, Chi-square = 0.602, Degree of freedom = 2, Probability level = 0.740, NFI = 0.992, RFI = 0.960, TLI = 1.107, CFI = 1.000 and RMSEA = 0.000. The finding of FA indicates good fit with model.

Conceptual Model Test

Final conceptual model test is based on the individual's factor analysis. All the parameters are tested to check the data fit the model well. The result is discussed below;

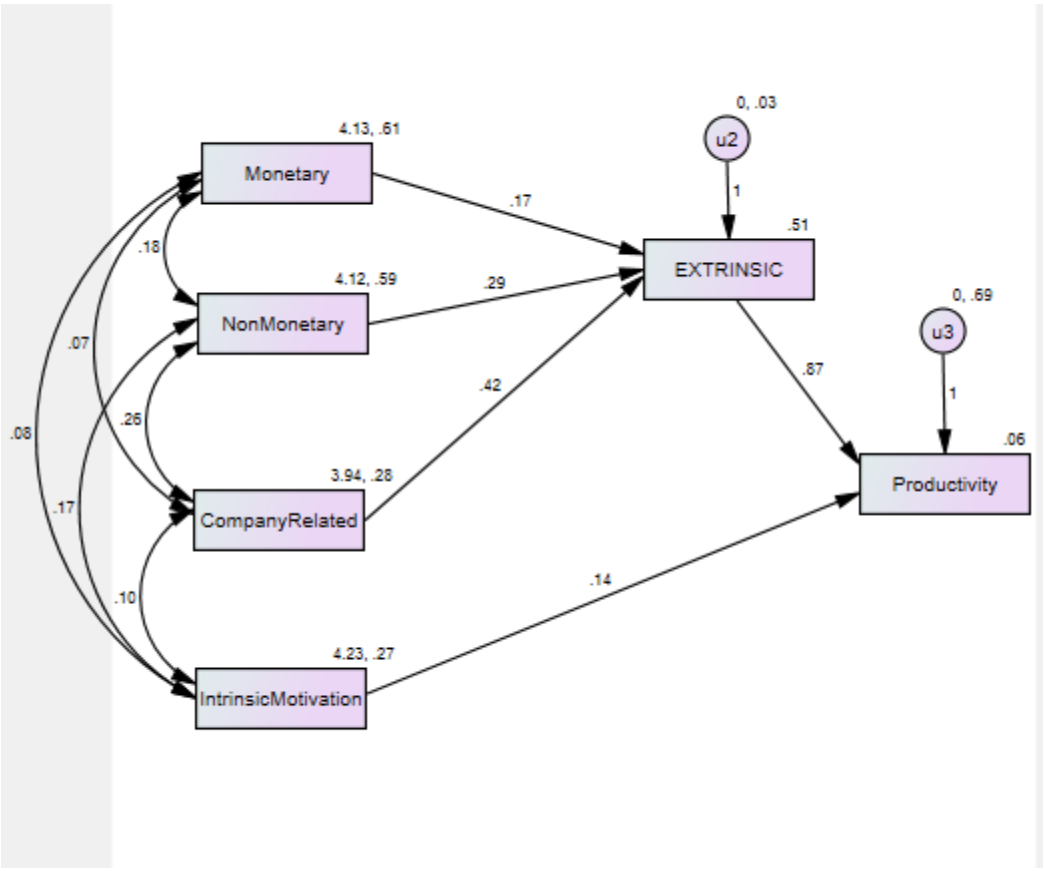


Figure 4. 13: SEM for Modified Conceptual Model

Based on the deletion and review of conceptual model the FA suggests three extrinsic factors. The finding indicates, Chi-square = 10.810, Degree of freedom = 4, Probability level = 0.029, NFI = 0.926, RFI = 0.960, CFI = 0.945 and RMSEA = 0.015. From the co-relation of conceptual model Productivity with Intrinsic Motivation p = 0.608 and Productivity with Extrinsic Motivation Factor P = 0.003. This indicates extrinsic motivation factors have strong relation with the labor productivity but intrinsic motivation factors have weak relation with labor productivity.

Table 4. 11: Result of Structural Equation Modeling for Conceptual Model

Relation between factor and observed variable	Estimate	S.E.	C.R.	P
Monetary <-> Non-Monetary	0.180	0.098	1.846	0.065
Monetary <-> Company Related	0.075	0.066	1.136	0.256

Non-Monetary ←> Company Related	0.261	0.075	3.466	***
Intrinsic Motivation←> Monetary	0.077	0.065	1.186	0.235
Intrinsic Motivation←> Non-Monetary	0.169	0.068	2.509	0.012
Intrinsic Motivation←>Company Related	0.099	0.046	2.174	0.030
Extrinsic ←Monetary Incentive	0.165	0.034	4.822	***
Extrinsic ←Non-Monetary	0.294	0.045	6.535	***
Extrinsic ←Company Related	0.418	0.063	6.646	***
Productivity←Intrinsic Motivation	0.140	0.273	0.513	0.608
Productivity← Extrinsic Motivation	0.866	0.293	2.956	**0.003**

Table 4.11, indicates there is strong relation between Non-monetary incentives and company related, extrinsic motivation and monetary incentives, extrinsic motivation and non-monetary incentives, extrinsic motivation and company related, and labor productivity and extrinsic motivation. Nevertheless, one category from extrinsic motivation (Job related) is rejected because the data didn't fit with model. This implies there is weak relation as compare to the other extrinsic motivation factors.

4.3 Motivating Factor Analysis Using Fuzzy Expert System

Hence structural relationship of motivational factors is developed, the ranking of motivation factor is analyzed using both Alpha cut and center of area. From the computation all values are between 0 and 1. From the result obtained from alpha cut and center of area, motivation factors are graded.

Table 4. 12: Alpha Cut and Center of Area Ranking Motivation factors

Questions	Weighted Alpha	Center of Area	Rank
Q 1	0.94	0.73	1
Q 2	0.94	0.73	1
Q 3	0.6	0.6	3
Q 4	0.94	0.73	1
Q 5	0.94	0.73	1

Q 6	0.94	0.73	1
Q 7	0.94	0.73	1
Q 8	0.94	0.73	1
Q 9	0.43	0.53	4
Q 10	0.26	0.47	5
Q 11	0.94	0.73	1
Q 12	0.77	0.67	2
Q 13	0.94	0.73	1
Q 14	0.94	0.73	1
Q 15	0.6	0.6	3
Q 16	0.77	0.67	2
Q 17	0.77	0.67	2
Q 18	0.77	0.67	2
Q 19	0.94	0.73	1
Q 20	0.94	0.73	1
Q 21	0.94	0.73	1
Q 22	0.77	0.67	2
Q 23	0.94	0.73	1
Q 24	0.94	0.73	1
Q 25	0.77	0.67	2
Q 26	0.94	0.73	1
Q 27	0.6	0.6	3
Q 28	0.94	0.73	1
Q 29	0.94	0.73	1
Q 30	0.77	0.67	2
Q 31	0.6	0.6	3
Q 32	0.77	0.67	2
Q 33	0.77	0.67	2
Q 34	0.94	0.73	1

Q 35	0.94	0.73	1
Q 36	0.94	0.73	1
Q 37	0.94	0.73	1
Q 38	0.77	0.67	2
Q 39	0.77	0.67	2
Q 40	0.77	0.67	2
Q 41	0.77	0.67	2
Q 42	0.77	0.67	2
Q 43	0.26	0.47	5
Q 44	0.6	0.6	3
Q 45	0.94	0.73	1
Q 46	0.94	0.73	1
Q 47	0.94	0.73	1
Q 48	0.94	0.73	1
Q 49	0.94	0.73	1
Q 50	0.26	0.47	5
Q 51	0.77	0.67	2
Q 52	0.77	0.67	2
Q 53	0.77	0.67	2
Q 54	0.94	0.73	1
Q 55	0.94	0.73	1
Q 56	0.43	0.53	4
Q 57	0.77	0.67	2
Q 58	0.94	0.73	1
Q 59	0.94	0.73	1
Q 60	0.94	0.73	1
Q 61	0.94	0.73	1
Q 62	0.94	0.73	1
Q 63	0.77	0.67	2

Q 64	0.77	0.67	2
Q 65	0.94	0.73	1
Q 66	0.77	0.67	2
Q 67	0.94	0.73	1
Q 68	0.94	0.73	1
Q 69	0.94	0.73	1
Q 70	0.77	0.67	2
Q 71	0.77	0.67	2
Q 72	0.94	0.73	1

Eight ranking computed using alpha cut and center of area, from monetary incentive factors 73% are grade 1, from non-monetary incentives 45% are grade 1, from job related motivational factors 57% are grade one, from company related motivational factors 38% are grade 1, and from intrinsic motivation factors 61% are grade one. Fuzzy expert system ranking indicates 52% of extrinsic motivation factor are grade 1 while 15% of intrinsic motivation factors are grade 1. Among internal and external motivation factors, extrinsic motivation factors have high percentage ranking. It means employees motivation is increased by external motivation factors. Monetary incentive is the highest extrinsic motivation factor 73% of its factor ranks grade 1, Job related extrinsic motivation factors are the second 57% of its factor rank grade 1, Nom-monetary incentives ranks third 45% of its factors rank grade 1, and company related motivational factors are the least extrinsic motivation factor only 38% of factors rank grade 1.

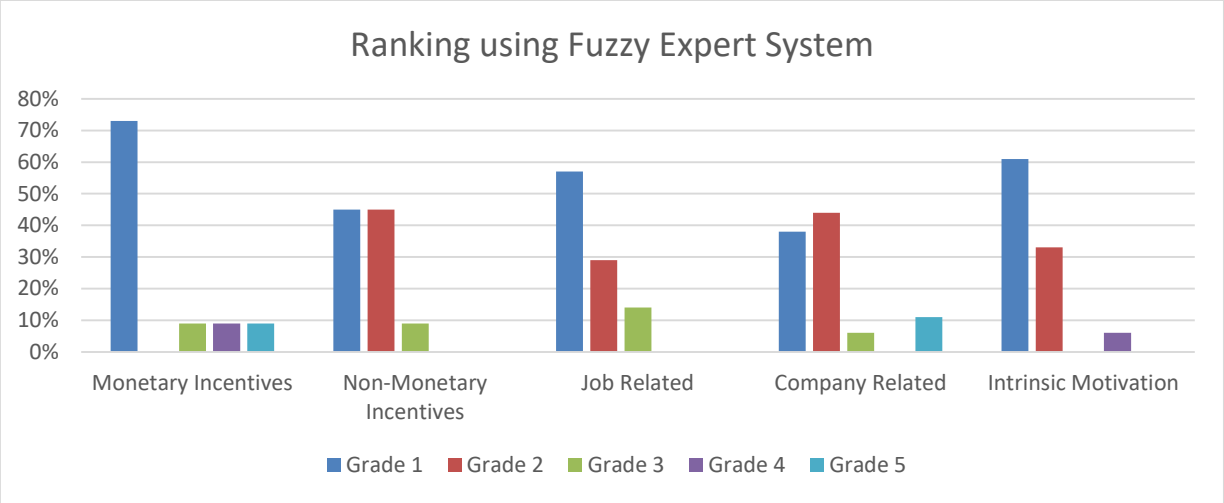


Figure 4. 14: Motivational Factors Ranking by Fuzzy Expert System

Generally, when it compares to the result obtained from confirmatory factor analysis extrinsic motivation factor is highly related with productivity.

4.4 Data Envelopment Analysis

The role of data envelopment analysis is to create methodological linkage between social science and natural science for multidirectional efficiency measurement (Toshiyuki Sueyoshi 2017). For this study non-parametric approach is used because it can handle multiple inputs and multiple outputs without production and cost specification, and no restriction on assumptions (Kokkinou 2012). On this analysis theoretical model analysis is used as an input to strengthen the analysis and discussion. The choice of the variable is depended on the availability of data. DEA Model is selected by calculating DMUs efficiency using four types of DEA models namely; CCR-Input Oriented, CCR-Output Oriented, BCC-Input Oriented, BCC-Output Oriented then among the average efficiency score is calculated and the largest value is selected. To indicate the clear impact of human factors on labor efficiency two models are developed; model 1 efficiency score is calculated without considering human factors where as in model 2 efficiency score is calculated by considering human factors. This will help to compare the result and to justify the impact of human factors on staff efficiency. The proposed model is shown in Figure 4.15.

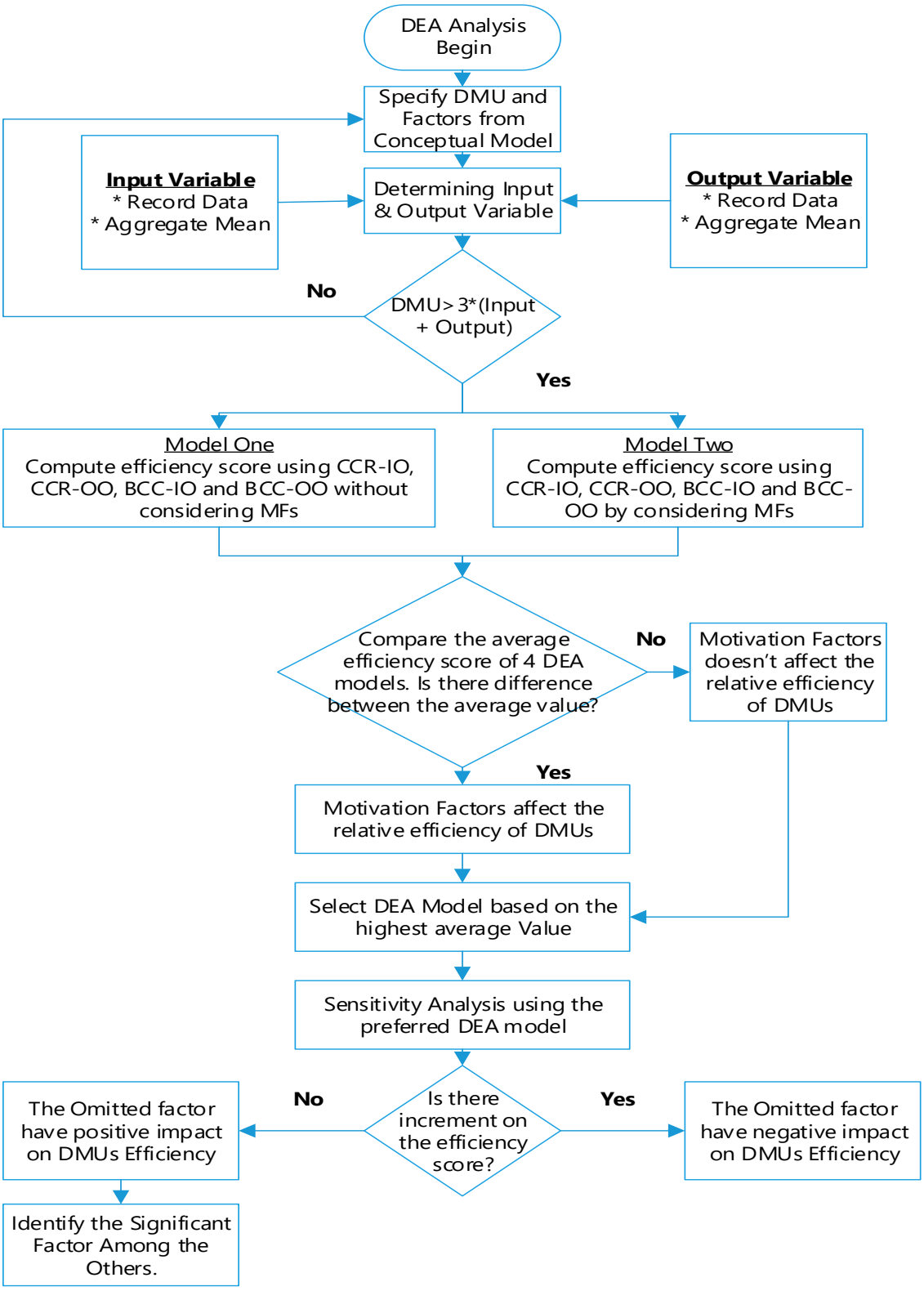


Figure 4. 15: Proposed DEA Model

Input and Output Variables

DEA specification seized with different assumption about returns to scale (RTS). Return to scale measures the change in output levels due to the changes in input levels. Constant returns to scale imply that an increase in input levels result in certain increase on output level in a proportional level. Whereas variable returns to scale imply that an increase in the input level does not certainly result in a proportional increase in output levels, this means, the input increment may result in output or decrease in output by dissimilar proportion. Smith (Smith 1997, Fernandez-Cornejo 1994), conduct simulation study and found that the number of DMUs should exceed three times more than the sum of input variables and output variables, this indicate DEA can over estimate DMUs relative efficiency by 27%. DMUs are randomly selected from apparel process.

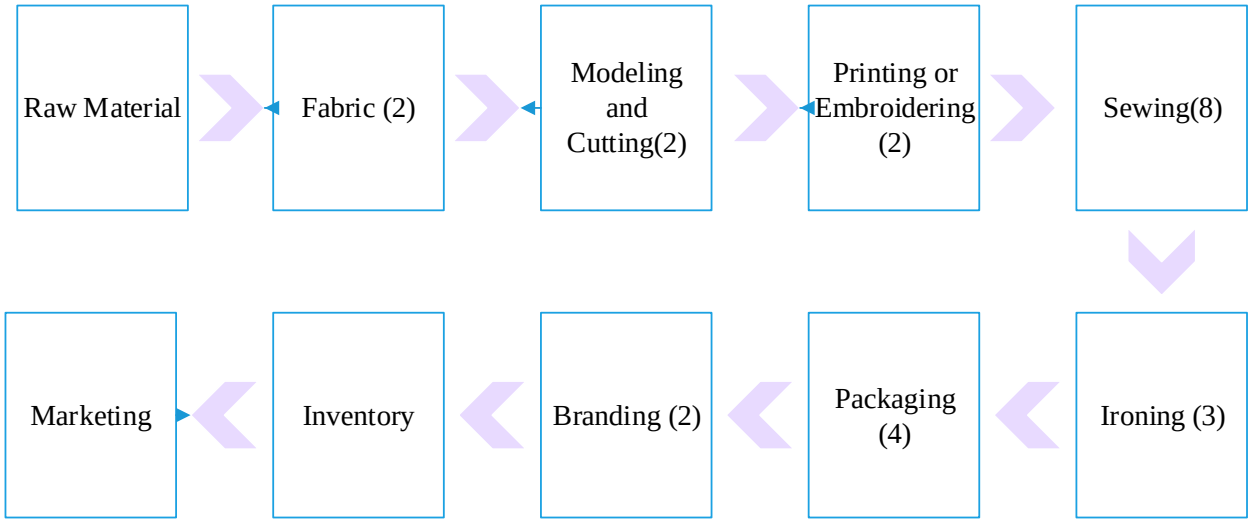


Figure 4. 16: Number of DMUs Selected from Each Apparel Process

DMU 1- Operator from Fabrics

DMU 2- Operator from Fabrics

DMU 3- Operator from Cutting

DMU 4- Operator from Cutting

DMU 5- Operator from Printing

DMU 14- Operator from Sewing

DMU 15- Operator from Ironing

DMU 16- Operator from Ironing

DMU 17- Operator from Ironing

DMU 18- Operator from Packing

DMU 6- Operator from Embroidery

DMU 7- Operator from Sewing

DMU 8- Operator from Sewing

DMU 9- Operator from Sewing

DMU 10- Operator from Sewing

DMU 11- Operator from Sewing

DMU 12- Operator from Sewing

DMU 13- Operator from Sewing

DMU 19- Operator from Packing

DMU 20- Operator from Packing

DMU 21- Operator from Packing

DMU 22- Operator from Finishing

DMU 23- Operator from Finishing

In Model one we have two input variables (standard time and working hour per day for each operator) and one output variable (daily piece rate for specific apparel design from sample selected station operators'). In Model two motivational factors from the conceptual model is added; monetary incentive, non-monetary incentive, job related and company related as an input variable whereas intrinsic motivation included as output variable. From the Smith suggested study, Model one contains 23 DMUs and 2+1 input and output variables so 23 > 3*(2+1), **23 > 9**, this implies that the preferred DEA model result in over estimate of DMUs relative efficiency by 27%. The same is true for Model two; there are 5 input variables and two output variables. 23 > 3*(2+5), **23 > 21**. The analysis is done for 4 envelopment models under constant returns to scale and variable returns to scale using MaxDEA Basic Software. Some features of envelopment model and procedures are listed below.

1. Data – Import from Excel
2. Define Data – Data Sheet selected > Define Data > Field Type Selected (DMU name, Input and output variable specified)
3. Distance – Radial (CCR 1978, BCC 1984)
4. Orientation – Input-oriented and Output-oriented
5. RTS – CRS and VRS

6. Frontier – Default (Convex)
7. Advanced Model – Default
8. Result – Efficiency Score, Proportionate Movement, Slack Movement.
9. Slack Computation – Two Stage
10. Set timeout for Solver – 1000 seconds
11. Result Decimal – Six
12. Run
13. Export Results to Excel Files and Text files
14. Graphic Representation – Line Graph

Model One: - Measure Relative Efficiency of DMUs by Excluding Motivational Factors.

Before the efficiency score measurement, the decision-making units are identified based on the similarity of input and output variables. In this model 2 input variables (standard time and working hour) and 1 output variable (daily piece rate) total of three variables are used. Nevertheless, daily working hour is ignored because the value for each DMUs is the same. The results of 4 models are described with both tabular and graphic form. The raw data is cited in the appendix part.

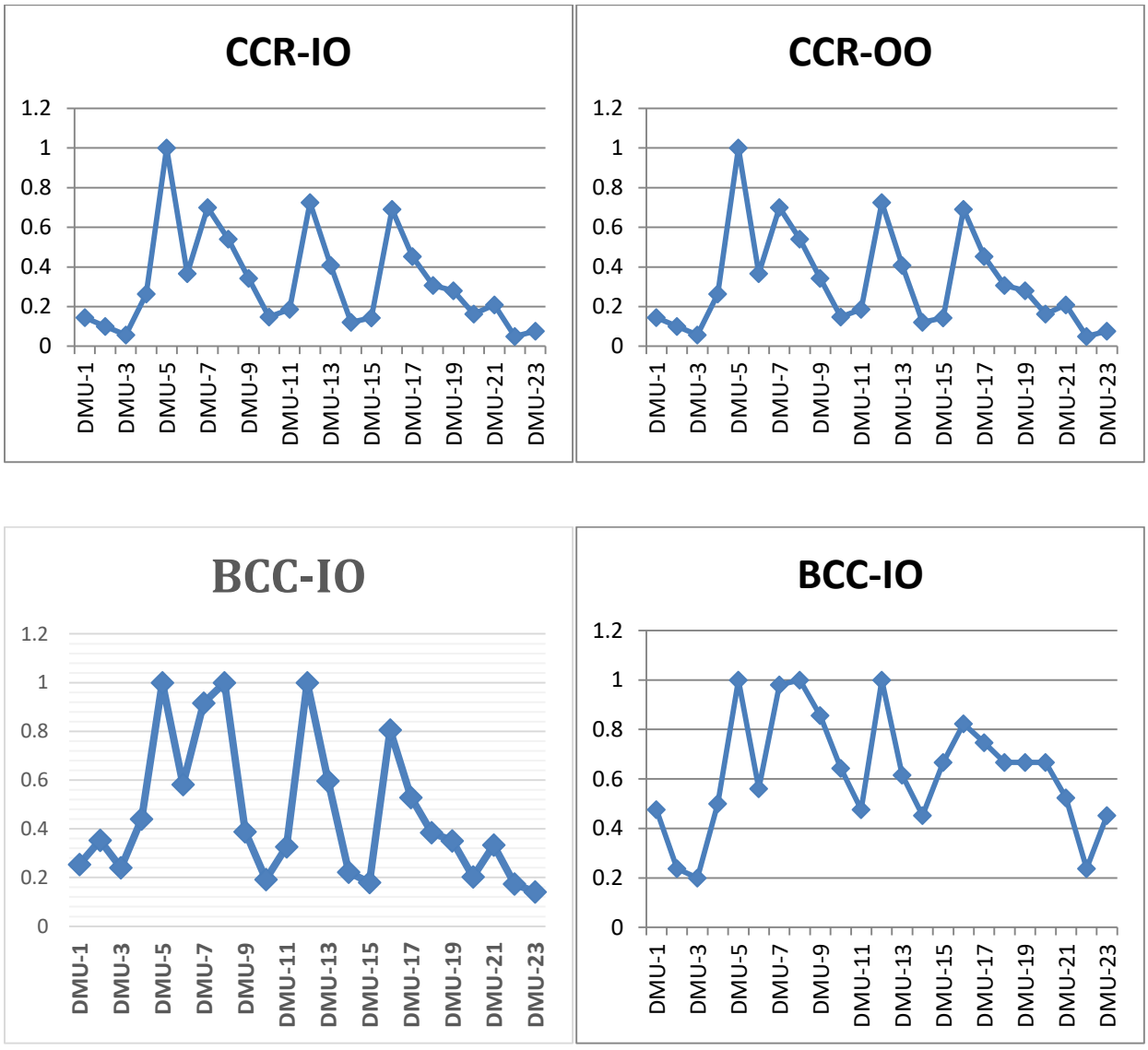


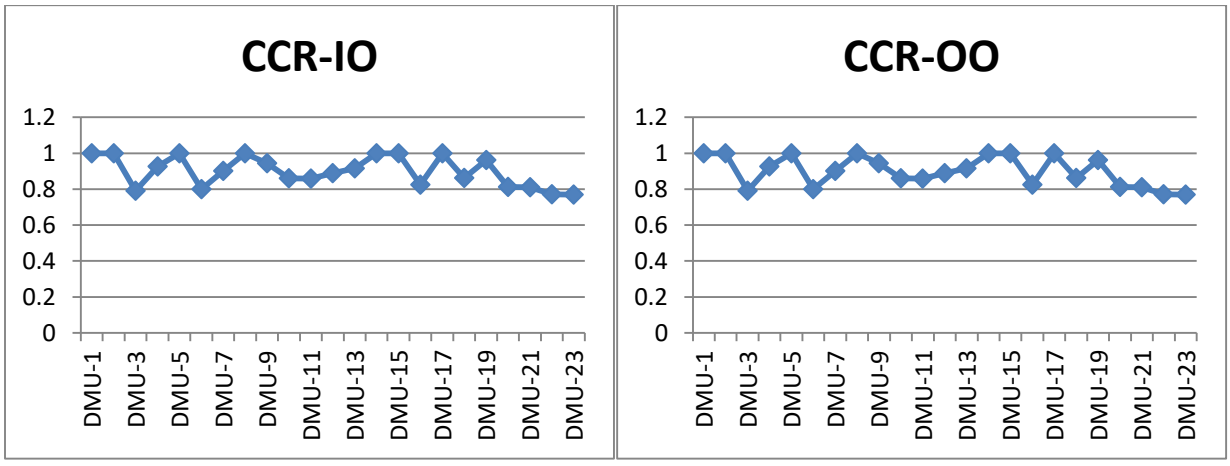
Figure 4. 17: DEA for Model One

Summary of Model One

From the Figure 4. 3 model computation and graphical representation, CCR Input-oriented and CCR Output-oriented relative efficiency score is the same this is due to constant returns to scale. Else BCC Input-Oriented relative efficiency score is different from BCC Output-Oriented relative efficiency score this is due to variable returns to scale. For the first two DEA model only, decision making unit (DMU-5– Operator from Printing Section) is efficient, 95.65% of DMUs are inefficient. From the remaining two models summary 3 DMUs are efficient (DMU 5 – Operator from Printing Section, DMU 8 – Operator from Sewing Section and DMU 12 – Operator from Sewing Section), 87% of DMUs are inefficient. When we compare the efficiency score under constant returns to scale and variable returns to scale; VRS result is better that CRS.

Model Two: - Measure Relative Efficiency of DMUs by including Motivational Factors

Previous model is a reference for this model to compare the relative efficiency of decision making units of four DEA models. Monetary incentive, non-monetary incentive, job related and company related motivation factors are incorporated as an input variable and intrinsic motivation is incorporated as an output variable. Relative efficiency score is calculated using four DEA models CCR-IO, CCR-OO, BCC-IO and BCC-OO.



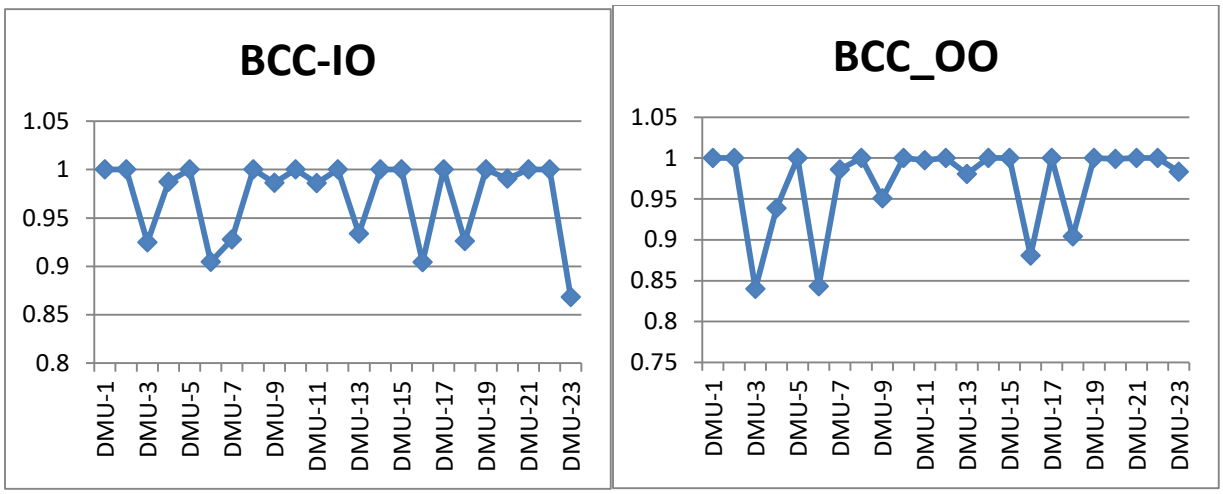


Figure 4. 18: DEA for Model Two

Summary of Model Two

As compare to the result of DEA model computation, Model Two shows improvement on relative efficiency score of DMUs. In CCR-IO and CCR-OO DEA model 7 DMU (DMU1, DMU 2, DMU 5, DMU 8, DMU 14, DMU 15 and DMU 17) are efficient, and in efficiency percent is decrease from 96% to 70% and number of inefficient DMUs are decreased from 22 to 16. VRS result indicates that there is improvement on the relative efficiency of DMUs. 12 DMUs (DMU1, DMU 2, DMU 5, DMU 8, DMU 10, DMU 12, DMU 14, DMU 15, DMU 17, DMU 19, DMU 21 and DMU 22) are efficient on BCC-IO and BCC-OO DEA model computation. As compare to model one percent of inefficient score is decrease from 87% to 48% and number of inefficient DMUs is decreased from 20 to 11. In another side relative efficiency score increase from 13% to 52%. The above data envelopment analysis justifies motivation factors have positive impact on DMUs relative efficiency score.

Comparison of DEA Models

Four DEA model's average efficiency score is summarized in Figure 4.19. From the table, the average efficiency score calculated by four DEA model is different. The higher average score is **0.9713** encounter by BCC-Input oriented DEA model computation under variable returns to scale.

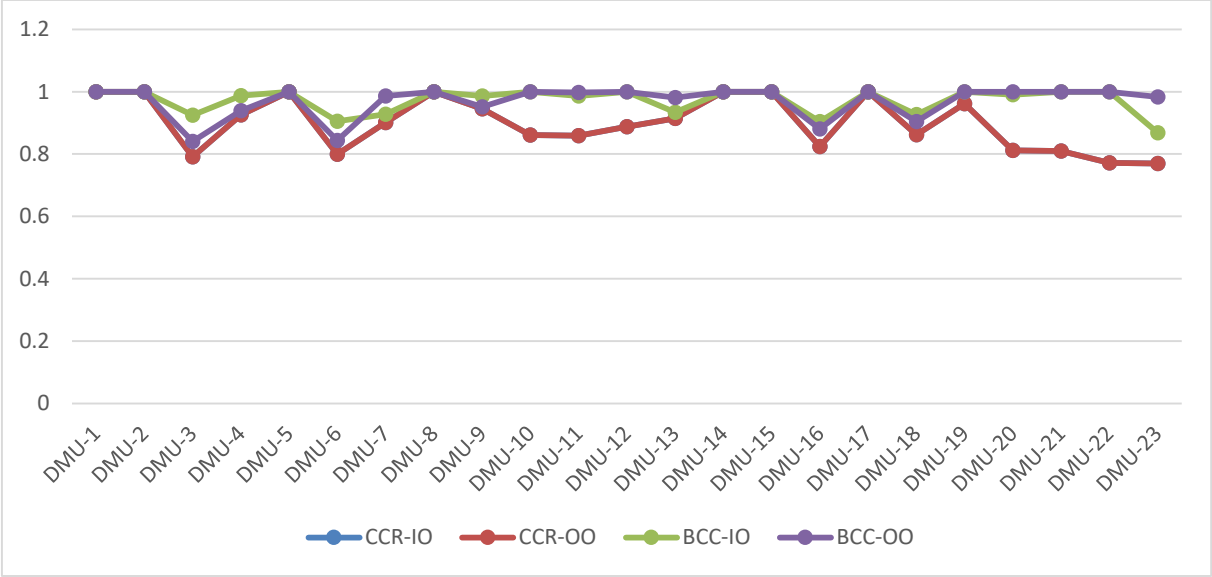


Figure 4. 19 Value of Efficiency Score Calculated by DEA Models

Sensitivity Analysis

Due to the nature of DEA modeling, adding more variables may not inflate the relative efficiency score but it can conceal the magnitude of relative inefficiency (Andrew Hughes 2004). Sensitivity analysis helps to analyze the stability of the proposed input and output variable. BCC Input-oriented DEA model computation and input output variables effect on DMUs relative efficiency is calculated using sensitivity analysis. The relation between relative efficiency and motivational factors is presented by omitting each factor one by one and recalculated using the preferred DEA model (BCC-IO).

Let the average efficiency score calculated when all factors are involved is $A_{f;}$ and average efficiency score where one of the factors is left out is $A_{o.}$ Then the significant impact is estimated by comparing the previous average value with the average value calculated by ignoring MFs.

If $A_{f;} > A_o$; the ignored factor has positive impact.

If $A_{f;} = A_o$; the ignored factor has no significant impact.

If $A_{f;} < A_o$; the ignored factor has negative impact.

Based on the above assumptions sensitivity analysis is analyzed. Impact of motivational factors is justified using the comparison.

Table 4. 13: Sensitivity Analysis of the Motivational Factors' effects on efficiency scores.

S/No.	Omitted Motivation Factor	Average Efficiency Score before factor is left out. (A_f)	Average Efficiency Score after factor is ignored. (A_o)	Comparison based on assumptions.	Types of Impact
1	MI	0.9713	0.8956	$A_{f;} > A_o$	Positive Impact
2	NMI	0.9713	0.9694	$A_{f;} > A_o$	Positive Impact
3	JR	0.9713	0.9349	$A_{f;} > A_o$	Positive Impact
4	CR	0.9713	0.9701	$A_{f;} > A_o$	Positive Impact
5	IM	0.9713	0.9110	$A_{f;} > A_o$	Positive Impact

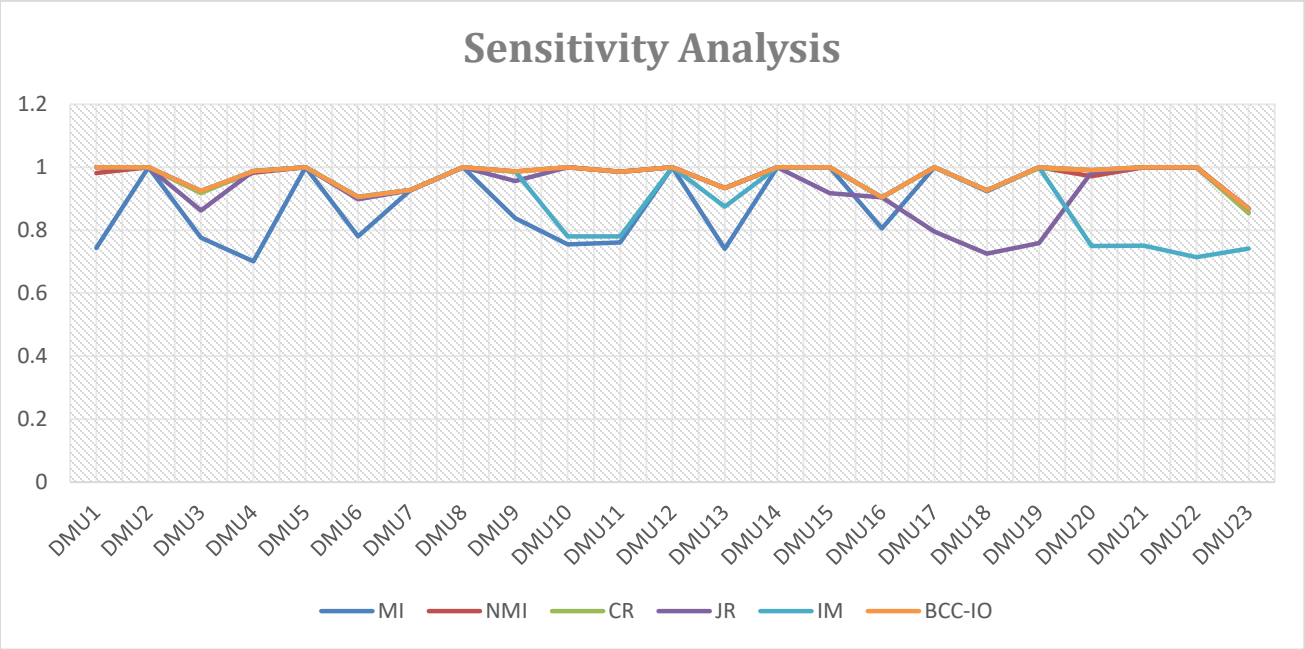


Figure 4. 20: Diagrammatical Representation of Sensitivity Analysis

From the Figure 4. 4 sensitivity analysis all motivational factors have positive impact on relative efficiency score of DMUs. No factor is realized as a negative impact though monetary incentive

impact is high as compare to the others, intrinsic motivation is the second, job related is the third, nonmonetary is the fourth and company related have least impact on DMUs relative efficiency score relative to the others. The result of sensitivity analysis proves that motivation factors have positive impact on DMUs relative efficiency. Top management must look forward to improve the efficiency of operators by smearing scientifically justified motivational factors from the above suggested analysis.

4.5 RESULT DISCUSSION

Based on the above data analysis, motivational factors have significant impact on labor productivity which is similar with the result of other experiments (James Christopher Ryan 2016 et al.,). From confirmatory factor analysis there is strong relation between extrinsic motivation factors. Nevertheless, the relation between intrinsic motivation and productivity is paltry. Qualitative study conducted to specify the impact of motivation on productivity results operator's superior motivation is self-motivation (Alrahlah 2016).

4.5.1 Impact of Endogenous Variable

Modified conceptual model analysis is dependent on observed variable (Extrinsic motivation and Productivity). From the structural estimation result there is strong relation between dependent observed variables. It means productivity is highly dependent on the extrinsic motivation factors given by the company. Similar research conducted on apparel industry financial incentive is determinant factor for employee performance (Imran Khan 2014 et al.,).

4.5.2 Impact of Exogenous Variable

From the conceptual model confirmatory factor analysis, monetary incentive, non-monetary incentive, company related and intrinsic motivations are observed variables. While u2 and u3 are unobserved variables. The impact of exogenous variables in the conceptual models indicates there is no significant relation between monetary incentive and company related, intrinsic motivation and monetary incentive. Though, there is significant effect between non-monetary

and company related, intrinsic motivation and non-monetary, extrinsic motivation and monetary, non-monetary, and company related.

4.5.3 Impact on Labor's Relative Efficiency

Non-parametric approach is computed in four types of DEA under variable return to scale and constant return to scale. The preferred DEA model is selected based on the highest average score. Average relative efficiency score for 4 DEA models are, CCR-IO = 0.8999, CCR-OO= 0.8999, BCC-IO= 0.9713 and BCC-OO = 0.9698. The result occupied from BCC-IO data envelopment analysis, percent of inefficient operators was 48% before including extrinsic and intrinsic motivation factors. Perhaps the result obtained from aggregated motivation factors have impact on labor's relative efficiency. The analysis specifies operator's relative efficiency score is increased from 13% to 52%. Number of efficient DMUs are increase from 3 to 12. Similarly, the research conducted on petrochemical plant company, three motivation factors (Job Satisfaction, Job Security, and Job Stress) are proposed to analyze the impact of motivation factor on labors relative efficiency score (A. Azadeh 2014). Data envelopment analysis is done in both CCR and VRS approach. The largest relative efficiency score is held by VRS assumption and the most effective human factor is job security. Significant factor's impact is identified by calculating Pearson and Spearman correlation coefficient. In this study sensitivity analysis is used to identify the significant motivation factor and the result of relative efficiency score is high in this study due to integrated motivation factors. This is the first study that presents an integrated extrinsic and intrinsic motivation factors for assessment of labor's relative efficiency score. From the finding monetary incentive (good wage, bonus, rewards and incentives) given by the company is major motivation factor to increase labor's performance. Intrinsic motivation factors (self-motivation, attitude, participation, commitment) and Job-related factors (job satisfaction, job safety and security, working climate, job design) rank the second and third significant factor. Non-monetary incentives (appreciation, promotion and growth, entertainment, supportive facilities, opportunity for education, and flexible working hour) and Company related (empowerment, guidance, good communication, fair assessment, clear organization goal, management style, and company loyalty) are fourth and fifth significant factors.

CHAPTER FIVE CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Human resource management is very essential for apparel industries' labor efficiency optimization. In appropriate identification of motivation factor result in poor labor performance. More than half of the respondent agreed on inadequate motivating factor is the reason for demotivation and poor performance. This paper develops structural relationship between motivational factors and measure the performance of human resource relative efficiency by considering motivational factors to show the impact of motivation factors. From the finding the following conclusions are drawn;

Reliability test of all factors Cranach alpha is greater than 0.70. the value shows the collected data's internal consistency is high. This is major step to test individual's factor analysis. All dependent and independent variables are analyzed by factor analysis and model fitness was check all modified model's fitness is good. The confirmatory analysis value Chi-square = 10.810, Degree of freedom = 4, Probability level = 0.029, NFI = 0.926, RFI = 0.960, CFI = 0.945 and RMSEA = 0.015 shows the model fitness is strong enough. The regression weight and p-value between extrinsic motivation and productivity is 0.87 and 0.003 (the relation is tough), and the regression weight between intrinsic motivation and productivity is 0.14 and 0.608 (the relation is less). This reflect the host company worker are motivated by monetary incentive, company related factors and non-monetary incentive offered by the company. However, internal motivation by itself cannot be the reason to work devotedly in the company. P-value justified with the value of 0.012 and 0.030 that non-monetary incentive and company related factors have significant impact on intrinsic motivation.

Ranking computed by alpha cut and center of area fuzzy expert system indicates 52% of extrinsic motivation factor score grade 1 (Weighted alpha=0.94 and CoA=0.73) whereas 15% of intrinsic motivation factors are grade 1(Weighted alpha=0.94 and CoA=0.73). Monetary incentive is the highest extrinsic motivation factor 73% of its factor ranks grade 1, Job related extrinsic motivation factors are the second 57% of its factor rank grade 1, Nom-monetary incentives ranks third 45% of its factors rank grade 1, and company related motivational factors

are the least extrinsic motivation factor only 38% of factors rank grade 1. It means employees motivation is increased by external motivation factors mainly by monetary incentives and extrinsic motivation factors have strong relation with labor productivity.

Four types of data envelopment analysis are tested under CRS and VRS assumption; the computation result of average relative efficiency score is CCR-IO = 0.8999, CCR-OO= 0.8999, BCC-IO= 0.9713 and BCC-OO = 0.9698. BCC-IO score highest average values so it is selected as an appropriate model. The proposed DEA model is used to demonstration the impact of motivation factors on labor's relative efficiency using BCC-IO. Model One measure labor's relative efficiency by considering working hour, standard time and estimated average piece rate for single apparel design. The output indicates 3 DMUs (DMU 5, DMU 8 and DMU 12) are efficient but the remaining 20 DMUs are not efficient. So, based on the computation 87% of operators are not efficient. Model two figure out motivation factors to compute operator's relative efficiency. The finding shows percent of inefficient DMUs decrease from 87% to 48% and number of efficient DMUs are increased from 3 to 12 (DMU1, DMU2, DMU5, DMU8, DMU10, DMU12, DMU14, DMU15, DMU17, DMU19, DMU21 and DMU22). It indicates motivation factors have positive impact on labor's relative efficiency.

Sensitivity analysis result justifies none of external and internal motivation factor have negative impact labor's relative efficiency score. From recalculation of relative efficiency score using BCC-IO monetary incentive score the first effective motivating factor its value is 0.8956, intrinsic motivation scores the second motivating factor its value is 0.9110, job related factors score third motivating factor its value is 0.9349, the fourth motivating factor is non-monetary incentive its value is 0.9694 and company related motivating factor is the last motivating factor by scoring 0.9110.

5.2 Recommendation

Based on the finding of the study the following recommendations are forwarded to intensification of labor motivation and to nurture labor productivity.

- The study suggests that in order to address the highly raised labor related problems motivating employees is the straightforward and scientifically justified solution. So, it would be enhancing if the host company give attention to applying motivation factors accordingly.
- The study suggests applying different money rewarding system to positively influence labor motivation.
- It should be better if there is appropriate promotion method in the company and participate employees for growth fairly.
- The study suggest that there are no unique motivating techniques but the case company should handle their employee's interest by mixing motivational factors for labor great performance achievement.
- It should be enhancing if GMM Garment PLC can practice extrinsic motivating techniques to lessening labors complain.

5.3 Further Research Area

This study was limited to one garment industry but future study may consider Ethiopian industry parks and industry zones. This study majorly uses questioner to analyze the impact of employee motivation on productivity but it would be feasible if direct interview is used for data collection to strengthen the analysis. This research is conducted on small sample size and the response rate is insufficient but it would be convincing if target population is more than hundreds. Due to the limited scope of this research analyze motivation factors by considering operator's perspective only but the researcher suggests to consider another factor like management staffs and to consider demotivating factors to analyze the impact. The result of the study will be more realistic if there is opportunity for validating the proposed motivational factors. Relative efficiency score is calculated by considering three factors only but this study suggests to add financial related variables like profit.

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Annex-I English Questionnaire

Addis Ababa University
Addis Ababa Institute of Technology
School of Mechanical and Industrial Engineering
Questionnaires for the Study of Impact of Workers Motivation on Productivity

Dear Sir/Madam,

I am student of Master of Industrial Engineering in Addis Ababa Institute of Technology. This thesis is part of my research and conducted for academic purpose only. The purpose of these questionnaires is to gather relevant data on a given topic. The questionnaires are stratified according to the employee work position. This research is highly dependent on the respondent truthful response and collaboration to make it viable.

Thank You!

Part I General Information: - Please mark √ inside the rectangle box.

1. Gender
   [] Male **[]** Female
2. Age
   [] Below 20 years **[]** 20-30 years **[]** 31-40 years **[]** 41-50 years **[]** above 50 years
3. Family Size
   [] Single [] 1-4 **[]** 5-8 **[]** Above 8
4. Level of Education
   [] Under grade 10 **[]** 10+1-10+3 **[]** Grade 12 completed **[]** Diploma **[]** Degree
5. Job Position
   [] Junior Staff [] Supervisor [] Manager
6. Work Experience
   [] Below 6 months **[]** 6-12 months **[]** 1 year – 2 years **[]** above 2 years

Part II Motivation Factor: - This part of questionnaire is prepared to investigate the impact of motivation on employee performance and to know what motivation factor is very sensitive to employee. Please express your opinions by the options listed below according to their degree of agreement. Circle the number to specify your agreement and choose only one answer for one statement.

1= Strongly Disagree **2=** Disagree **3=** No Opinion **4=** Agree **5=** Strongly Agree

S/No.	Statements	Response				
		1	2	3	4	5
1	Selecting a type of needle is basic for producing quality apparels.					
2	Bad noises affect my performance.					
3	Absenteeism affects productivity.					
IM14	Staffs can control defects before occurred.					
CR15	My employer-employee's relation is good enough.					
6	I have enough break time.					
7	I am motivated in my current work.					
8	I have face work overload.					
CR29	Language problem is the reason for low work performance.					
10	Lateness is one way of expressing worker de-motivation.					
NMI111	Different stitching training is given by my company.					
CR312	I know my company vision and mission.					
CR413	Sewing instructions are clearly described by my company.					
14	Employees are satisfied with company motivation system.					
15	Job rotation is helpful to eradicate employee fatigue.					
16	I am interested in line competition and struggle to win.					
CR517	I know my company rule and regulation.					
IM218	My job is one way of achieving my future goal.					
19	I am committed to try new apparel design before mass production.					
MI120	Overtime payment is major thing for work motivation.					
NMI221	Supplementary privileges (free meal, free transportation) provide by my company inspired me to perform better.					
22	I prefer monetary rewards than non-monetary rewards.					
23	Interpersonal relation between top managements and staff is very encouraging.					

NMI324	Company achievement celebration is important for employee performance.					
25	My boss appreciates me while I achieve daily targets.					
NMI426	I have received promotion request while I perform better.					
JR127	I am satisfied with existing working condition.					
CR628	My company leadership style is participative.					
29	My payment is fair as compare to the work.					
30	Absenteeism is come from lack of motivation.					
31	Dissatisfaction is major reason for turnover.					
32	Reward and recognition is associated to employee performance.					
IM3 33	Well-motivated employee has a positive attitude towards work.					
34	Teamwork is vital for better employee performance.					
MI235	Incentives are important for motivation of workers.					
36	Job security is one way of motivation.					
37	I'm doing my work in comfort zone.					
JR238	Ventilation system is basic to perform with full potential.					
39	I get the chance to tell my complaints in my work place.					
CR740	Getting good response from HR is used to solve work place conflicts.					

Part III Intrinsic and Extrinsic Motivation Survey: - This section is prepared to assess both intrinsic and extrinsic motivation. Please express your opinions from the options listed below. Circle the number to specify your agreement and choose only one answer for one question.

1. **(JR3)** Are you interested with your current work?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
2. Did you face any work overload?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
3. Do you think you work is safe and secured?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
4. **(CR8)** Did you get fair assessment throughout your performance evaluation?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
5. **NMI5**Is appreciation from supervisor and recognition aid you to perform effectually?

A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree

6. During task assignments, is there any unbalanced work assignment?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
7. **(CR9)** Being your work empowered by yourself motivates you?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
8. **(MI3)** Is salary decrement influence your work performance?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
9. **(MI4)** Do you prefer monetary incentive than non-monetary incentive?
   A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
10. Working condition and environmental condition is basic for you to perform more?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
11. **(CR10)** Do you need guidance and special support for your work initiation?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
12. **(NMI5)** Does receiving no recognition affect your performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
13. Do you have good relation with your managers?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
14. Harsh communication with managers affects your work performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
15. **(IM4)** Do you have good relation with peers?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
16. **(CR11)** Harsh communication with work met affects your work performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
17. **(NMI7)** Did you get a chance for job position growth?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
18. **(CR12)** Do you think company's work evaluation system is fair?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
19. **(CR13)** Do you know your company's goal and policies?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
20. If there is any entertainment in your company do you think it is good to perform well?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
21. **(NMI8)** Enabling free transport, free meal, and dormitory in your company affects your working ability?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
22. **(NMI9)** If you get an opportunity for education and training, it motivates you to accomplish your task greatly?

A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree

23. **(MI5)** Do you believe your motivation level would be altered if you receive a different reward and incentives?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
24. **(MI6)** Are you satisfied with the company reward and bonus?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
25. Would you still be motivated in the work place if salary increment is the only way of reward?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
26. If the working time is flexible is it convenient for you to work passionately?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
27. **(CR14)** Do you feel comfortable with your company leadership style?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
28. **(CR15)** Do you think your company is loyal?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
29. **(IM5)** Are you responsible for you task?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
30. **(IM6)** Do you participate group task in your line?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
31. **(IM7)** Are you willing to solve any challenge in your workplace?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
32. **(IM8)** Do you have an internal interest for your job?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
33. **(IM9)** Are committed for work?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
34. **(IM10)** Did you attend your work on time?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
35. Daily lateness comes from work de-motivation?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
36. Absenteeism is reason for de-motivation?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
37. **(IM11)** Your work is one way for your future personal growth?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
38. **(IM12)** Do you think you can do any apparel design as soon as you get skilled?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree

39. **(JR4)** Your life interest can be satisfied with your job?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
40. Are you confident enough to seek new product?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
41. Is your current position being better than any other profession?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
42. If you get the chance for free clothing accessories can you make your own design independently?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
43. Do you prefer your salary would be based on the piece rate?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
44. Unclear company goal and policy affect your daily output?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
45. Unsafe working condition affects you to produce defective clothes?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
46. Being low wage paid affect your productivity?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
47. Can unsecured job be reason for poor performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
48. Unfair recognition between employees affects your performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
49. Harsh communication between supervisors and peers affect your work productivity?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
50. Lack of supervision affect your performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
51. Late promotion and growth has impact on your piece rate?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree
52. Your work motivation level affects your performance?
    A. Strongly Disagree B. Disagree C. No Opinion D. Agree E. Strongly Agree

Annex-II Amharic Questionnaire

አዲስ አበባ ዩንቨርስቲ
አዲስ አበባ የቴክኖሎጂ ተ ም
የመካኒካል እና ኢንዱስትሪያል ኢንጅነሪንግ ትምህርት
የሠራተኞች ተነሳሽነት በምርታማነት ላይ የሚያመጣውንለውጥ ለማጥናት የተዘጋጀ መጠይቅ

ለሠራተኞች የቀረበ መጠይቅ

ውድ ሠራተኞች፣

እኔ በአዲስ አበባ የቴክኖሎጂ ተ ም የኢንዱስትሪያል ኢንጅነሪንግ የማስተርስ ተመራቂ ተማሪ ነኝ፡፡ ይህ የመመረቂያ ጥናት የሚከናወነው ሙሉ ለሙሉ ለትምህርታዊ ጉዳይ ብቻ ነው፡፡ ከላይ እንደተተቀሰው የዚህ መጠይቅ ዋና አላማው የሠራተኞች ተነሳሽነት በምርታማነት ላይ የሚያመጣውን ለውጥ በትክክለኛ መረጃ በተደገፈማስረጃ ለማቅረብ እና የእርሶንምላሽ አጠናክሮ ማቅረብ ነው፡፡ ለጥናቱ ውጤታማ መሆን የእርሶ ትክክለኛ ምላሽ እና ትብብር በአክብሮት እጠይቃለው፡፡ መጠይቁን ለመሙላት ውድ ሰአትዎን መስዋት ስላደረጉ ከልብ አመሰግናለሁ፡፡

ክፍል አንድ፡ አጠቃላይ መረጃ የሚመርጡትን ምርጫ ለመግለፅ በአራት ማዕዘን ሳጥን ውስጥ የራይት ምልክቱን ያስቀምጡ፡፡

1. ፆታ
   [ ]ወንድ **[ ]**ሴት
2. እድሜ
   [ ]ከ 20 ዓመት በታች **[ ]**ከ 20-30 ዓመት **[ ]**ከ 31-40 ዓመት **[ ]**ከ 41-50 ዓመት **[ ]**ከ 50 ዓመት በላይ
3. የቤተሰብ ብዛት
   [ ]ያላገባ **[ ]**1-4 **[ ]**5-8 **[ ]**ከ 8 ቤተሰብ በላይ
4. የትምህርት ደረጃ
   [ ]ከ 10 ክፍል በታች**[ ]**10+1 - 10+3 **[ ]**12 ክፍል ያጠናቀቀ**[ ]**ዲፕሎማ**[ ]**ዲግሪ
5. የሥራ መደብ
   [ ]ኦፐሬተር **[ ]**ሱፐር ቫይዘር **[ ]**ሀላፊ
6. የስራ ልምድ
   [ ]ከ 6 ወር በታች **[ ]**ከ 6-12 ወር **[ ]**ከ 1-2 ዓመት **[ ]** ከ 2 ዓመት በላይ

ክፍል 2፡ በዚህ ክፍል ያሉት መጠይቆች የተዘጋጁት የሰራተኞች ተነሳሽነት በምርታማነት ላይ የሚያመጣውን ተፅኖ ለማወቅ እንዲሁም ለሰራተኞች ተነሳሽነት ከፍተኛ ሚና የሚጫወተውን ነገር ለይቶ ማውጣት ነው፡፡ ስለዚህም የእርስዎ ቀና ምላሽ ለጥናቱ በጣም አስፈላጊ ነው፡፡ መጠይቆቹ በአባባል መልክ ተቀምጠዋል ስለሆነም እርስዎ ስምምነትዎን ቁጥሮቹን አንዱን በማከበብ እንዲገልፁልን በአክብሮት እንጠይቃለን፡፡ ስለትብብርዎ ከልብ እናመሰግናለን፡፡

1=በጣም እቃወማለው **2**= እቃወማለው **3**=አስተያየት የለኝም **4**= እስማማለው **5**=በጣም እስማማለው

ተ/ቁ ጥር	መጠይቅ	ምርጫ				
		1	2	3	4	5
1	የመርፌ አይነት መምረጥ ጥራት ያለው ልብስ ለማምረት በስረታዊ ነው፡፡					
2	ጩኸት የበዛበት ድምፅ ለስራ ውጤታማነት እንከን ነው፡፡					
3	ከስራ በተደጋጋሚ መቅረት ምርታመማነትን ያውካል፡፡					
4	ሠራተኞች እንከን ከመፈጠሩ በፊት ቀድመው መከላከል ይችላሉ፡፡					
5	ከአሰሪዬ ጋር ጥሩ የስራ ቅርርብ መኖር አስፈላጊ ነው፡፡					
6	በቂ የእረፍት ሰአት ለማንኛውም ሰራተኛ ያስፈልጋል፡፡					
7	Iየስራ ተነሳሽነት ለማንኛውም አይነት ስራ ያስፈልጋል፡፡					
8	የስራ ጫና መብዛት የስራ ተነሳሽነትን ይቀንሳል፡፡					
9	ከስራ ሀላፊ ጋርበ ን አለመግባባት የመስራት አቅምን ያውካል፡፡					
10	በተደጋጋሚ በስራ ሰአት አርፍዶ መምጣት ከስራ ተነሳሽነት ጋር ይገናኛል፡፡					
11	ከምሰራበት መስሪያ ቤት በተደጋጋሚ የተለያዩ ስልጠናዎች ተሳትፊለው፡፡					
12	የመስሪያ ቤታችሁን ራዕይ እና ተልዕኮ በሚገባ ያውቃሉ፡፡					
13	የስራ ሀላፊነት እና ግዴታ በመስሪያ ቤታችሁ ተገልፃል፡፡					
14	በድርጅታችሁ በሚሰጠው የስራተኞችን ተነሳሽነት መጨመሪያ መሳተፍ የስራ ውጤታማነትን ይጨምራል፡፡					
15	የስራ ቅይይር የስራ ላይ ድካምን ለመቀነስ ይረዳል፡፡					
16	ከላይን ላይን የሚደረግ የስራ ፉክክር የስራ ተነሳሽነትን እና ምርታማነትን ይጨምራል፡፡					
17	የመስሪያ ቤትዎን ህግና ደንብ በሚገባ ያውቃሉን፡፡					
18	ለወደፊት አላማዎ መሳካት የአሁን ስራዎ አንዱ አካል ነው፡፡					
19	አዳዲስ ምርቶች ሲመጡ በድፍረት የመሞከር ተነሳሽነትዎ ክፍትኛ ነው፡፡					
20	የትርፍ ሰአት ክፍያ አንዱና ዋነኛው የስራ ተነሳሽነትን መጨመሪያ መንገድ ነው፡፡					
21	ከመስሪያ ቦታዎ የሚደረጉ የተለያዩ ድጎማዎች የስራ ንቃትን ይጨምራል፡፡					
22	የገንዘብ ጥቅማ ጥቅም ከቁስ ጥቅማ ጥቅም ይበልጥብኛል፡፡					
23	ከበላይ ሀላፊዎች ጋር ያለ ጥሩ የስራ ቅርርብ ለስራዬ ውጤታማነት ወሳኝ ነው፡፡					
24	የድርጅታችንን ውጤታማነት ከሰራተኞች ጋር ማከበር ለስራ ላይ ውጤታማነት ጠቃሚ ነው፡፡					
25	ከአለቆች የሚመጣ አድናቆት እና ሙገሳ ስራን በይበልጥ ለማሳካት ይረዳል፡፡					
26	የስራ እድገት መኖር ለወደፊት የስራ መነቃቃት ይጠቅማል፡፡					
27	አሁን ባለው የስራ ሁኔታ ደስተኛ ኖት፡፡					
28	የድርጅታችሁ የስራ አመራር አሳታፊ ነው፡፡					
29	አሁን ላይ የማገኘው ክፍያ ከምሰራው ስራ ጋር ተመጣጣኝ ነው፡፡					
30	በየአመቱ ከመስሪያ ቤታችሁ ሽልማቶች እና ቦነሶች ያገኛሉ፡፡					
31	ተደጋጋሚ የስራ መልቀቅ ከስራ ተነሳሽነት ማነስ የሚመጣ ነው፡፡					
32	ሽልማቶች እና ማበረታቻዎች መኖር ለስራ ውጤታማነት አስፈላጊ ነው፡፡					
33	የስራ ተነሳሽነት ያለው ሰራተኛ ለስራው ፍቅር እና ክብር አለው፡፡					
34	ስራን በቡድን ሆኖ መስራት ውጤታማ ያደርጋል፡፡					

35	የተለያዩ ጥቅማ ጥቅሞች ለስራ ውጤታማ መሆን አስተዋፅዎ አለው፡፡					
36	ሚ ስራ ከጊዜያዊ ስራ ይልቅ ጥሩ አስተዋፅዎ አለው፡፡					
37	በተመቻቸ ሁኔታ ውስጥ ነው የሚሰሩት፡፡					
38	በቂ እና ነፋሻማ አየር ባለበት ሁኔታ ውስጥ መስራት ለስራተኛ ምርታማነት አስፈላጊ ነው፡፡					
39	ቅሬታዎችን በግልፅነት ለስራ ሀላፊዬ መንገር እችላለሁ፡፡					
40	የስራ ቅሬታዎችን በግልፅ ስናገር ከሰው ሀይል አስተዳደር ወይም ከሀላፊዎች ጥሩ ምላሽ አገኛለው፡፡					

ክፍል 3፡ በዚህ ክፍል ያሉት መጠይቆች የተዘጋጁት የሰራተኞችን የውስጣዊና የውጫዊ ተነሳሺነት መንገዶችን ለማጤን ነው፡፡ መጠይቆቹ በምርጫ መልክ ተቀምጠዋል ስለሆነም የእርስዎ ስምምነትዎን ፊደሎቹን አንዱን በማክበብ እንዲገልፁልን በአክብሮት እንጠይቃለን፡፡ የእርስዎ ቀና ምላሽ ለጥናቱ በጣም አስፈላጊ ነው፡፡ ስለትብብርዎ ክልብ እናመሰግናለን፡፡

1. አሁን በሚሰሩት ስራ ደስተኛ ኖዎት?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
2. በስራዎ ላይ የስራ ጫና በተደጋጋሚ ያጋጥሞታል?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
3. የሚሰሩት ስራ ዋስትና ያለው እና የተጠበቀ ነው?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
4. የስራ ብቃትዎ መመዘኛ እና ግምገማ ግልፅ እና መድልዎ የሌለበት ነው?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
5. ከስራ ሀላፊዎ የሚያገኙት ምስጋናና ኡድናቆት ስራዎን በብቃት ለመወጣት ይረዳል?
   ሀ.በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
6. የስራ ምደባ በሚኖርበት ጊዜ በሰራተኞች መሀል እኩል ያልሆነ የስራ ክፍፍል አለ?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
7. ስራዎን በራስዎ ስልጣን ያለማንም አዛዥ መስራት የስራ ተነሳሽነትዎን ይጨምረዋል?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
8. የወርሀዊ ደመወዝ መቀነስ የስራ ብቃትዎን ይቀንሰዋል?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
9. ከቁሳቁስ ድጎማ ይልቅ የገንዘብ ድጎማን ይመርጣሉ?
   ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
10. የስራ ቦታዎ ምቹ ሁኔታ እና የተመጣጠነ የአየር ንብረት፣ በቂ የሆነ ብርሀን፣ ምቹ መቀመጫ መኖር ለስራ ክንዋኔዎ ውጤታማ መሆን አስፈላጊ ነው?
    ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
11. ከድርጅትዎ የሚደረግ የማማከር እንዲሁም ለሚያጋጥምዎ ችግር የሚሰጥ ድጋፍ የስራ ተነሳሽነትን ይጨምራል?
    ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው
12. ከድርጅትዎ ማበረታቻ አለማግኘት የስራ ብቃትዎን ይቀንሰዋል?

ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

13. ከስራ ሀላፊዎ ጋር ጥሩ የስራ ግንኙነት አለዎት?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

14. ከስራ ሀላፊዎ ጋር የሚፈጠር አለመግባባት የስራ ብቃትዎን ይቀንሰዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

15. ከስራ ባልደረባዎ ጋር ጥሩ የስራ ግንኙነት አለዎት?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

16. ከስራ ባልደረባዎ ጋር የሚፈጠር አለመግባባት የስራ ብቃትዎን ይቀንሰዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

17. የስራ እድገት አግኝተው ያውቃሉ?
ሀ.በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

18. የድርጅታችሁ የስራ ግምገማ ሂደት አድልዎ የሌለበት ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

19. የድርጅታችሁን አላማ እና መርህ ጠንቅቀው ያውቃሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

20. በድርጅታችሁ ውስጥ የተለያዩ መዝናኛዎች መኖር ከስራ ክንዋኔዎች መጨመር ጋር ይገናኛል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

21. ነፃ የትራንስፖርት አገልግሎት፣ ነፃ ምሳ እና የማደሪያ አገልግሎት መኖር የመስራት አቅምዎን ይጨምረዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

22. በድርጅትዎ ውስጥ ውስጥ የሚያገኙት የትምህርት እድል እንዲሁም የተለያዩ ስልጠናዎች ስራዎን በተነሳሺነት ለማከናወን ይረዳል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

23. የተለያዩ ቦነሶችን እና ጥቅማጥቅሞችን ማግኘት የስራ ተነሳሽነትዎን ይጨምረዋል ብለው ያምናሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

24. በድርጅትዎ ይደረግ የነበረው የሽልማት እና የማበረታች ጥቅማጥቅሞች በስራዎ ላይ ለውጥ አምጥቷል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

25. በድርጅትዎ ሰራተኞችን ማበረታቻ ብቸኛ መንግድ ደሞዝ መጨመር ብቻ ቢሆን ይስማማሉ?
ሀ.በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

26. የስራ ሰአትዎ በሺፍት ቢሆን ስራዎን በሚገባ ለመስራት ምቹ ነው ብለው ያስባሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

27. በድርጅትዎ ውስጥ ያለው የአመራር አይነት ለስራዎ ውጤታማነት ምቹ ሁኔታን ይፈጥራል?
ሀ.በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

28. ድርጅትዎ ለሰራተኞቹ ታማኝ ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

29. የሚሰጥዎት ስራ በሙሉ ኃላፊነት ይወጣሉ?

ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

30. በተመደቡበት ላይን ላይ የቡድን ስራ ሲኖር ለመሳተፍ ፈቃደኛ ነዎት?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

31. በስራዎ ላይ ለሚያጋጥምዎት ማንኛም ችግር በአቅምዎ ለመፍታት ይሞክራሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

32. ሥራዎትን የሚያከናውኑት የውስጥ ተነሳሺነት ኖሮት ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

33. ለስራዎ ቅድመ ዝግጅት አድርገው ነው የሚሰሩት?
ሀ.በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

34. በስራ ገበታዎ ላይ ዕለት በዕለት በሰአቱ ይገኛሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

35. የስራ ሞራል ውድቀት በስራ ገበታ ላይ በሰአቱ ላለመገኘት ምክንያት ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

36. በስራ ገበታ ላይ በተደጋጋሚ ያለምክንያት መቅረት በስራ አለመነቃቃትን ያመላክታል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

37. የወደፊት የሂወት እቅድዎን የሚያሳኩበት አንዱ መንገድ ስራዎ ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

38. በቂ ልምድ ካገኙ ማናኛውንም አይነት የልብስ ዲዛይን መስራት ይችላሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

39. ለኑሮ የሚያስፈልግዎት ወጪዎች ለማሳካት ስራዎ ወሳኝ ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

40. ማንኛውንም አይነት ዲዛይን ለመሞከር ብቃትዎ አለዎት?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

41. አሁን የተሰማሩበት የስራ ዘርፍ ከሌሎች የስራ ዘርፎች የተሻለ ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

42. ነፃ ጥሬ እቃ የማግኘት እድል ቢገጥምዎት በራስዎ ዲዛይን ብቻዎትን የራስዎን ልብስ መስፋት እና ማምረት ይችላሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

43. የሚከረልዎት ወርሀዊ ደመወዝ በሰሩት ወይም በሰፉት የልብስ መጠን ቢሆን ይመርጣሉ?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

44. የድርጅታችሁ ኣላማ እና መርህ ግልፅ አለመሆን የስርስዎን የቀን ምርትዎን ያውከዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

45. አስተማማኝ ባልሆነ የስራ ቦታ ላይ መስራት ከእከል ነፃ የሆነ ምርት የማምረት አቅምዎን ይቀንሰዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

46. ዝቅተኛ ደመወዝ ተከፋይ መሆን የስራ ምርታማነትዎን ይቀንሰዋል?

ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

47. በስራዎ ላይ ቋሚ አለመሆን ወይም በጊዜያዊነት መስራት ስራን በብቃት ያለመወጣት ምክንያት ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

48. መድልዎ ያለው ሽልማት እና ማበረታቻ የመስራት አቅምዎን ይገድበዋል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

49. ከስራ ሀላፊ ጋር የሚፈጠር አለመግባባት የመስራት ችሎታን ይገድባል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

50. በቂ ያልሆነ የስራ ላይ ቁጥጥር ምርታማነትን ይቀንሳል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

51. በስራ ላይ ፈጣን እድገት አለመኖር ለስራ ተነሳሺነት እንዲሁም ምርታማነት እንከን ነው?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

52. ለስራዎ ተነሳሺነት አለመኖር ምርታማነትን ይቀንሳል?
ሀ. በጣም እቃወማለው **ለ.** እቃወማለው **መ.** አስተያት የለኝም **ሠ. .**እስማማለው **ረ.** በጣም እስማማለው

Annex-III Standard Time

NO.	ID No.	PROCESS	MACHINE	RATING FACTOR	AVERAGE	NORMAL TIME	ALLOWANCE	STANDARD TIME	OUT PUT
1	SE-8295	take end zip side pocket	SNLS	0.45	159.5	71.775	0.4	100.485	100
2	SE-8095	attach zip with welt side pocket	SNLS	0.55	94	51.7	0.4	72.38	50
3	SE-11954	stitch around opening side pocket	SNLS	0.45	169	76.05	0.4	106.47	42
4	SE-5067	sew lining with egde finish	SNLS	0.45	92	41.4	0.4	57.96	105
5	SE-9774	03 egde lining side pocket	SNLS	0.4	45.6	18.24	0.4	25.536	175
6	SE-8125	sew egde top lining sidepocket	SNLS	0.45	69.6	31.32	0.4	43.848	110
7	SE-9282	03 egde	SNLS	0.45	25.3	11.385	0.4	15.939	200
8	SE-8688	stitch top lining side pocket	SNLS	0.4	69.6	27.84	0.4	38.976	187
9	SE-7997	inter lock back yoke	SNLS	0.45	64.6	29.07	0.4	40.698	80
10	SE-6236	top stitch + stitch back yoke	DNLS	0.5	42	21	0.4	29.4	100
11	SE-9014	inter lock shoulder	O5	0.4	61	24.4	0.4	34.16	100
12	SE-9015	top stitch + stitch shoulder	DNLS	0.5	81	40.5	0.4	56.7	210
13	SE-12962	sew edge flap	SNLS	0.45	121.6	54.72	0.4	76.608	180
14	SE-4785	set main collar with body	SNLS	0.4	143.5	57.4	0.4	80.36	91
15	SE-9018	03 egde	O3	0.5	50	25	0.4	35	134
16	SE-7022	top stitch + stitch big sleeves	DNLS	0.35	65	22.75	0.4	31.85	110
17	SE-6039	set sleeves with body	SNLS	0.45	211	94.95	0.4	132.93	135
18	SE-3500	sew contrast collar + tape with body	SNLS	0.45	124	55.8	0.4	78.12	100
19	SE-6253	inter lock big sleeves + small	SNLS	0.4	68.3	27.32	0.4	38.248	190

		sleeves							
20	SE-8117	sew turn around adjust cuff	SNLS	0.5	66	33	0.4	46.2	75
21	SE-3559	sew end adjust cuff	SNLS	0.45	53.5	24.075	0.4	33.705	70
22	SE-9578	sew adjust cuff with cuff	SNLS	0.5	43.3	21.65	0.4	30.31	85
23	SE-12006	sew program velcro adjust cuff	PGM	0.45	68	30.6	0.4	42.84	120
24	SE-10133	sew program velcro open cuff	PGM	0.4	63	25.2	0.4	35.28	100
25	SE-5338	fold + top stitch cuff	SNLS	0.35	235	82.25	0.4	115.15	95
26	SE-8218	sew top lining collar with main collar	SNLS	0.45	226	101.7	0.4	142.38	140
27	SE-13263	sew side lable	SNLS	0.4	56.6	22.64	0.4	31.696	150
28	SE-9031	sew side lable with side seam	SNLS	0.5	69	34.5	0.4	48.3	150
29	SE-9861	sew turn contrast collar	SNLS	0.5	95	47.5	0.4	66.5	140
30	SE-9033	interlining	SNLS	0.4	95	38	0.4	53.2	200
31	SE-8972	sew turn around flap	SNLS	0.35	148.5	51.975	0.4	72.765	140
32	SE-1948	topstitch around flap	SNLS	0.45	200	90	0.4	126	140
33	SE-9590	sew flap with main zip	SNLS	0.5	109.5	54.75	0.4	76.65	110
34	SE-8469	set main zip with body	SNLS	0.4	263	105.2	0.4	147.28	50
35	SE-9038	sew edge side pocket with zip	SNLS	0.5	259	129.5	0.4	181.3	95
36	SE-11744	sew turn first collar	SNLS	0.45	105.5	47.475	0.4	66.465	190
37	SE-3027	sew turn first bottom	SNLS	0.35	262.5	91.875	0.4	128.625	67
38	SE-11815	binder	SNLS	0.4	112.5	45	0.4	63	130
39	SE-11695	stitch main zip + top collar	SNLS	0.35	128.6	45.01	0.4	63.014	130
40	SE-7519	fold + topstitch end collar	SNLS	0.45	135	60.75	0.4	85.05	206
41	SE-6884	fold + topstitch bottom	SNLS	0.45	126.3	56.835	0.4	79.569	110
42	SE-9045	bartack short * 2	BT	0.55	58	31.9	0.4	44.66	105

Annex IV Normalized Value of Motivational Factors That Affect Productivity

Motivation Factors		1	2	3	4	5
Monetary Incentive	P1	0	0.2308	0.3846	0.1538	1
	P2	0.182	0	0.273	0.636	1
	P3	1	0.571	0.857	0.429	0.429
	P4	0	0	0	0.095	1
	P5	0.056	0	0	0.222	1
	P6	0	0.5	0.1	0.6	1
	P7	0	0	0	0.467	1
	P8	0	0.7	0.4	0.2	1
	P9	0	1	0.063	0	0.375
	P10	1	1	0	0.222	0.333
	P11	0.111	0.444	0	1	1
Non-Monetary Incentives	P12	0	0.071	0.214	1	0.357
	P13	0	0.091	0.091	0.091	1
	P14	0	0	0	0.769	1
	P15	0.222	0.222	1	0.333	0.778
	P16	0.455	0.455	0.182	1	0
	P17	0	0	0.071	1	0.571
	P18	0	0.5	0.4	1	0.4
	P19	0.071	0.143	0.071	0.357	1
	P20	0	0.231	0.154	0.385	1
	P21	0	0.059	0	0.294	1
	P22	0	0.545	0.091	1	0.455
	P23	0.2	0.1	0.1	0.9	1
	P24	0.222	0.222	0.222	0.889	1
	P25	0	0.143	0.143	1	0.357
	P26	0	0.083	0.083	1	0.75
	P27	0	0.273	1	0.364	0.455

Job Related Motivational Factors	P28	0.429	0.286	0.714	0.857	1
	P29	0	0	0	0.353	1
	P30	0	0	0.286	1	0.357
	P31	0.571	0.714	1	1	0
	P32	0	0	0.273	1	0.818
	P33	0	0.1	0.4	1	0.8
	P34	0	0.333	0.222	1	1
	P35	0.1	0.2	0	0.9	1
	P36	0	0.857	0.429	1	1
	P37	0	0	0.154	0.615	1
Company Related Motivational Factors	P38	0.182	0.455	0.273	1	0.182
	P39	0	0.077	0.154	1	0.538
	P40	0.091	0.182	0.182	1	0.636
	P41	0	0	0.5	1	0.8
	P42	0	0.091	0.091	1	0.909
	P43	1	0.778	0.33	0.444	0
	P44	0.286	0.857	1	0.571	0.571
	P45	0.111	0.111	0.333	1	1
	P46	0	0.083	0	0.833	1
	P47	0.154	0.077	0.154	0.308	1
	P48	0.286	1	0.286	0.571	1
	P49	0	0	0.071	0.571	1
	P50	1	0.625	0.75	0.25	0.25
	P51	0	0.214	0.143	1	0.286
	P52	0.1	0.5	0.5	1	0.2
	P53	0.2	0.1	0.3	1	0.7
	P54	0	0	0	0.438	1
	P55	0	0	0	0.533	1
	P56	0.143	1	0714	0.857	0.571

Intrinsic Motivation Factors	P57	0	0.091	0.182	1	0.818
	P58	0	0.167	0.5	0.25	1
	P59	0	0	0	0.643	1
	P60	0	0.5	0	0.417	1
	P61	0.1	0.5	0.1	0.6	1
	P62	0	0.071	0	0.571	1
	P63	0	0	0	1	0.917
	P64	0	0	0	0.769	1
	P65	0	0	0	0.533	1
	P66	0	0.077	0.077	1	0.615
	P67	0.2	0.3	0	0.8	1
	P68	0	0	0.231	0.538	1
	P69	0	0.188	0	0.25	1
	P70	0.111	0.556	0.556	1	0.333
	P71	0	0.222	0.444	1	0.889
	P72	0.375	0.375	0.25	0.875	1

Annex V Literature Summary

Author	Journal	Title	Problem	Methodology	Result	Gap	Keyword	Tools
Rajesh Bheds, A.S. Narag, M.L. Singla	Journal of Fashion Marketing & Management (2003) Emerald Insight	Apparel Manufacturing a Strategy for Productivity Improvement	The performance of Indian apparel manufacturing is much lower than the performance of their Asian counterparts.	Primary data were collected from Interview. Master data file was used for basic statistical analysis.	8 strategies were developed for productivity improvement.	The proposed 8 strategies are specifically customized for India Apparel Industry. It will not grant for other apparel industries.	Productivity improvement in apparel industries. Emerald Insight	Statistical.
Raymond N. Cheser	International Journal of Organizational Analysis. (1998)	The Effect of Japanese Kaizen on Employee Motivation in U.S. Manufacturing	Incomplete identification of possible scales and traditional methods to implement Japanizes Kaizen.	Job diagnosis survey was used and it has been considerable discussion regarding its psychometric properties. Questionnaires were used.	Modern Japanizes Kaizen method increase workers motivation, job enrichment and helps for labor productivity growth.	It is cross sectional rather than longitudinal design.	Employee motivation in Manufacturing. Emerald Insight	ANOVA, Job Characteristics Model (JCM).
David Conrad, Amit Ghosh, Marc Isaacson	International Journal of Public Leadership.	Employee Motivation Factors; A comparative Study of the Perceptions between Physicians & Physicians Leaders.	No previous investigator on physicians and physicians leaders motivation.	A web survey software program for both physicians and physicians leaders.	Job attractiveness and job security is the first choice to boost physicians and physicians leaders.	The study focuses on extrinsic motivation, no intrinsic motivation investigation.	Employee motivation factors. Emerald Insight	Mann-Whitney's U-test.
Jon-Chao Hong, Sung-D, Yong, Li-Jung Wang, En-Fu Chiou, Fan-Yin Su, Sui-Lan Huang.	International Journal of Career Management.	Impact of employee benefits on work motivation and productivity.	Different aspect of benefits between executives and shop floor workers.	Questionnaires.	* There is a cognitive gap between management and worker on the importance of employee benefit programmed. * Private-corporation employees have	* Unsatisfied survey on impact of employee benefit and productivity. * No clear relations are shown between productivity measurement parameters and	Work motivation and productivity. Emerald Insight	Graph and tabulation.

					greater employee benefit demand than their public corporation counterparts. * Employee with different education levels perceive different employee benefit impact.	employee benefits.		
Antanios Panariotakopoulos.	International Journal of Development and Learning in Organizations.	The impact of employee learning on staff motivation in Greek small firms: the employees perspective.	Workers motivation affect by owners lack of appreciation, poor communication and lack of training.	Data collected by observation and structured interview. Data analyzed based on descriptive and hierarchical coding.	Staff learning rank the first to motivation factor for directing and sustaining staff behaviors.	Major motivation factors are not mentioned and measured.	Employee Motivation	Hierarchical Coding
Lucia Munoz-Pa Scual, Jesus Galende	Journal of Employee Relation	The impact of knowledge and motivation management on creativity: Employees of innovative Spanish Companies.	Employee creativity mainly affected by knowledge management and motivation management, but most organizations doesn't recognize so far.	Sample taken from three innovative clusters, physical questionnaires, linear regression and ANNOVA.	Intrinsic motivation is very crucial to strengthen creativity and components of knowledge management and motivation management. It also affect creative thinking.	Unidirectional way of measuring productivity. Types of human resource mentioned are not adequate enough to measure or investigate productivity.	Impact of Motivation	Torrance Test of Creative Thinking (TTCT), SPSS
V.V.S.S.S.V Prasada Rao	International Journal of Productivity and Performance Management	Motivation model for improving productivity in a measuring unit - a success story.	The quality of row material directly affect the healthiness of the production system.	Multi-factor group incentive scheme	Effective resource utilization and higher productivity achieved by implementing motivational incentives.	Proposed motivation model not clearly described. Generic way of assessing the impact of motivation on productivity.	Motivation and Productivity	Productivity index and material utilization index.

Anna Baines	Journal of Work Study	Productivity Improvement	Lack of productivity improvement skill and expertise. This will result in unwilling and unreceptive workforce, low motivation, poor quality performance, distrust and high absenteeism	Literature Survey	Productivity improvement is different from one company to the other.	Productivity measurement and improvement parameters are not clearly stated. It is simply literature survey no clear methodology.	Productivity improvement	Not clearly specified.
Paula Linna, Sana Pekkola, Juhani Ukko, Helina Melkas	International Journal of Public Sector Management.	Defining and measuring productivity in public sector managerial perceptions	Wrong perception on productivity improvement which is producing more (quantitative sense) is the only way for productivity improvement. This lead to greater share of defective or low quality performance.	Literature review related to productivity in public sector, interview and workshops with municipal authorities.	Public sector productivity can't be developed and discussed without considering the issue of effectiveness. There is mismatch between perception concerning productivity.	In order to define and measure productivity the research used insufficient data. The tool used to analyze were not specified.	How to define and measure productivity.	Tabulation.
Amin Akhavan Tabass, Mahyuddin Ramli, Abu Hassan Abu Bakar	International Journal of Project Management	Effects of training and motivation practices on teamwork improvement and task efficiency: The case of construction firms	Lack of skilled workforce, less attention has been given to human resource development practices in the construction industry.	Questionnaires and quantitative research approach.	Employee productivity is positively affected by training and motivation. Mainly motivation can influence the willingness of an employee to follow training programmed effectively.	Data are limited to Iran's construction industry only and it may not be applicable to other countries.	Motivation and team work	SPSS

Elizabeth Boye, Kuranchie-Mensah, Kwesi Amponsah-Tawiah	Journal of Industrial Engineering and Management	Employee motivation and work performance: A comparative study of Mining Companies in Ghana	Work performance is directly affected by unsafe working condition. Lack of employee motivation result in poor work performance because of various toxic and harmful material exposed in the working area	Descriptive and exploratory research design. Questionnaires and interviews are used to collect data. Stratified sampling method applied and ANOVA, reliability test, and independent T-test were used for data analysis.	Best motivating factor for employees at the Ghana mining industry is good pay. Job security, retirement plan and health insurance also one factor for employee motivation which result in work performance.	The comparative study didn't mention motivation impact on work performance with quantitative measure.	Employee motivation	Statistical Package for Social Science.
Rafikul Islam, Ahmed Zaki Hj. Ismail	International Journal of Commerce and Management	Employee motivation; A Malaysia Perspective	Employee turnover, retention challenge	Survey questionnaires and literature review used for data collection	6 motivation factors observed based on employee demographic characteristics; 1. High wage 2. Good working condition 3. promotion 4. Job security 5. Interesting work 6. Full appreciation of work done.	Measuring employee motivation is rely on demographic characteristics it is unidirectional	Employee Motivation	SPSS
A.S.M. Sarfaraz Nawaz	African Journal of Business Management	Employee motivation: A study of some selected McDonalds in the UK	Lack of interest to work full time (need agility), low wage, bad employer-employee relation.	Survey questionnaires, non-proportional quota sampling method, T-test used for analyzing data	Major motivation factors are; working time flexibility, free meal card at work, discount card while purchasing from McDonalds of any region.	Less motivational factors are investigated. Short sight on external customer impact on employee motivation at McDonalds	Employee Motivation	SPSS

Ayesha Masood, Qurat UI-Ain, Rabia Aslam, Muhammed Rizwan	International Journal of Human Resource Studies	Factor affecting satisfaction on the public and private sector	Job dissatisfaction is the result of uncertainty among the employee.	Probability sampling method used, questionnaires, literature survey, statistical data analysis, reliability analysis	Working condition was found to be the most important factor on employee satisfaction. Pay and promotion also greatly affects the level of satisfaction of employee. There is a positive relationship between employee satisfaction and job performance.	Limited employee satisfaction factors are surveyed.	Employee Satisfaction	SPSS
Ali Shaem, Barzoki, Ph.D., Ali Attafar, Ph.D., Ali Reza Jannati, M.A	Australian Journal of Basic and Applied Science	An Analysis of factors affecting the employees motivation based on Herzberg's Hygiene Factors Theory (The Study: Golpayegal city saipa corporation Industrial complex's staff)	Lack of specialist , absence of motivation and job dissatisfaction among the staff.	Descriptive survey design, questionnaires, stratified random sampling (calculated by Cron Bach's formula), SPSS 18 and AMOS 18	Major hygiene factors that affect employees' motivation are salary and wages, job security, supervisory practice, and relationships with the authorities.	Previous literatures reviews on hygiene factors are weak.	Factor affecting motivation	SPSS 18 and AMOS 18

Ali Azadeh, Mansour Zarrin	Safety Science	An intelligent framework for productivity assessment and analysis of human resource for resilience engineering, motivational factors, HSE and ergonomics perspective	Improper work force (personnel) management will cost on productivity inefficiency and ineffectiveness.	questionnaires, calculation and analysis of effectiveness and efficiency by taking consideration of resilience engineering, motivation factors and HSEE(Health, safety, environment and ergonomics).	Resilience engineering, worker motivation factor and HSEE have positive effect on effectiveness and efficiency.	In work motivation assessment only 4 factors are used this is somehow can't measure the level of employee motivation.	Motivation factor and productivity	Data envelopment analysis, Adaptive Neuro Fuzzy Inference System, particle Swarm Optimization and Genetic Algorithm.
Muhammed Nadeem, Naveed Ahmad, Muhamad Abdullah, Naquin Hamad	International Letters of Social and Humanistic Science	Impact of employee motivation on employee performance (A case study of private firms Multan District, Pakistan)	Private sector employees are less motivated than that of public sector. Pakistan firms are owned by single person and most of them are family owned business they can't focus on other employee interest.	Descriptive analysis, questionnaires, convenience sampling method.	Direction, Recognition, incentives and different psychological feature factors have positive impact on work motivation.	The research is more of data presentation, there is no clear effect is shown between employee motivation and performance. No comparison or justification between private and public from employee motivation.	Impact of employee motivation	Percentage Analysis

Masood Asim	International Journal of Scientific and Research Publications	Impact of motivation on employee performance with effect of training specific to education sector of Pakistan	Reward and promotion have different effect on employee motivation in education sector.	Questionnaires, descriptive statistics, correlation and regression analysis.	Direct relation between HR practice (performance, reward,…) and promotional factors in education sector. Employee performance indicates significant relation between financial and non-financial rewards. Training promote competitive advantage of job satisfaction as well as performance.	Mismatch between problem identified and finding.	Impact of Motivation	SPSS
Laura Arranz-Aperete	New Analyses of worker well being	The impact of wage dispersion on labor productivity: evidence from finish workers.	Too much dispersion can induce workers to engage in unproductive predatory practices.	questionnaires, descriptive statistics, literature survey, second hand data, regression analysis, sensitivity analysis.	From regression analysis there is a positive and concave quadratic relation between conditional wage dispersion and labor productivity. There is also positive and significant relation between unconditional wage dispersion and plant productivity.	Problem statement was not clearly mentioned, unclear means of measuring labor productivity.	Labor productivity	SPSS

John A. Buzacott	International Journal of Production Economics	The impact of worker difference on production system output.	individual difference can result in substantial loss in throughput.	Data collected from automobile plant.	workers differences between workers have considerable impact on the realize performance of the production system and result in loss in loss in system productivity.	individual difference test on automobile assembly plant it is tested on one plant.	impact of motivation on productivity	Assembly line balancing
Imran Khan, Han Dongping and Tauqir Ahmad Ghauri	World Applied Science Journals	Impact of attitude on employee performance: A Study of Textile Industry in Punjab, Pakistan	Leaders behavior and attitude can affect the behavior of employee belief and attitude	Questionnaires, descriptive statistics, co-relation analysis, t-test, ANOVA	Attitude, job satisfaction, job commitment, training and motivation positively affect the performance of the employees.	Only four motivation elements are used to measure and analyze the impact.	Impact of employee attitude on performance.	SPSS version 18
Md. Nurun Nabi, Md. Moniru Islam, Tanvir Mahady Dip, Md. Abdullah Al Hossain	Arabian Journal of Business and Management Review	Impact of Motivation on employee performance: A case study of Karmasangsthan Bank Limited, Bangladesh.	Employee retention, high cost of recruitment, training, increased competition, increased regulation by the government and high rate of technological growth, feel demotivated and work over load.	Questionnaires, descriptive statistical analysis.	Motivation has moment our effect on employee performance.	Some other motivating variable were not investigated and it rely on bank only.	Impact of Motivation	SPSS