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C O N T E N T

Editorial Note

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The South Asian Journal of Management Research (SAJMR) is an open access, peer-reviewed journal committed to disseminating the latest research findings in management, information technology, social work, economics, and environmental studies. The Open Access policy of the journal makes its articles accessible to a global audience. We aim to provide an internationally recognized platform for the dissemination of research findings in management, information technology, social work and many more scholarly interdisciplinary and transdisciplinary domains. This editorial note recognizes the valuable contributions of all the researchers who have contributed to SAJMR since 2009. We at SAJMR also look forward to the contributions of all scholars in this exciting arena.

The current issue of SAJMR showcases research studies on electoral democracy, organizational culture, perceptions of structure plan implementation, municipal governance, environmental ethics, solid waste management challenges, e-education transformation, environmentally friendly city, sustainable eco-tourism, security models, and ragas in classical music. Methodologies and techniques used in these articles open up new research directions for young researchers. It is therefore with deep gratitude that the South Asian Journal of Management Research expresses its gratitude to all authors for their contributions to knowledge in these fields. It is my pleasure to extend a special thank you to the loyal readers of SAJMR. I hope this journal will continue to stimulate, inspire, and question research in order to improve the quality of life and the practice of management. The journal will continue to publish high quality research and review articles, foster a vibrant conference circuit, and contribute to the dissemination of knowledge so that we can all benefit from it.

Dr. R. S. Kamath
Editor

The Influence of Organizational Culture on Employees' Commitment in Civil Service Organizations: The Cases of Selected Cities in Ethiopia

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Abstract : The main objective of this study was to examine the influences of organizational culture on employees' commitment with the mediating role employees' job satisfaction. In order to achieve this objective, the study employed descriptive and explanatory research designs to describe the situation and examine the cause and effect relationship of the cases under the study respectively. For collection of data, the survey questionnaire was administered to 400 randomly selected employee respondents who were permanently working in the civil service organizations in the selected study areas. The data analysis has been executed using both descriptive and inferential statistics. The study has found that the practice of organizational culture in the civil service organization is at moderate level relatively with more customer orientation. In regard to employees' job satisfaction, it was found at moderate level with 61% exhibited with more intrinsic scale compared to extrinsic ones which assures more job satisfaction of employees with nature of jobs they perform than the associated benefits. It was also noticed that the job satisfaction level of employees increases as the level of job grades raise up. The study also found that employees have higher affective commitment which reveals more emotional attachment to the organization compared to continuance and normative forms of commitment. The level of employees' commitment increases as the job grades of employees goes up in the civil service organizations. The regression analysis reveals that organizational culture has significant influence on the job satisfaction and commitment level of employees in the civil service organization which was realized that the employees' job satisfaction partially carries the influence of organizational culture to employees' commitment. Therefore, it is very important for civil service organizations to give due attentions to the improvement of their current organizational culture and enhancing the job satisfaction of employees to get more commitment from employees for realization of the organizational goals.

Keywords: Organizational culture, Employees' commitment, Job satisfaction, Civil service organization

1.0 Background and Problems of the Study

Employees are the greatest resource in organizations and play an important role through their involvement and commitment to make the organization competitive (Sempane, Rieger&Roodt, 2002).Employees who are committed are liable to increase their performance and devote their time to the organization success. Organizational commitment is often described as the key factor in the relationship between employees and organizations (Raju&Srivastava, 1994).Satisfied employees by means of an affective orientation or a positive attitude, achieve a positive result in relation to his/her job, in general, or to specific personal aspects (Smith, Kendall and Huh, 1969) and they would being to try new ideas and could participate more in the decisions that need to be made (Kivimaki&Kalimo, 1994). This results in improved communication among employees and workforce support for the organization, organizational commitment and job satisfaction (Lok& Crawford, 2004). The existence of job satisfaction is the result of organizational culture that comprises new approach of leadership style, the value, and belief and perception practice in the organization. Organizational culture is the shared understanding of the beliefs, values, norms and philosophies of how things work in the organization (Wallach, 1983). Many organizational cultures are presented by the scholars to handle and manage different organizational situations. In regard to defining and discussing different characteristics of organizational culture, Cameron & Quinn (20110); Lok& Crawford (2004) mentioned some of the important characteristics of

organizational culture, which should have to address the phenomena of organizational effectiveness success through the contribution of committed employees.

It can be also clearly realized that the success of organization can nearly always be ensured through the contribution of unreserved efforts of employees who are working within it. This is possible if the organization has employees who have been satisfied in their current jobs and show the highest commitment for ensuring their organizational competitiveness. It also shows that how strongly employees are involved in and identify with the organization highly depends on conducive culture being exercised within the organization (Awan&Mahmood, 2011). Moreover, the commitment of employees traced directly back to the good organizational culture practiced. Therefore, having effective and good organizational culture for the organization is critical to retain competent and committed employees to ensure the competitive survival of organizations. Also Awan&Mahmood (2011) depict that employee commitment can be affected by the quality of the leadership exercised, and culture practiced in the organization.

Every organization functions within a unique culture and it becomes more widely recognized in contemporary discussions of organizational effectiveness that managers and their subordinates have to develop understanding of their cultural contexts if their organizations needs to perform effectively (Cameron & Quinn, 2011; Harrison & Stakes, 1992). The main focus of the organization should be also how to relate organizations more closely with their cultural settings in order to enhance optimal performance. This requires the ability of organizations to satisfy their workers in order to increase their commitment to contribute for the optimal performance of their respective organizations. If the organizations fail to plan and lack ability to satisfy their employees, this may lead employees to frequently leave the organization which will lead a given organization always to have inexperienced employees that might lead to inefficiency and ineffectiveness in accomplishing its goals. Ideally, organizations are expected to have staff of well experienced and well educated experts to successfully perform and achieve their goals. In this regard, many researchers have discussed the positive aspects of organizational commitment and its effects on work productivity, motivation, turnover intention, and absenteeism, and that it is a powerful tool for employees and organizations to increase productivity and effectiveness (Kuvaas, 2006; Genevičiūtė-Janonienė&Endriulaitienė, 2014). However, the study by Bersisa, et al (2016) confirmed that most civil service institutions in Ethiopia have less satisfied employees with lower commitment as a result of poor remuneration and benefit packages to benefit and motivate them on the tasks they perform in their respective positions. This could make the public organizations to hold employees who are not committed and losing well experienced ones from time to time which is believed to adversely affect the competitive survival of organization in meeting the changing service demand of citizens.

Many studies were also investigating the relationship between organizational culture and organizational commitment which found that there a positive relationship between organizational culture and organizational commitment (Acar, 2012; Brewer &Clippard, 2002). Organizational culture has been identified as a major driver behind employee longevity (Desselle, Raja, Andrews, &Lui, 2018). A corporate culture was realized as a significant tool for improving organizational commitment, and the better the adjustment between stated and perceived values, the better the organizational commitment (Brewer &Clippard, 2002). In addition, Messner (2013)found that there was a positive relationship between organizational culture and organizational commitment, recommending the design of a corporate culture change strategy, in order to increase organizational commitment in India's IT services. In regard to the relationship between organizational culture and employees' job satisfaction, the study by Cameron &Freeman (1991) has found that organizational culture has a significant impact on several key organizational variables such as employee satisfaction, employee performance, turnover and so forth. Again, Dima et al (2019); Elizabet (2017);Ahn&Inanlou (2017) have studied the effects of organizational culture on employees commitment as well job satisfaction.

In aaddition,, in the body of literature, there is evidence that assures the impact of organizational culture on individual attitudes and behaviors of which job satisfaction has been shown to be directly impacted by organizational culture (Lund, 2003; MacIntosh& Doherty, 2010; Schein, 1985). Concerning the relationship between job satisfaction and employee commitment, Huang & Hsiao (2007) stated that job satisfaction is the precursor of commitment which may benefit both changing human behavior outcomes and increasing commitment. They further explained that people will be more committed to their work if they felt satisfied and appreciated.

Furthermore, Aamodt (2007) indicate that satisfied employees tend to be committed to an organization, and employees who are satisfied and committed are more likely to attend work, stay with an organization, arrive at work on time, perform well and engage in behaviors helpful to the organization success. The discussions on relationships of organizational culture, job satisfaction, and employee commitment lead to examining the mediating of these variables in the existing relationships. Girma&Tesfaye (2018) have also studied the effect of organizational culture on employees' commitment with mediating role of job satisfaction in this relationship by considering employees in a public enterprise of Oromia Forest and Wild Life. However, all these studies did not systematically investigate whether the employee's job satisfaction plays a mediating role in the relationship between organizational culture and employee commitment in Ethiopian Civil Service organizations.

Therefore, it has been found as very essential to fill this gap by thoroughly examining whether the job satisfaction plays a mediating role in the relationship between organizational culture and employees' commitment toward the achievement of the organizational goals.

1.1 Objectives of the study

The general objective of this study is to examine the mediating role of job satisfaction in the effect of organizational culture on employees' commitment in civil service institutions. In line to this general objective, this study attempted to attain the following specific objectives:

➢ To identify the most dominant type of organizational culture practiced in the Ethiopian civil service organizations;
➢ To determine the level of employees commitment and job satisfaction in their current organizations;
➢ To examine the effect of organizational culture on employees' job satisfaction and commitment; and
➢ To analyze the mediating role of job satisfaction in the effect of organizational culture on employees' commitment.

2.0 : Review of Related Literature

This section covers the definitions for basic concepts, the organizational culture, job satisfaction, employees' commitment and the mediating role of job satisfaction in the relationship between organizational culture and employees' commitment.

2.1 : Concept of Organizational Culture

According to Schein (2004), organizational culture can be considered as what the organization has or what the organization is depending on whether it is being treated as a construct or a metaphor. Meanwhile, according to Moorhead & Griffin (2013), organizational culture is defined as a set of acceptable values is always right, which helps a person in the organization to understand the actions that are unacceptable and which actions are unacceptable and values are communicated through stories and other symbolic ways. According to Sashkin&Rosenbach (2013), elements of organizational culture include: Managing change, coordinated teamwork, goal achievement, customer orientation, and building strong culture.

Managing change:-This area of action concerns how well the organization is able to adapt to and deal effectively with changes in its environment. All organizations are open, to some extent, to be influenced from their environments; that is what it means when we refer to organizations as "open systems." This fact has become even more obvious today, in times of rapid technological and social change, than it was in the past.

Achieving goals:- All organizations must achieve some aims or goals for clients or customers. Having a clear focus on explicit goals has been proven repeatedly to have a very strong relationship to actual success and achievement.

Coordinated teamwork:- Long term organizational survival depends on how well the efforts of individuals and groups within the organization are tied together, coordinated and sequenced so that people's work efforts fit together effectively.

Customer orientation:-While organizations often have specific product or service goals or a standard of quality or a type of product or service for which the organization is known, the crucial question is whether these internally-derived and defined goals match or fit with what clients or customers want of the organization.

Cultural strength:-A strong culture will provide greater stability of organizational functioning. When the culture is based on values that do not support the functions of managing change, organizational achievement, customer orientation, and coordinated teamwork--or when the values actually work against the effective performance of these functions--then a "strong" culture might actually hamper organizational survival.

2.2. The Concept of Employees' Job Satisfaction

Job satisfaction can be defined as a positive effect towards employment (Mueller & McCloskey, 1990) and it is arguably a fairly stable evaluation of how the job meets the employee's needs, wants, or expectations (Fisher, 2003). Job Satisfaction has been playing a leading role in management research (Petty et al., 1984; Fisher, 2003). Many studies share that satisfied employees will perform their work more effectively, which is the basis of many theories of performance, reward, job design and leadership (Shipton et al., 2006). In a simpler term, job satisfaction is 'the extent to which people like their jobs (Peterson & Wilson1992).Besides, Saiyadain (2007) viewed   job satisfaction as an employee's end-state of feeling after accomplishing a task. This feeling may lead employee to have either a positive or a negative attitude towards the job. In this regard, Herzberget al (1959) brought attention to the following two distinctive categories of employees' job satisfaction in the workplace in relation to the theory of job motivation.

i. **Intrinsic factors:-** are matters related to the self-actualization of the worker, that is, the need for a sense of self-accomplishment on the job or, as commonly labeled, intrinsic job satisfaction. Intrinsic job satisfaction is derived from the composite of intrinsic factors experienced in the job. Intrinsic job factors are factors such as responsibility, self-defectiveness, skill development, and observed accomplishment associated with doing the work.

ii. **Extrinsic factors:-** reflected by Ewen, Smith, Hulin, & Locke (1966); Warr (1991) as factors such as company policies, supervision, external rewards which are reflected in satisfaction with pay, and workload and define the external context and reward systems.

2.3 : Concept of Employees' Commitment

Commitment has been defined and measured in many different ways O'Reilly & Chatman (1986) defined organizational commitment as "the psychological attachment felt by the person for the

organization; it will reflect the degree to which the individual internalizes or adopts characteristics or perspectives of the organization".

2.3.1. Models of Organizational Commitment

According to Meyer & Allen (1991), organizational commitment reflects at least three general themes: "affective attachment to the organization", "the perceived costs associated with leaving it" and "the obligation to remain with it". These three approaches are referred to as "affective", "continuance" and "normative" commitment. Common to these three approaches is the view that commitment is a psychological state that characterizes the employee's relationship with the organization and has implications for the decision to continue membership of it. These psychological states also have different implications for work-relevant behavior.

i.   **Affective commitment:-**refers to the employee's emotional attachment to, identification with, and involvement in the organization. Employees with a strong affective commitment continue employment with the organization because they want to. According to Lerner (1982), the antecedents of affective commitment generally fall into four categories: (1) personal characteristics, (2) structural characteristics (organizational), (3) job-related characteristics, and (4) work experiences. Although various research studies have been conducted to link demographic characteristics such as age, tenure, gender, and education to commitment, the relations were neither strong nor consistent, the reason being too many variables such as job status, work rewards and work values moderating the relationship.

ii.   **Continuance commitment:**refers to an awareness of the costs associated with leaving the organization. The potential costs of leaving an organization include the threat of wasting the time and effort spent acquiring nontransferable skills, losing attractive benefits, giving up seniority-based privileges, or having to uproot the family and disrupt personal relationships Meyer and Allen, 1991. Apart from the costs involved in leaving the organization, continuance commitment will also develop as a function of a lack of alternative employment opportunities (Meyer & Allen, 1991).

iii.   **Normative commitment:-** reflects a feeling of obligation to continue employment. Employees with a high level of normative commitment feel that they ought to remain with the organization. Wiener (1982) suggests that the feeling of obligation to remain with an organization may result from the internalization of normative pressures exerted on an individual prior to entry into the organization (family or cultural orientation), or following entry (organizational orientation). However, normative commitment may also develop when an organization provides the employee with "rewards in advance" (eg paying college tuition) or incurs significant costs in providing employment (e.g. head-hunting fees or the costs associated with job training). Recognition of these investments causes employees to feel an obligation to reciprocate by committing themselves to the organization until the debt has been repaid (Scholl, 1981).

2.4.   Relationship between Organizational Culture, Job Satisfaction, and Employees Commitment

There are many studies investigating the relationship between organizational culture and organizational commitment that found there is a positive relationship between organizational culture and organizational commitment (Acar, 2012; Brewer &Clippard, 2002). Organizational culture has been identified as a major driver behind employee longevity (Desselle, Raja, Andrews, &Lui, 2018). A corporate culture is a significant tool for improving organizational commitment, and the better the adjustment between stated and perceived values, the better the organizational commitment (Brewer &Clippard, 2002). In addition, Messner (2013)found that there was a positive relationship between organizational culture and organizational commitment, recommending the design of a corporate culture change strategy, in order to increase organizational commitment in India's IT services. In regard to the relationship between

organizational culture and employees' job satisfaction, the study by Cameron & Freeman (1991) has found that organizational culture has a significant impact on several key organizational variables such as employee satisfaction, employee performance, turnover and so forth.

Furthermore, in the body of literature, there is evidence that assures the impact of organizational culture on individual attitudes and behaviors of which job satisfaction has been shown to be directly impacted by organizational culture (Lund, 2003; MacIntosh & Doherty, 2010; Schein, 1985). Concerning the relationship between job satisfaction and employee commitment, Huang & Hsiao (2007) stated that job satisfaction is the precursor of commitment which may benefit both changing human behavior outcomes and increasing commitment. They further explained that people will be more committed to their work if they felt satisfied and appreciated.

In addition, Aamodt (2007) indicate that satisfied employees tend to be committed to an organization, and employees who are satisfied and committed are more likely to attend work, stay with an organization, arrive at work on time, perform well and engage in behaviors helpful to the organization success. The discussions on relationships of organizational culture, job satisfaction, and employee commitment lead to examining the mediating of these variables in the existing relationships. To this end, the study by Girma & Tesfaye (2018) stated that job satisfaction does act as a fully mediating role in the relationship between organizational cultures and organizational commitment and suggesting that effective improvement in job satisfaction is a critical aspect of the organizational success.

Commitment plays a large role in the decision-making process when deciding to continue or discontinue membership in the organization. Employee commitment also plays a role in organizational performance and effectiveness. Studies have shown a strong correlation between organizational culture, organizational commitment, and job satisfaction. However, all these studies did not systematically investigate how organizational culture can influence the job satisfaction and commitment of employees. In addition, whether the employees' job satisfaction carries the influence of organizational culture to the commitment of employees was not yet well studied from the context of Ethiopian civil service organizations. Thus, this study examines whether the employee's job satisfaction plays a mediating role in the relationship between organizational culture and employee commitment in Ethiopian Civil Service organizations using the following framework.
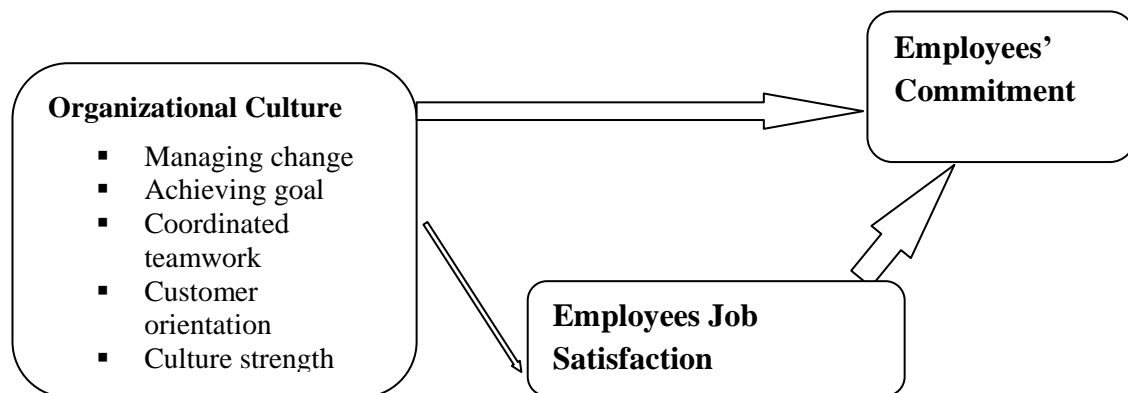
Figure 2.1: Conceptual framework of the study
Source: Cameron & Freeman (1991); Girma&Tesfaye (2018); Huang & Hsiao (2007)

Research Methodology

This section deals with the methodology considered to meet the objectives of the study that comprise the approach of research that fits the intended purpose. In addition, it covers the target population and sample size, sampling techniques, methods of data collection and analysis techniques that to be applied in the study.

3.1. Research Design and Approach

This study employs a combination of descriptive and explanatory research design in the way to align with the objectives of the study. A descriptive study was employed with the aim to describe the current practice of organizational culture, employees' satisfaction, and commitment. The explanatory design was used to examine the factors that significantly explain the employees' job satisfaction and commitment. The descriptive and explanatory research designs were accompanied with quantitative approach which is subject to rigorous quantitative analysis in a formal and rigid fashion (Kothari, 2004).

3.2. Target population, Sample Size and Sampling Technique

The population in this study comprises the employees who are currently working in selected civil service organizations in five selected cities of Ethiopia. Employees who are currently working in civil service organizations are sources of information to measure employees' job satisfaction, commitment, an organizational culture. In order to ensure an acceptable standard, the sample size is determined by using the following proportional formula of Kothari (2004) since the targeted population is not clearly specified.

$$n = \frac{z^2 pq}{e^2} = \frac{(1.96)^2 (0.5) (0.5)}{0.05^2} = 384$$

Where;
n   : sample size
P%   : is the proportion belonging to specified category (positive response)
q%   : is the proportion not belonging to the specified category (opposite response)
e   : = the margin of error, which is 5%.

Thus, the sample sizes of 384 with an additional 16 more respondents to compensate the missing respondents, which makes a total of 400 employees as a sample. In this study multi-stage sampling technique has been employed. At the first stage, cities are clustered as Western, Eastern, central and Southern and Northern of which representative clusters (Central, Eastern and Western cities) were selected by using simple random sampling technique (lottery method). To this end, five major cities such as Addis Ababa and Adama from Central cities, Dire Dawa, and Harar from Eastern Cities, and Assosafrom Western cities have been selected. Secondly, five institutions have been selected from each city by using simple random sampling technique. In this regard, institutions of finance, labor and social affairs, transport authority, women, children and youth, education have been selected to identify the participant employees. At third stage, 80 permanent employees have been selected using systematic sampling technique from five institutions in each of the selected cities. However, finally 15 respondents did not return the distributed questionnaire, due to which the analysis has been executed on the basis of data properly collected from 385 respondents.

3.3 Methods of Data Collection

For the collection of data in relation to employees' satisfaction, a structured questionnaire of employees' job satisfaction towards its intrinsic and extrinsic scales was used. The survey questionnairewas adapted by condensing 100 items of the Minnesota Job Satisfaction Questionnaire. For addressing the commitment level of employees, 24-items questions pertinent to three dimensions of commitment such as "Affective", "Continuance" and "Normative" has been designed and used. In addition, data were collected from employees in regard to their current organizational culture with five dimensions using a questionnaire comprising of 29 items. The questionnaire used in this study was a 5 Point- Likert scale that has been translated from English into the local language (Amharic) for respondents to easily understand and give their responses accordingly. Trained enumerators were used to administering questionnaires for selected employee respondents in each of five cities.

3.4. Methods of Data Analysis

After completion of survey data collection, the completeness of data have checked and then variables were properly coded and then entered in to SPSS to process the results. With help of SPSS, both descriptive and inferential statistical results were generated for the quantitative data. Using descriptive analysis such as frequency, measures of central tendency and dispersion, the study indicatedthe level of employees' satisfaction and commitment, as well as the nature of organizational culture. For descriptiveunivariate analysis using mean values computed from the 5-likert scale, the study followed the decision rule recommended by (Andrew, 2017). To this end, the study used the following ranges of mean values for discussion in the discussions to the results of analysis.

Table 3.1 : Decision rule for univariate analysis

Low level	Moderate level	High level
$1 \leq Xi \leq 2.5$	$2.5 < Xi \leq 3.5$	$3.5 < Xi \leq 5.0$
$20\% \leq Xi \leq 50\%$	$50\% < Xi \leq 70\%$	$70\% < Xi \leq 100\%$

Source: Andrew (2017)

From the inferential data analysis, the study employed correlation analysis to assess the magnitude and directions of associations among variables in the study and multiple regression analysis models to examine the factors that significantly determine the employee's job satisfaction and commitment in civil service organizations. In addition, the study used mediation analysis to examine the mediating role of employees' job satisfaction in the relationship between organizational culture and employees' commitment. Furthermore, ANOVA has been applied to test the average satisfaction and commitment difference among employees of different categories and job grades (position levels) in the organizations.

4.0 : Results and Discussions

This section presents and discusses the major findings in relation to the research questions stated.

4.1. The Current Dominant Dimension of Organizational Culture Practiced in the Public Organizations

This section presents the condition of organizational culture practiced in public organizations considering the five dimensions such as *managing change, achieving goal, coordinated team work, customer orientation, and building strong culture*. The actual practice from the perspective of each of these dimensions in the public institutions has been presented and discussed as in Table 4.1 below.

Table 4.1: Summary of Organizational Culture Dimensions

Dimensions	Minimum	Maximum	Mean	Percent (%)
Manage Change	1.00	5.00	3.09	61.74
Achieving goal	1.00	5.00	3.08	61.59
Coordinated team work	1.00	5.00	3.13	62.60
Customer Orientation	1.00	5.00	3.16	63.18
Building strong culture	1.00	5.00	3.11	62.18
Composite mean – Organizational culture			**3.11**	**62. 26**
Number of Participants = 385				

Source: Field survey, 2021

Table 4.1 clearly shows that the aggregate organizational culture of public organizations has been found on average 3.11 (62.26%) which is at moderate level which requires more efforts to strengthen in the future. The study also found that relatively customer orientation dimension of organizational culture has been mostly practiced in public organizations compared to other dimensions. This implies that civil service organizations are on the way of directing their service delivery with the focus of their customers.

4.3. Employees Job Satisfaction

In order to measure the overall job satisfaction level of employees, the MSQ standardized questions were used with composite score of the 36 items in which two subscales such as intrinsic and extrinsic were considered. The intrinsic satisfaction scale was measured using 15items under 5 dimensions that measure feelings of employees about their job tasks and for the extrinsic satisfaction scale, 21 items under 6 dimensions were considered.

4.3.1. Intrinsic Satisfaction Level

Intrinsic factors are matters related to the self-actualization of the worker, that is, the need for a sense of self-accomplishment on the job. Intrinsic job satisfaction measures feelings of employees about the nature of their job tasks (Johnson, 2004). In the study this feeling of employees was measured with the use of 15items under 5 dimensions. Thus, table 4.2 below presents theintrinsic satisfaction level of employees that was computed with the use of these dimensions.

Table 4.2: The Intrinsic job satisfaction level employees

Dimensions	Minimum	Maximum	Mean	Percent (%)
Ability utilization	1.00	5.00	3.15	62.92
Achievement	1.00	5.00	3.12	62.48
Recognition	1.00	5.00	2.67	53.39
Responsibility	1.00	5.00	3.21	64.27
Advancement	1.00	5.00	3.15	62.99
Composite Mean- Intrinsic satisfaction	**1.00**	**5.00**	**3.06**	**61.21**
Total Participants =385				

Source: Field survey, 2021

Table 4.2 portrays the intrinsic job satisfaction level of employees in the organization where they are currently working. In this regard, the overall intrinsic satisfaction of employees has been found 61.21% which can be labeled as moderate. This in general implies that the feelings of employees toward the nature of their job tasks is at moderate level which requires attention to improve the situation to advance the satisfaction level of employees. Among five dimensions of the intrinsic satisfaction, the responsibility dimension has been rated relatively high with 64.27%. This implies that the practices of making employees being responsible for planning their job, provision of chance to them to make decision on their own and permitting employees to work alone on the job without regular supervision by officials relatively good that to be strengthened to the future. On the other hands, the situation in recognition dimension of intrinsic satisfaction has been rated low. This clearly reflects that the way organizations give credit and recognition for the work employees performed need further improvement and attention to enhance the satisfaction of employees on the basis of their successful accomplishment. This is due to expectation of employees for feedback from their immediate supervisor to know whether they are considered as performed well and one of the factor that determine their job satisfaction (Lester, 2013).

4.3.2. Extrinsic job satisfaction

Extrinsic job satisfaction measures feelings about external aspects of the job and mainly related with external factors such as company policies, supervision, and reward systems in relation to the job tasks (Kalleberg, 1977). In this regard, the study adopted 6 dimensions that measured with use of 21 items to examine the extrinsic satisfaction level of employees as presented in Table 4.3.

Table 4.3: Extrinsic Satisfaction level of employees

Dimensions	Minimum	Maximum	Mean	Percent (%)
Company policies and practices	1.00	5.00	2.89	57.96
Compensation	1.00	5.00	2.59	51.91
Coworker	1.00	5.00	3.64	72.76
Supervision-human relationship	1.00	5.00	3.19	63.99
Supervision-technical	1.00	5.00	3.07	61.34
Working conditions	1.00	5.00	2.79	55.86
Composite mean-Extrinsic Satisfaction	1.00	4.65	3.032	60.64
Total participants= 385				

Source: *Field survey (2021)*

Table 4.3 indicates 60.63% level of the overall extrinsic satisfaction of employees which can be rated as moderate level. The extrinsic satisfaction of employees with the co-worker dimension is relatively the highest with 72.76%. This implies that the current spirit of cooperation among employees, and the chance to develop friendliness relationship in the organizations make employees satisfied. On the other hand, the compensation, working condition and organization policy dimensions of extrinsic satisfaction are relatively low with the 51.91%, 55.86% and 57.96% respectively. Unless improvements are made on these dimensions, these could negatively influence the overall satisfaction of employees in the organizations.

4.3.3. Overall employees job satisfaction

An overall satisfaction measure is a degree the feelings of individual with the all dimensions of intrinsic and extrinsic satisfaction scales. According to Johnson (2004), combinations of intrinsic and extrinsic rewards predict levels of job satisfaction and influence employees' decisions to remain in the profession. In this regard, Table 4.4 below presents the overall satisfaction of employees that comprise both intrinsic and extrinsic scales.

Table 4.4: The overall job satisfaction of employees

Item	Minimum	Maximum	Mean	Percent (%)
Overall employees job satisfaction	1.00	4.82	3.05	61.00
Total participants = 385				

Source: Field survey, 2021

Table 4.4 depicts 61% of the overall employees' job satisfaction which is at moderate level. This shows that organizations have to exert more effort to increase their employees' satisfaction to increase organizational performance. The job satisfaction of employees has been examined by their employment category and position level in table 4.5 and 4.6 below to see if there are significant variations.

Table 4.5: Satisfaction of employees by job category

Employment category	Mean	Percent (%)
Expert	3.23	64.6
Leader	3.05	61
Other	2.96	59.2

Source: Field survey, 2021

Table 4.5 shows that the satisfaction level of leaders has been found 61% which is less than that of expert (64%) though more than others (59.2%). However, this difference is not statistically significant at 5% significance level as shown below in Table 4.6.

Table 4.6: ANOVA Test Result on Overall Employees Job Satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.656	2	.328	.499	.607
Within Groups	250.218	381	.657		
Total	250.873	383			

Source: Field survey, 2021

Table 4.6 presents the ANOVA test result for the difference in overall job satisfaction among employees of different categories. Accordingly, it was confirmed that there is no statistically significant difference among employees of expert, leaders and other categories in their overall job satisfaction at 5% significance level (Sig = .607 > 0.05). In addition, the employees' job satisfaction has been analyzed and tested on the basis of the position of employees in the surveyed organizations as follows.

Table 4.7: Employees' job satisfaction by the level of positions

Level of positions	Mean	Percent (%)
Level I - Level IV	2.58	51.6
Level V - Level VIII	3.03	60.6
Level IX -Level XII	3.04	60.8
Level XIII & Above	3.24	64.8

Source: Field survey, 2021

Table 4.7 shows the overall job satisfaction level of employees by their level of positions. In line to this, the overall satisfaction level of employees increases as the level of position increases. It increases from 51.6% at level I - level IV to 64.8% at level XIII and above. This implies that the establishment of systems of employees' promotion from one level to the subsequent level can increase satisfaction to employees. This difference has been tested by using ANOVA and has been found statistically significant at 1% significance level as depicted in Table 4.8 below.

Table 4.8:   ANOVA Test Results for the Differenceof Overall Employees' Job Satisfaction among their Levels

Overall employees job satisfaction					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.210	3	3.403	5.374	.001
Within Groups	240.663	380	.633		
Total	250.873	383			

Source: Field survey, 2021

4.5 : The Level of Employees' Commitment

According to Meyer and Allen (1997:3), commitment can be defined as "a psychological state that characterizes the employees' relationship with the organization and has implication for the decision to continue membership in the organization". Most organizations, especially service providing institutions are facing the challenges of getting committed employees who are competent and ready to give in their best in the pursuit of the objectives of the organization. Sharma and Bajpai (2010) assert that the high levels of effort exerted by employees with high levels of organizational commitment would lead to higher levels of performance and effectiveness

of both the individual and the organizational performance levels. In this regard, this study has examined the level of employees' commitment considering three elements such as Affective, Continuance, and Normative dimensions as discussed hereunder. In this regard, the perception of respondents from the three dimensions has been computed and presented in Table 4.9 as follows.

Table 4.9: Aggregate employees' commitment

	Minimum	Maximum	Mean	Percent (%)
Affective Commitment	1.00	5.00	3.61	72.2
Continuance Commitment	1.00	5.00	2.94	58.8
Normative Commitment	1.00	5.00	3.26	65.2
Composite mean-Employees commitment	1.00	5.00	3.27	65.4
Total participants= 385				

Field survey, 2021

Table 4.9 presents the summarized commitment level of employees in the civil service institutions. As a result, overall commitment level of employees has been found on average 3.27 or 65.4% which can be considered as moderate level. Among the dimensions of employees' commitment, affective dimension with 72.2% has been found relatively the highest one which confirms that the employee's emotional attachment and involvement in their current organization is promising. This can be also confirmed on the low level continuance commitment (58.8%) which implies that the attachment of employees to the organization is not on the basis of the gains received or not due to fear for cost of leaving. The commitment level of employees has been analyzed on the basis of the job category of employees as presented in Table 4.10 hereunder.

Table 4.10: The Commitment of Employees by Job Category

Current employment category	Mean	Percent (%)
Expert	4.00	80
Leader	3.28	65.60
Other	3.25	65.00

Source: Field Survey, 2021

The result above shows that the commitment level is higher for experts than leaders and other category employees (messengers, custodial, etc). This could be due to attachment of experts on to their jobs on the basis of their skill, knowledge and experience. This variation has been tested by using ANOVA and has been found statistically significant at 1% significance level as presented in Table 4.11 below.

Table 4.11: The ANOVA Test result on Variations of Employees Commitment across Job Category

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.399	2	2.199	4.908	0.008
Within Groups	170.732	381	0.448		
Total	175.131	383			

Source: Field survey, 2021

The test result clearly shows that the variation of employees satisfaction level across the job category is statistically significant at 5% significance level (Sig= .008 < .05).

4.6. The Effect of Organizational Culture on Employees' Job Satisfaction and Commitment

This section discusses the influence of organizational culture on employees' job satisfaction and commitment. The influence which organizational culture could impose on employees' job satisfaction and commitment has been analyzed using the multiple regression analysis. This analysis has been executed separately considering employees' job satisfaction and commitment as two different dependent variables though dimensions of organizational culture has been adopted as independent variables in both cases. Before running multiple regression analysis, preconditions need to be fulfilled. To meet this requirement, correlation analysis has been executed to check the association of each of independent variables among themselves and also with dependent variables (Table 4.13). The Multicolinearity problem has been also checked by using Variance Inflation Factor (VIF) and found its value less than 10 for all variables which ensure the absence of any problem in this regard. In addition, the adequacy of model was tested by employing ANOVA test before using the results for interpretation and found that the (Sig .< 0.05) confirms that the model is adequate by ensuring that the coefficient (B) is non-zero at least for one of the independent variables in the model (Table 4.14).

Table 4.13: Results of Correlation Analysis

		Manage Change	Achieving goal	Coordinated team work	Customer Orientation	Building strong culture	Overall employees job satisfaction	Overall employees commitment
Manage Change	Pearson Correlation	1	.701**	.757**	.677**	.674**	**	.640**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
Achieving goal	Pearson Correlation	.701**	1	.776**	.716**	.712**	.640**	.641**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
Coordinated team work	Pearson Correlation	.757**	.776**	1	.808**	.776**	.628**	.603**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
Customer Orientation	Pearson Correlation	.677**	.716**	.808**	1	.842**	.670**	.623**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
Building strong culture	Pearson Correlation	.674**	.712**	.776**	.842**	1	.653**	.637**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
Employees job satisfaction	Pearson Correlation	.604**	.640**	.628**	.670**	.653**	1	.698**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
Employees commitment	Pearson Correlation	.640**	.641**	.603**	.623**	.637**	.698**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).								

Source: Field survey, 2021

The results of correlation analysis in the table shows that the response variables (employees' job satisfaction and commitment) are significantly correlated with all predictors (dimensions of organizational culture) at 1% significance level. Correlation becomes significant here, since higher value of correlation coefficient represents better prediction of dependent variable with lowest possible errors.

According to Senthilnathan (2019), high level of multicollinearity (VIF $\geq$ 5) becomes possible, approximately when Coefficient of Correlation (r) $\geq$ 0.9 (for positively correlated predictors) or r $\leq$ -0.9 (for negatively correlated predictors). However, in this study all predictors, to each other, have the coefficient of correlation (r) < 0.9, implies that the correlation does not cause the problem

of multicollinearity. Hence, this confirms that interpretation can be possible with the correlation coefficient of the predictors on the outcome variable to examine the effects using the Multiple Regression Model. In order to perform the regression model, the Model summary has been checked to see what proportion of the changes in outcome variable is explained by the predictors included in the model. In addition, ANOVA table has been checked to ensure the adequacy of the model and ensured that the use of multiple regression model is adequate to predict the effect of predictors on outcome variable as indicated in the Table 4.14

Table 4.14: Model Summary and ANOVA Result (Dependent variable: Employees' Commitment)

Model Summary				
Model	**R**	**R Square**	**Adjusted R- Square**	**Std. Error of the Estimate**
1	0.720[a]	0.518	0.512	0.47257

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	90.714	5	18.143	81.239	.000[b]
	Residual	84.417	378	.223		
	Total	175.131	383			
a. Dependent Variable: Overall employees commitment						
b. Predictors: (Constant), Building strong culture , Manage Change , Achieving goal , Coordinated team work, Customer Orientation						

The model summary table confirms that 51.8 % of the variations in dependent variable (employees' commitment) is explained by the predicator (organizational culture in terms of change management, achieving goal, coordinated teamwork, customer orientation, and building strong culture). In addition, the ANOVA table assures that the regression model is adequate to regress the response variable over the predicators. Furthermore, Table 4.25 below shows the summary of model and ANOVA result for the use of regression analysis to examine the effects of dimensions of organizational culture on employees' job satisfaction.

Table 4.15: Model Summary and ANOVA Result (Dependent variable: Employees' job satisfaction)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	0.723[a]	0.523	0.517	0.56258

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	131.240	5	26.248	82.934	.000[b]
	Residual	119.634	378	.316		
	Total	250.873	383			
a. Dependent Variable: Overall employees job satisfaction						
b. Predictors: (Constant), Building strong culture , Manage Change , Achieving goal , Coordinated team work, Customer Orientation						

The model summary in Table 4.15 indicates that 52.3 % of the variations in dependent variable (employees' job satisfaction) is explained by the predicator (Dimensions of organizational culture). Besides, the ANOVA table result confirms that the regression model is adequate to regress the response variable over the predicators in the model. As a result, the following Table 5.16 summarizes and presents the result of regression analysis that indicates the dimensions of

organizational culture that significantly influence the employees' job satisfaction and commitment in the civil service organizations.

Table 4.16: The Results of Multiple Regression Analysis on Effects of Dimensions of Organizational Culture on employee' Job Satisfaction and Commitment

Variables	Employees' Commitment		Employees' job satisfaction	
	t	Beta (β)	T	Beta (β)
(Constant)	11.501	1.225 (0.006)	4.944	0.627 (0.127)
Manage Change	5.138	0.263*** (0.053)	2.868	0.174*** (0.061)
Achieving goal	4.330	0.200*** (0.046)	3.795	0.209*** (0.055)
Coordinated team work	-1.363	-.078 (0.057)	-.352	-.024 (0.068)
Customer Orientation	1.805	0.108* (0.060)	3.662	0.260*** (0.071)
Building strong culture	3.042	0.167*** (0.055)	2.413	0.157** (0.065)

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$
Source: Field survey, 2021

The regression analysis result shows the effects of dimensions of organizational culture on both employees' job satisfaction and commitment. To this end, the three dimensions of organizational culture such as manage change, achieving goal, and building strong culture have statistically significant effect on employees' commitment at 1% significance level, while customer orientation has the effect on employees commitment at 10% significance level. This clearly shows that the three dimensions such as **manage change**, **achieving goal** and **building strong culture** have high influence on the commitment level of employees in the civil service organizations. As it can be seen from the table, a one unit change of current change management effort of the organization can increase the commitment level of employees by 5.138 units when other factors remain constant. Again, a unit change in current efforts of achieving goals could increase the commitment level of employees by 4.33 units, while other factors remain constant. Besides, a unit change in current efforts of building strong culture would increase the commitment level of employees by 3.042 units, in the constant of all other factors.

In regard to the influences of dimensions of organizational culture on employees' job satisfaction, manage change, achieving goal, and customer orientation dimensions of organizational culture have statistically significant effects on employees' job satisfaction at 1% significance level, while the effect **building strong culture** has 5% significance level. By checking the regression coefficient ß, one could understand that the larger the value of ß is, the higher the effect of independent variables on dependent variable (Nunnaly, 1978). To this end, it is possible to understand that the influence of four dimensions of organizational culture such as manage change, achieving goal, customer orientation, and building strong culture have strong influence on job satisfaction level of employees. The results clearly show that a unit change of current efforts on managing change would increase the job satisfaction level of employees by 0.174 units when other factors remain constant. A unit change in current efforts of achieving goal could increase the satisfaction level of employees by 0.209 units, while other factors remain constant. In addition, a unit change in current efforts of customer orientation and building strong culture would increase the job satisfaction of employees by 0.26 and 0.157 units respectively.

Therefore, the regression analysis in general confirms that if no measures are taken to improve the current level of four dimensions of organizational culture such as **manage change**, **achieving goal, customer orientation** and **building strong culture,** the commitment and job satisfaction

levels of employees will not be changed. Thus, the civil organizations have to give more attentions in exerting efforts in order to take initiatives to improve the indicated dimensions of organizational culture since these are the most significant factors in influencing the commitment and job satisfaction levels of employees.

4.7 The Mediation Role of Job Satisfaction in the Relationship between Organizational Culture and Employees Commitment

The proposition that job satisfaction mediates the relationship between organizational culture and employee commitments was tested by meditation analysis techniques developed by Baron and Kenny (1986). To this end, Table 4.17 below presents a series of regression analyses performed to test this mediating role. In model 1, the result indicates that the aggregate organizational culture has a positive significant effect on the dependent variable/employee commitment ($\beta = 0.626$, P< .001). This assures that step 1 of the mediation analysis is fulfilled. Step 2 of the analysis provides evidence for a significant relationship between the independent variable and the mediator variable. The result of model 2 in the table below shows that aggregate organizational culture has a significant positive effect on job satisfaction of employees ($\beta = 0.763$, P< .001), indicating that step 2 of the mediation analysis is also satisfied.

Table 4.17: **Regression statistics for the employees' job satisfaction as a mediator between the relationship of organizational culture and employee's Commitment**

	Model 1 (Path c)	Model 2 (Path a)	Model 3 (Path b &c')
	Employees Commitment	Job Satisfaction	Employees Commitment
Organizational Culture	0.626*** (0. 032) t= 19.370	0. 763*** (0.038) t = 20.084	0. 372*** (0.043) t=8.718
Job Satisfaction			0. 333*** (0.040) t= 8.286
_cons	1.321*** (0.104) t= 12.764	0.673*** (0.122) t= 5.532	1.097*** (0.099) t= 11.068
N	385	385	385
R^2	0.496	0.514	0.573

Standard errors in parentheses

*p< 0.1, **p< 0.05, ***p< 0.01

Model 3 in the above table indicates performing step 3 and step 4 of the mediation analysis simultaneously. Step 3 confirms that job satisfaction (the mediator variable) is significantly related to employee commitment ($\beta = 0.333$, P<.001). Once job satisfaction is entered into the regression, the effect of organizational culture on employee commitment is reduced from $\beta = 0.626$ to $\beta = 0.372$, which is step 4 of the mediation analyses. This represents a 40.58% reduction which implies that employees' job satisfaction partially mediates the relationship between organizational culture and employees' commitment in the civil service organizations.

5.0 : Conclusion

The main objective of this study was to examine whether the job satisfaction of employees carries the influence of organizational culture to on employees' commitment. In line to this objective, the

study has examined the dimensions of organizational culture practiced, the level of employees' commitment and job satisfaction level of employees in the civil service organizations and drawn the conclusion as follows.

The practice of organizational culture in terms of managing change, goal achievement, coordinated team work, customer orientation and building strong culture were found at moderate level which yet requires more attention and efforts to bring change since the quality of work place in terms of organizational culture has paramount importance in any organizational setting. Concerning the job satisfaction of employees, the intrinsic satisfaction level of employees which measures feelings of employees about the nature of their job tasks, and extrinsic that measures feelings about external aspects of the job were found at moderate which imply much to be done to advance the job satisfaction level of employees in the civil service organizations. The job satisfaction of employees increase as the job grade increases and the difference has been found statistically significant. This informs that employees to be given opportunities of promotion to higher job grades or positions on the basis of their performance and experiences to get more satisfaction in their jobs.

It has been found that employees have relatively higher affective commitment than the continuance and normative dimensions which indicates that they have more emotional attachment with their current organizations than their feeling of economic benefits and obligations. Besides, it was noticed that the level of employees' commitment increases as increase in their level of job positions or grades which has statistically significant difference. This indeed confirms that periodical promotion of employees to higher positions on the basis of their performance and experience can create more commitment.The study has also assured that the dimensions of organizational culture such as manage change, achieving goal, customer orientation and building strong culture have statistically significant influence on the employees' job satisfaction and commitment. Furthermore, the employees' job satisfaction has been found as playing a mediating role in carrying the influence of organizational culture on the commitment of employees.

6.0 : Recommendations

On the basis of the major findings, the following recommendations were forwarded.

- It has been noticed that the practice of organizational culture that enhances the quality of work place is at moderate level. Therefore, leaders in the civil service organizations have to work hard on improving the current conditions of organizational culture through:
  o Managing change by having collective discussion with employees to convince them on importance of the change to the organization and employees to make them believe that their concerns and anxieties during periods of change are heard and taken into considerations.
  o Measuring the performance of individuals and teams and rewarding them on the basis of how well goals have been achieved. In addition, it is very important to participate individuals and teams in defining specific goals of the organization to enhance goal achievement efforts.
  o Focusing on resolving the problems of customers related with the services they receive to their satisfaction and develop the culture of recognizing those employees who show maximum efforts to satisfy customers.
  o Building strong culture by allowing employees to have access to timely and accurate information about what is happening in the organization and the reasons these new events. Besides, employees should be encouraged to not compromise the organization's policy and procedures to reach operational goals.
- The overall employees' job satisfaction has been found yet at moderate level which requires more effort due to the fact that the performances of organization and employees commitment highly rely on their satisfaction. Therefore, it is imperative for organizations to make the adoption of organizational policies consistent at a time while making

decisions that affect individuals, revising the compensation schemes on the basis of the life cost, and improving the work conditions by fulfilling all required work facilities.

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Determinants of Structure Plan Implementation: Perception of Residents in Sebeta City, Next-door of Addis Ababa, Ethiopia

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Abstract : While there have been numerous thoughts and discussions at global, regional and national levels and at various specific urban centers on the implementation of structure plans, a lot remains to be discussed and thoughtful obstacles remain to be overcome. Though structure plan for Sebeta city was revised by Oromia Urban Palnning Institute in 2018, the plan is not well implemented and hence land development in the city seems to be very much disorganized. By this research, perception of residents on the level of major resources and determinants for structure plan implementation in the city was seen. Sample of 385 was taken and spesfic respondents were selected based on cluster sampling in combination with simple random sampling method. Data was analyzed by using descriptive statics (mode, mean and percentages) and inferential statics (regression analysis). The findings show that the mean level was rated by the respondents as 57.00% for the level of financial resource; 56.55% for community participation; 55.33% for existence of skilled man power; and 55.22% for the level of stakeholders' involvement in structure plan implementation. All the four major determinants are found to be significant predicators by explaining 69.47% of the change in implementation of structure plan in the city. Community participation was found to have the most explaining power with beta value 0.527. The explaining power of the other three was 0.317 for involvement of other stake holders; 0.253 for engagement of skilled manpower; and 0.206 for financial resource. For the effective implementation of Structure plan of Sebeta city, the city administration should give priority to raise and promote community participation, to encourage engagement of skilled manpower; to augment involvement of other stake holders and to enhance the city's financial resource in order of their influencing power.

Key Words: Structure plan, Implementation

1.0 : Introduction

Urbanization is transforming the world (Jamal, 2018) and is an irreversible and universal phenomenon on a global scale (Zoma & Sawadogo, 2022). As of 2021, an estimated number of 609 million people in Africa (13.8 percent of the global share) live in urban areas and by 2050, Africa's cities will be home to an additional 950 million people making 20.2 percent of the global share (The Sahel and West Africa Club, 2022). Much of this growth is taking place in small and medium-sized towns and importantly, around 70% of Africa's urban growth will take place in secondary cities. 52% of the urban population in Africa lives in cities of less than 200,000 inhabitants, in comparison to 42% for all developing countries (Kessides, 2006). On the other side, we frequently hear statements saying that many Sub-Saharan African cities are 60-80% "unplanned." Ethiopia is located in the north-eastern part of Africa, commonly known as the Horn of Africa. The country is still predominantly a rural country, with only about 20% of its population living in urban areas with relatively fast annual urbanization rate which is about 5% in sub-Saharan Africa Structure plans are done for every urban center by different bodies in different countries as a framework to guide the growth or improvement of an area by defining the forthcoming development and land use patterns, areas of open space, the arrangement and nature of infrastructure, and other key features and constraints that influence how the effects of development are to be managed. Structure plans is also taken as a binding technical, institutional and policy framework for guiding development of urban centers (National Urban Planning Institute (NUPI), 2002). Structure plan implementation is usually seen as the crucial component of planning and can only be achieved or made possible when broad goals and definite objectives are

translated into executable strategies (Abubakari, Asokwah, Dapaah and Appiah, 2016). According to these authors, the major factor for the poor implementation if structure plan in Bekwai Municipality in the Ashanti Region of Ghana were 13.3% political, 14.7% economic factors, 4.8% socio-cultural factors and 1.3% institutional factors. However, Gebrechristos 2015 found as 'implementation of structure plan of Hawassa city in Sothern Ethiopia was impaired because of weaknesses of the master plan itself and low institutional capacity. Benti 2012 indicated as structure plan implementation effort in Ethiopia is observed to be at its infancy.

While structure plan is considered as a tool for implementing development policies, strategies, programs and laws of federal and regional governments, which are mostly reflections of global agendas, and development issues at an urban level why not implemented is the central question initiated the author to conduct this research.

Because of its proximity to Addis Ababa, its suitability to live and work in and relative availability of land than its availability in Addis Abeba, many are interested to live and work in Sebeta city. Structure plan for the city was revised in 2018 by Oromia urban palnning institute, the institute engaged in preparation and revision of structure plans and local development plans for urban centers in Oromia National regional state (the largest regional state in Ethiopia). On the other side, land development in Sebeta City seems to be very much disorganized which can be evidenced by the poor road networks, the way residential houses are developed, the commercial areas, location of manufacturing centers and adminstration sites, waste disposal sites and the like seems not nice-looking. By this research, perception of residents in the city on the level of major resources and determinants for structure plan implementation in the city was seen.

2.0 : Study Area and Research Methods

2.1 : Study Area

The spatial scope of this study is limited to Sebeta city, one of the urban centers in Oromia special zone surrounding Addis Ababa, the capital city of Ethiopia. The city is located just adjacent to Addis Abeba at about 24 km on the South Western direction of the capital city of Ethiopia along the main road taking from Addis Ababa to Woliso and Jimma. The city is one of the fast growing cities in Oromia National Regional State that serve very large hinterland, regional, sub national and national areas. It is a center of business, social, cultural, and political institutions for the region and the nation as a whole.

Information from the local elders shows that Sebeta city was emerged before the Italian invaded Ethiopia in 1935 and it has got municipal status in 1954 (Oromia Urban Planning Institute, 2018). Geographically, Sebeta City is located within an approximate geographical coordinates of $8^0 53'38.50''$N-$8^0 59'58.17''$N latitude and $38^0 35'11.91''$E-$38^0 39'33.75''$E longitude on the globe and its average elevation is 2,365 meters above sea level (OUPI, 2008). With regard to relative location, it shares common boundaries with Addis Ababa in the North, North East and East, Burayu City in the North and rural villages of Sebeta Awas district in the South and Western directions. Population of the city was 56,131 in 2007 (CSA, 2007); 336,975 in 2018 (OUPI, 2018) and currently grown to 402,265 (Sebeta City Administration, 2022) which seems abnormal growth due to internal and external factors. Location of Sebeta city in relation to Addis Ababa City and main roads to different directions from Addis Ababa is shown on figure 1 below.
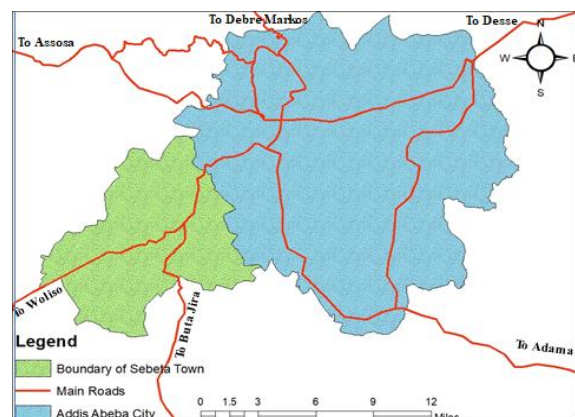

Figure 1: Geographic Location of Sebeta City Adjacent Addis Abeba   Source, OUPI (2018), Supported by Own Survey, 2022

2.2 : Research Methods

Since the predominant purpose of this study is to understand a phenomena in the identified study area and in the meantime, the conclusion may also indicate the cases in other similar urban centers especially in Oromia National Regional State and generally in other similar urban centers in Ethiopia, a case study involving qualitative method was undertaken among purposively selected communities in Sebeta city. According to Yin, 2009, case study enables the researcher to study a phenomenon in detail and provide objectivity within the limited period. Therefore, case study provides an opportunity to study a phenomenon within a geographical boundary.

Implementation of structure plan of the city was assessed by using four basic variables having many proxies within. The four major variables are financial resource, community participation, engagement of skilled manpower, and involvement of other stake holders. The financial capacity of the city was seen by five different proxies. These are about having strong local revenue; sources, having external revenue sources for implementing the plan, fair budget allocation for plan implementation, ability to pay compensation to implement the structure plan and about financial capacity of the city to prepare Neighborhood Development Plan (NDP) for the implementation of structure plan. The proxies used to see level of community participation are communities' participation during preparation of the structure plan; getting information about what is planned and where; knowledge of their role to play in structure plan implementation; benefit they got from structure plan; proper management of public properties during the plan implementation; payment of reasonable compensation during displacement or for lost properties in the process of implementation; consideration of farmers on their farming land to implement the plan; and perception of the community to take the structure plan as positive. Availability of skilled manpower in the sector was assessed by availability of skilled urban planners, urban engineers, surveyors, GIS and remote sensing experts, availability of required training for this professionals and general involvement of related professionals in plan implementation. Finally, involvement of other stakeholders was analyzed by looking into involvement and co-ordinations of experts in mayor office, zone urban & housing development office, zone land office, construction office, the city municipality and involvement and active participation of local communities, vulnerable and disadvantaged groups; NGO's, private sectors and media. For the status/level of these four major variables, data was collected by nine point likert scale and mean was computed.

Considering the nature of the target population, representative sample size (385) was taken based on population proportion and margin of error. Since previous studies did not show about how much is the value of p and q in this regard, the worst scenario was considered making the value of

$$n = \frac{z^2\,pq}{E^2}$$

p = 0.5 and q also 0.5. Therefore the following formula was used.

Where,

n= required sample size
p and q = population proportion which is 0.5 for both
z = the value that specifies the level of confidence, which is 1.96 at 95% level of confidence

$$n = \frac{z^2\,pq}{E^2} = \frac{(1.96)^2\,(0.5)\times(0.5)}{(0.05)^2} = \frac{3.8416 \times 0.25}{0.0025} = \frac{0.9604}{0.0025} = 384.16 = 385$$

E= Margin of error or sampling error expressed as a proportion (in this case 0.05)

Cluster sampling in combination with simple random sampling method was used to include specific respondents to the sample. For the regression analysis, basic assumptions were well tested. The distribution is normally distributed (distribution of the data is skewed neither to the left nor to

the right) and there are no such extreme outliers from both the left and the right hand side. This implies that most of the observations are around the expected vale (mean). Hence, it is relatively symmetrical and fit to be analyzed statistically. In addition, while a reliability coefficient (Cronbach's alpha) of 0.7 or higher is considered as "acceptable" in most social science research (Cortina, 1993), the minimum reliability coefficient in this case is 0.79 as can be seen on the table 1 below which is very tolerable to proceed.

Table 1: Reliability Test Results

Sr. No	Variables	Reliability Test		Correlation Coefficient with Implementation of Structure Plan	Co linearity Statistics	
		Number of Items	Cronbach's Alpha		Tolerance	VIF
1	Financial Resource	5	81.7%	0.74	0.876	1.142
2	Community participation	8	84.2%	0.88	0.794	1.259
3	Engagement of skilled manpower	6	79.6%	0.79	0.872	1.147
4	Involvement of other stake holders	9	87.3%	0.83	0.916	1.092

Source: Computed from Field Survey, 2022

The third assumption was to check about the existence of relationships between the dependent variable (implementation of structure plan of the city) with all the four independent variables. The analysis shows as the correlation coefficient of the dependent variables is .74 with financial resource; .88 with community participation; .79 with engagement of skilled manpower, and .83 with involvement of other stakeholders in structure plan implementation. On the other hand, there is no Multi co linearity problem in the relationship among the variables since the coefficient of the correlation among the independent variables is very insignificant. This can also be evidenced by the value of variance inflation factor (VIF) which is by far less than 10 indicating Tolerance more than 0.1 (See table 1 above).

The next assumption was about checking the existence of linear relationship between the variables of interest that means implementation of structure plan in the city (ISP) is the function of financial resource (Fr), community participation (Cp), engagement of skilled manpower (Esm), and involvement of other stake holders (Ish). This means:

$$ISP = \alpha + \beta tFr + \beta asCp + \beta rsEsm + \beta rlIsh + e \ (Some \ sort \ of \ tolerable \ error)$$

Where, α = constant

$\beta tFr, \beta asCp, \beta rsEsm$ and $\beta rlIsh$ are Coefficients to estimate financial resource (Fr), community participation (Cp), engagement of skilled manpower (Esm), and involvement of other stake holders respectively.

3.0 : Results and Discussion

3.1 : Level of Major Inputs in Structure Plan Implementation in Sebeta City

To implement structure plan of Sebeta city, the major inputs identified are financial resource, community participation, engagement of skilled manpower, and involvement of other stake holders all of which were seen by different type and number of proxies as discussed one by one as follows.

3.1.1 : Financial Resource in Structure Plan Implementation

To implement the structure plan of Sebeta city, financial resource of the city was seen by using five different proxies. These are about having local revenue sources, having external revenue sources, having fair budget allocation for plan implementation, ability of paying related

compensation to implement the structure plan, and about having financially strong capacity to prepare Neighborhood Development Plan (NDP) for implementing structure plan. The data from the respondents shows that the mean of the level of agreement of the respondents on having strong local revenue sources is 4.76 out of the nine point scale of measurement (52.89%). Moreover, level of the city's external revenue sources for implementing the plan is 5.40 of nine (60.00%); level of fair budget allocation to implement the plan of the city is 3.64 out of nine (40.44%); ability of the city to pay related compensation to implement the structure plan is 5.41 out of nine (60.11%); level of the city on having strong financial capacity to prepare NDP for implementing the structure plan is 4.53 out of nine (50.33%); and adequacy of the overall municipal finance to implement structure plan of the city is calculated as 5.13 out of nine point scale of measurement (57.00%). Detail of this is presented on Table

Table 2: Level of Financial Resource in the City's Structure Plan Implementation

Sr. No.	Proxies	Mean Level of Agreement	
		Out of 9	In%
1	The city has strong local revenue sources	4.76	52.89
2	The city has external revenue sources for implementing the plan	5.40	60.00
3	Budget allocation is fair for plan implementation	3.64	40.44
4	The city can pay related compensation to implement the structure plan.	5.41	60.11
5	The city is financially strong to prepare NDP for implementing structure plan	4.53	50.33
6	The overall municipal finance was adequate to implement structure plan of the city	5.13	57.00

Source: Computed from Field Survey, 2022

3.1.2 : Level of Community Participation in Structure Plan Implementation

The mean level of agreement of respondents on the overall level of community participation in structure plan implementation of Sebeta city is found as 4.53 out of nine point likert scale which is 50.33%. Specifically, mean level of community participation in preparation of structure plan of Sebeta city is 5.42 out of nine (60.22 %); mean level of knowledge of the community about what is planned and where to implement is 4.31 out of nine (47.89 %); community's knowledge about what to do in structure plan implementation is 4.85 out of nine (53.89 %); level of community's benefit from structure plan is found as 5.07 out of nine (56.33 %); level of management of the community during plan implementation is 4.12 out of nine (45.78%); Level of payment of reasonable compensation for communities during displacement or for lost properties is 3.74 out of nine (41.56); level of consideration of farmers on their farming land to implement the plan is 5.14 out of nine (57.11%); and level of perception of the community to take the plan as a positive planning tool is found as 5.09 out of nine (56.55%).

Table 3: Level of Community Participation in Implementation of Structure Plan of the city

Sr. No.	Variables	Mean level of Agreement	
		Out of 9	%
1	Community participation on preparation of the structure plan	5.42	60.22
2	Knowledge of the community about what is planned and where	4.31	47.89
3	Knowledge of the community about what to do in structure plan implementation	4.85	53.89
4	Benefited gained from structure plan	5.07	56.33
5	Management of properties during plan implementation	4.12	45.78
6	Payment of reasonable compensation during displacement or for lost properties in this regard	3.74	41.56
7	Consideration of farmers on their farming land to implement the plan.	5.14	57.11
8	Acceptance of the plan as a positive planning tool	5.09	56.55
9	The overall participation of the community in implementation of the structure plan	4.53	50.33

3.1.3 : Level of Engagement of Skilled Manpower in Structure Plan Implementation

Engagement level of skilled manpower in structure plan implementation in Sebeta city was seen based on six different proxies rated by nine point likert scale. The result shows that the mean level of commitment of urban planners is rated by the respondents as 4.68 out of nine (52.00%); dedication of urban engineers in implementation of structure plan of the city is found as 5.51 out of nine (61.22%); level of surveyors of the city as being faithful in implementation of structure plan of the city was found as 4.42 out of nine (49.11%); mean level of realistic behavior of GIS and remote sensing experts in implementation of structure plan of the city was found as 5.13 out of nine (57.00%); sufficiency of training provided for existing professionals is rated as 5.17 out of nine (57.44%); and mean level of involvement of related professionals in structure plan implementation was 5.14 out of nine (57.11%). Generally, mean level of engagement of skilled manpower in structure plan implementation of Sebeta city is calculated as 4.98 out of nine (55.33%)

Table 4 : Level of Engagement of Skilled Manpower in Structure Plan Implementation

Sr. No.	Variables	Mean level of Agreement	
		Out of 9	In%
1	Commitment of urban planners to implement structure plan	4.68	52.00
2	Dedication of urban engineers to implement structure plan	5.51	61.22
3	Faithfulness of the surveyors to implement structure plan	4.42	49.11
4	Realistic behavior of GIS and remote sensing experts to implement structure plan	5.13	57.00
5	Provision of sufficient training for the existing professionals	5.17	57.44
6	Involvement of related professionals in plan implementation	5.14	57.11
7	Generally, presence of skilled man power in implementation of the structure plan	4.98	55.33

Source: Computed from Field Survey, 2022

3.1.4 : Involvement of Other Stakeholders in Structure Plan Implementation

Stakeholder involvement is the other important variable to smoothly implement structure plan of a given city. The case in Sebeta city was seen by using nine different proxies rated by the respondents using the nine point likert scale, According to the descriptive statics generated mean level of coordination of mayor office experts in the city's structure plan implementation was found as 5.37 out of nine (59.67 %); mean level of coordination of land development and management office in the city's structure plan implementation was computed as 4.72 out of nine (52.44%); mean level of coordination of office of construction in the city's structure plan implementation was 4.64 out of nine (51.56%); and mean level of coordination of municipal experts in the city's structure plan implementation was 4.73 out of nine (52.56%). Moreover, mean level of involvement of local community in the city's structure plan implementation was computed as 4.59 out of nine (51.00%); mean level of involvement of vulnerable and disadvantaged groups in the city's structure plan implementation was seen as 4.89 out of nine (54.33%); mean level of involvement of NGO's in the city's structure plan implementation was 4.83 out of nine (53.67%); mean level of involvement of private sectors in the city's structure plan implementation was found as 4.77 out of nine (53.00%); and finally mean level of involvement of media in the city's structure plan implementation was 4.58 out of nine (50.89%), When generally seen, the overall stakeholders' involvement in Sebeta city's structure plan implementation was found as 4.97 out of nine which is 55.22%.

Table 5 : Level of Stakeholders' Involvement in Structure Plan Implementation of Sebeta city

Sr. No.	Variables	Mean level of Agreement	
		Out of 9	In%
1	Co-ordination of mayor office experts in the city's structure plan implementation	5.37	59.67
2	Co-ordination of land development and management office in the city's structure plan implementation	4.72	52.44
3	Co-ordination of office of construction in the city's structure plan implementation	4.64	51.56
4	Co-ordination of municipal experts in the city's structure plan implementation	4.73	52.56
5	Involvement of local community in the city's structure plan implementation	4.59	51.00
6	Involvement of vulnerable and disadvantaged groups in the city's structure plan implementation	4.89	54.33
7	Involvement of NGO's in the city's structure plan implementation	4.83	53.67
8	Involvement of private sectors in the city's structure plan implementation	4.77	53.00
9	Involvement of media in the city's structure plan implementation	4.58	50.89
10	The overall stakeholders' involvement in structure plan implementation	4.97	55.22

Source: Computed from Field Survey, 2022

3.1.5 : The Overall Status of Inputs in Structure plan Implementation

As indicated in the previous sections, implementation of structure plan of the city was assessed by using four basic variables having many proxies inside. The general status of these four different inputs (variables) was seen and the mean level for the four variables was calculated. The result shows that mean level of the overall adequacy of the municipal finance in structure plan implementation was 5.13 out of nine (57.00 %); the overall community participation in implementation of the structure plan of Sebeta city was rated as 4.53 out of nine (50.33%); mean level of existence of skilled man power in implementation of the structure plan of Sebeta city was rated as 4.98 out of nine (55.33%); and mean level of stakeholders' involvement in structure plan implementation was 4.97 out of none (55.22%). This clearly depicted on the next bar graph.
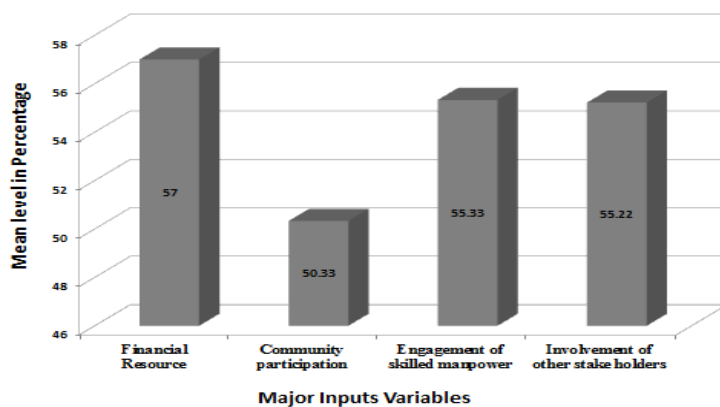

Figure 2: General Level of Inputs in Structure Plan Implementation of Sebeta city

Source: Computed from Field Survey, 2022

3.2 : Determinants of Structure Plan Implementation in Sebeta City

As can be seen on the table 6 below, all the four major variables (determinants) are found to be significant predicators for the implementation of structure plan of Sebeta city. With respect to the effect of the independent variables, 69.47% of the change in the implementation of structure plan of Sebeta city is explained by the change in those independent variables. This also shows as the remaining 30.53 of the determinants of the implementation of structure plan of Sebeta city is not explained by this model. The goodness of the model fit is also maintained as the ANOVA is significant at p<0.01. The model summary of the regression result is presented below.

Table 6: The General Explaining Power of the Variables

Model Summary				
R	R Square	Adjusted R Square	Standard Error of the Estimates	Sig. F Change
0.84	70.56	69.47	0. 43	0.003

Source: Computed from Field Survey, 2022

In order of the magnitude of their influence on implementation of structure plan of Sebeta City, community participation stands first with beta value (B=.527, p<.01) and the next factors in this order are involvement of other stake holders (B=.317, p<.01); engagement of skilled manpower (B=.253, p<.01); and finally financial resource (B=.206, p<.01), p<.01) as can be seen from table 7 below.

Table 7: Influencing Power of the Independent Variables on Implementation of the Plan

Variables	☐ Value	Std. Error	t	Sig.
(Constant)	3.889	.371	-5.058	.000
Financial resource (*Fr*)	.206	.016	7.420	.005
Community participation (*Cp*)	.527	.032	2.537	.000
Engagement of skilled manpower (*Esm*)	.253	.024	3.026	.002
Involvement of other stake holders (*Ish*)	.317	.040	5.061	.001

Dependent Variable is implementation of structure plan of Sebeta city (ISP)
Source: Computed from Field Survey, 2022

The linear regression equation in this case can be presented as follows. Implementation of structure plan of Sebeta city (ISP) = α+ ☐$_1$Fr + ☐$_2$Cp+ ☐$_3$Esm + ☐$_4$Ish + ☐

Where, α is constant which in this case is equal to 3.889; ☐$_1$ is beta value for financial resource which in this case is equal to .206; ☐$_2$ is beta value for community participation which is equal to .527; ☐$_3$ is beta value for engagement of skilled manpower which is equal to .253; ☐$_4$ is beta value for involvement of other stakeholders which is equal to .317 and e stands for some sort of tolerable error.

This result clearly indicates that keeping all the other variables constant, a unit increase in the perceived level of financial resource (Fr) would have the power of enhancing the implementation of structure plan of Sebeta city (ISP) by 0.206. As can be seen from the table, keeping any other variables constant, a unit increase in the perceived level of community participation (Cp), engagement of skilled manpower (Esm) and involvement of other stakeholders (Ish) would respectively improve the implementation of structure plan of Sebeta city by 0.527, 0.253 and 0.317.

4.0 : Conclusions and Suggestions for Recommendations

4.1 : Conclusions

To implement the structure plan of Sebeta city, financial resource, community participation, engagement of skilled manpower, and involvement of other stake holders were found as important variables. Their current mean level was rated by the respondents and found as 57.00% for financial resource; 56.55% for community participation; 55.33% for existence of skilled man power; and 55.22% for stakeholders' involvement. All the four major determinants are found to be significant predicators for the implementation of structure plan of Sebeta city. With respect to the effect of the independent variables, 69.47% of the change in implementation of structure plan of Sebeta city was explained by the change in those independent variables making the remaining 30.53% of the determinants not explained by this model. Out of these four variables, community participation has the most explaining power with beta value 0.527 and involvement of other stake holders with 0.317; engagement of skilled manpower with 0.253; and financial resource with beta value 0.206 explained the implementation of structure plan of Sebeta city in order of their magnitude. The result reveals that keeping all the other variables constant, a unit increase in the perceived level of financial resource (Fr) would have the power of enhancing the implementation of structure plan of Sebeta city (ISP) by 0.206 and the same in community participation (Cp), engagement of skilled manpower (Esm) and involvement of other stake holders (Ish) would rise the implementation of structure plan in the city by 0.527, 0.253 and 0.317 respectively.

4.2 : Suggestions for Recommendations

For the smooth and effective implementation of Structure plan of Sebeta city, the city administration in coordination with other stakeholders should give priority in doing different activities to raise and promote community participation in the preparation and implementation of the structure plan. The next priority should be given respectively to promote engagement of skilled manpower, involvement of other stake holders and to enhance the city's financial resource

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Social Networking and Public Participation As A Vital Entry Elements for Improving Municipal Governance and Service Satisfaction: Evidence from Ethiopia

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Abstract : The realization of effective public participation has faced several challenges across the globe. The objective of this study was to examine and present a comprehensive understanding on public participation and its key determinants and nexus with the municipal service satisfaction . The study considers one of Ethiopias' major city, Mekele as a case study. The major findings are that the existing citizens' participation practice is not inclusive. The female and old aged groups showed higher participation. Similarly, citizens' with higher social connectedness (social networking) participate more than the other groups. In terms of socially connected groups, respondents with older ages, female, high-income and citizens with longer residency time were found comparatively more connected than their other counterparts. The results of the study reveal that with increasing level of awareness, income and access to networking platforms; people's participation in service delivery has increased resulting a positive change in service satisfaction.

Keywords : Citizens' participation; Social connectedness; Municipal service delivery; Service satisfaction

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1.0 Introduction :

Nowadays scholars, development agencies, and international organizations recognize the twofold advantages of public participation viz. People get the timely service delivery demanded and facilitate the system to be more people friendly and accessible. It is, thus, a vehicle for achieving overall socioeconomic and environmental development endeavors across global, regional, and local governments. Participation is also an end objective by itself because it is among the basic human right which is included in the international covenants and national constitutions. Through effective public engagement programs, the process and outcomes of local planning, public policy and decision-making are expected to be more equitable, transparent, efficient, citizens oriented, and sustainable (Krishnaswamy, A. 2004). To be globally competitive and provide a good quality of life, cities need to deliver a wide range of services and infrastructure for their respective ordinary citizens. Thus, for urban areas to have demand-driven public projects and programs, it needs legitimate public participation and collaborative governance process. (Enid.S, and Andre. C, 2014). As such effective public participation is representative of successful public sector reform programs that promotes equity and sustainable local development (Mezgebe, 2007). With all these crucial and comprehensive advantages, the local public participation process and performance face several challenges both in developing and developed countries.

The urban public needs are rapidly changing as society's become more diverse, fragmented, and complex. They expect the municipal service to deliver more of these services accurately, better

quality, faster but cost-effective. The ability to deliver more choice services, more transparency, and more accountability is what is needed to re-establish public trust in the municipal governance and public service delivery process. The rationale for the decentralization and to have a participative government at the local level stems from a recognition that involving people in governance and service delivery processes makes local authorities accountable to their respective citizens for services and development in their area (Sirker and Cosic 2007).

Unfortunately, many research studies conducted on the implementation of participatory governance and municipal service delivery in developing countries are more problematic. Research made by World Bank (2007) In Ghana, citizens' participation in decision making and development planning in urban areas remains generally ad hoc, depending largely on the benevolence of a few assembly members. A study in Tanzania electric supply also shows that municipal institutions adhere to the principles of good governance practices, but it does not abide by its Customer Service Charter and it leads to poor service delivery and overall public mistrust on the municipal institution (Saada, 2017). Poor public participation is rated among the vanguard problems that hinder public service improvement initiatives all over the developing world (Gwayi 2010) cited by (Makanyeza, Kwandayi, and Lkobe, 2013).

In Ethiopia too, various initiatives and municipal service delivery reforms have been implemented to improve participatory municipal governance; .BPR (business process reengineering), (BSC) balnced score cared and deliverology are among others. Nonetheless, the regional governmment evaluation report 2018 asserted that the problem is still pervasive and needs other interventions. For instance, according to a study in one of Ethiopia's cities, Adigrat, 62% of respondents confirmed that there is no collaborative governance practice and officials are not open to the public (Berhe, T. T. 2020). The above finding is also supported by an evaluation report of the Growth and Transformation Plan I (GTP I) which is the major national development plan of the Ethiopian government (Federal Democratic Republic of Ethiopia 2016).

Public Participation

In many works of literature in the field of study the terms "engagement", "involvement" and "participation" have been used interchangeably similar approach has been used in this paper.

(FAO, 1998) Broadly defined participation as a *'' process of communication between local communities and development agencies, in which local people or ordinary citizens assume the lead role in analyzing their current situation to identify the need or problem requiring attention in order to plan, implement and evaluate development activities, and even implement and evaluate the quality of participation process itself''*. Citizens' participation in the context of new public management is defined as ''*an interaction of public administrators and citizens, concerned with public policy decision and public service delivery process''* (Callaha, 2007).

According to the European Institute for Public Participation (2009), public participation can be described as a deliberative process by which interested or affected citizens, civil society organizations, and government actors are involved in policy-making before a political decision is taken.

Why public participation

People's participation in the public governance process not only enriches democracy by fostering citizens' liberty and equality, but it also increases public transparency, enhance accountability, builds social capital, reduces conflicts, ascertains priorities in public goods and services, promote government legitimacy, cultivate mutual understanding among the ruler and ruled, or advances fairness and justice in the governance process and building trust among and within the participants, especially between the government at all levels and the ordinary citizens. (Box 1998; Putnam 2000; King & Martinelli 2005; Callahan 2007). Thus, effective people's participation, especially at the municipal level enables citizens to set goals and priorities of their interest, supervise or monitor

the actions of politicians and members of the city administration and hold them responsible and accountable for their decisions made and actions are taken.

According to the concept of a New Public Service, (Mindiarti, 2007), put society as a citizen who has the right to be given the great quality of public services of the state. Citizens also have the right to protect their rights: their voices are heard, while values and preferences are cherished.

Sometimes helping government decision-makers and the public become more informed and an enlarged view of issues (Fung 2007). Public participation also supports having a more equitable distribution of limited public resources (Simonsen and Robbins 2000). Citizen involvement can also be a powerful source of ideas and motivations for social innovation and bureaucratic partnership; Citizens may be better positioned to assess the relevance and effectiveness of public services, so they can contribute much in the evaluation of public programs and service delivery processes and performance.

Public Participation and Municipal Service Delivery

One of the major reasons for establishing local government is to bring the government to the communities and it enables the local people can participate fully in the process of governance and it provides essential local services and thus speed up the peace of social, economic and political transformation (Amujiri, 2012). .Citizens' participation in the process of public service delivery may lead to better public services, which comply with the needs of citizens, better decisions, higher quality, and more efficient collaboration in using public money for public services.

A developmental local government is a community-oriented approach and its all programs, initiatives, and reforms are broad and inclusive. (Koteze and Kellerman 1997) insist that as a result of these citizens oriented approach, the local government will encourage public engagement, and consequently support the programs and activities that seek to develop and benefit the mass residents.

Hence, effective and well-managed citizen participation will lead to a situation where the local sphere of government receives a valuable contribution from the communities and this will help in determining the quality and quantity of public services delivered Madumo, O. S. (2014).
Furthermore, citizens' has better ideas than the public officials about the service they need, so ordinary citizens can help local service providers to understand their needs, requirements and priorities which are vital solutions for their current and future problems. Similarly, citizens may become directly involved in the design and delivery of services, a process referred to as problem-solving collaboration, According to Helen E. Landemore,(2012) the *'' Many Are Smarter than the Few''*

Arguments About the Need for Public Participation Concept

Different arguments have been stated by different authors or researchers to advocate or opponents to the citizen participation towards improved local governance and service delivery process and performance.

Those supporters of public participation are denoted by *'People-centered'* the other side is also called *'Authority Centered'*; agencies should not be concerned that seeking public input means having to do *what the public wants.'*

Based on the people-centered view, citizens become active participants in the creation and implementation of the policies, decisions, and/ or any process which affects them. Citizens are capable individuals who are willing and able to take responsibility for their own choices, priorities, decisions, and actions, although one may say this is not always the case, i.e. unrealistic (Box, 1998; Robert, 2004 and Gaventa, 2006) who supports the people-centered view claimed that

citizens are capable and efficient to participate in all aspects of local government matters of governance and public service delivery process and performance.

This is because people learned through participating and thus the educational element of participation (Robert, 2004) will make people more matured hence, participatory and people center governance is prominent for effective local governance and public service delivery process.

The proponents of citizens participation justify a lot of purposes for public participation; these may include: embodying the ideals of democratization participation and principles of inclusion; fulfilling legal requirements in the local governance process; improving social justice; enhancing social consensus; informing the local people about public decisions towards public problems and opportunities; analyzing and generating alternative solutions for local problems; and generating effective public policies, programs, plans and projects of having higher quality in terms of their content being they are demand-driven; in such policies, strategies, plans and projects the local citizens exert their all-round support in the implementation and evaluation process (Bryson et al. 2013). One of the important arguments for public participation is that it is an important end unto itself in a democratic society.

They have just noted the key role citizens' participation plays in reflecting and consulting local citizenship, the public, and the public values. Similarly, numerous other potential advantages of effective citizen participation are well documented; though public participation demands-resources such as skill, time and money of the participants, but can generate numerous advantages that significantly outweigh the expected cost of participation (Roberts, 2004; Feldman and Quick, 2009). Participants can contribute to the public decisions through providing new and generic information, different ways of seeing, public issue, and motivation to address identified problems (Renn et al., 1993), sometimes helping government decision-makers and the public to become more informed and develop an enlarged view of issues (Fung, 2007).

Public participation can also support a more equitable distribution of limited public resources (Abers 2000; Simonsen and Robbins 2000). And it can create resources for future problem-solving and implementation to address new public issues by enhancing trust and legitimacy among the participants, building better relationships, and generating generic knowledge and interest about public policy issues and processes (Feldman and Quick, 2009; Ansell, 2011). Whether participation actually does produce these benefits depends on a number of factors which may from the local government side and/or from the participants side affect its contribution towards governance and service delivery process and performance.

Finally, the International Association for Public Participation IAP2 states that the benefits of public participation are better released through implementing effective and the best approach to engage for the purpose of audience and subject matter. The consequences of failure in policies, governance, and service delivery outcomes are costly than any investment costs of public participation embodied.

In contrast, based on the opponents or the viewers of Authority center, which are often supported by members of local government and elected or appointed officials, those who believe direct citizen participation is politically ''naïve'', and governance mostly rests on informed and knowledgeable elite and it is more of nominal. Only a small group needs to be actively and directly involves in the public decision-making process. Some scholars such as (Crosby et al and Irvin and Stansbury,2004; Yang, 2006), and Bowman and Kearney, 2007), argued that the local authorities focus on a limited scope or role for people's participation in the decision-making process and the formulation of policies. According to Bowman and Kearney (2007) from the perspective of local government officials, people participation can be a nuisance because it may disrupt established routines.

Similarly, another researcher in the area of study has stated some arguments that prevent direct citizens' participation in the local governance and service delivery process; (Stivers, 1990 and Fishkin, 1991) expressed how the modern societies are too complex, and it is very difficult for governments to support through face to face relationships. But in the normal experience, all participants do not require face-to-face communication among the participants.

(Clevel, 1986) believed participation is undesirable because it would be too expensive, too slow for public decisions and a waste of time for all the participants. Others also argue that most actively involved citizens might represent private interests that are very different than the broader mass interest. Moreover, the majority of local governments do not have the capabilities to manage the dynamic issues facing in the current modern society's interest through direct participation. In addition, people are too busy with their private lives, including supporting their families, thus most ordinary citizens have no interest to engage and spent their precious time on public agendas. All these issues prevent direct participation to take place and make sense in local governance and service delivery process and performance.

According to Barber (1984), excessive citizens' participation by the government increases political conflict among the participants; it also jeopardizes stability and social order. High expectations for direct participation are difficult to meet with the government, thus it creates alienation, low self-esteem, and distrust and this discourage participation of the people. Grisez Kweit, M., & Kweit, R. W. (2007) Revealed that citizen participation had no impact or a slight negative impact on satisfaction and legitimacy

Critics of participation argue that it is too complicated, costly, and time-consuming, and for them that there is no evidence that participation improves the process and outcomes in public governance and service delivery efforts; hence, the costs associated with citizens' participation in the light of what it does deliver are not justifiable.

However, there are compelling examples and best experiences from around the world of what goes wrong in circumstances where citizens are not consulted, and similarly, positive cases abound of the gains derived from citizen engagement (Cornwall, A. 2008). Lastly, based on the literature in the field of study, it can be concluded that the most important element that different People-Centered or proponents of citizen participation in the public governance process from Authority Centered or proponents of participation views is the level of people participating in the decision-making process. This, of course, is about power. So members of the local government advocate for Authority Centered in an attempt to keep power for themselves, and to avoid sharing their power with citizens and other governance actors. On this view, power is under local government control, and they are not willing to confer power to the people.

On the other hand, with the people center, citizens seek to be involved in the decision-making process that directly affects their lives and pursue the redistribution of power. Indeed, public participation is difficult to bring into the argument because many researchers, development agencies, and international organizations put citizen participation as not something which is given as a donation from the local authorities rather it is an ultimate human right. Citizen participation in decision-making processes at the local government level is a fundamental human right, not a discretionary policy option that policymakers can implement at their whim. (Sepúlveda Carmona, 2003). Thus, regarding its contribution towards effective local governance and service delivery, this research paper has come up with findings from empirical evidence and literature experiences.

Figure 1 Conceptual framework
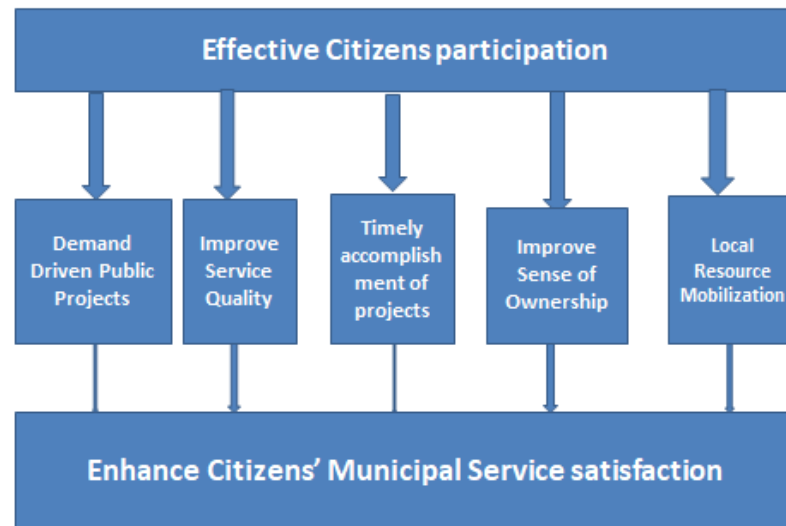
Developed by the researchers from different literature (2021)

2.0 Methodology

Participants for the study were selected using a systematic random sampling approach. Mekelle city has seven sub-city administrations and each sub-city also has 3-4 Kebelle /ward administrations. The city, the sub-cities, and Kebelles/ ward administrations have their independent governance structure of having legislative, executive, and judicial organs. Two Kebelles/ ward administrations were taken randomly from each sub-city.

According to the city bureau of finance and economic development (2018), the city has a total population of 423,172. Based on (Morgan. K, 1970) sample size determination table, 382 residents with ages of more than 18 were considered for the study through systematic random sampling technique. A semi structured questionnaire was used to collect the quantitative data. An informative interview was also conducted with the mayor of the city, the head of the municipal council, and three sub-city administrators. Similarly, FGD was also employed with CBOs and CSOs leaders in the city. The mixed concurrent triangulation approach has been used to mix the quantitative data and results collected from the survey with the qualitative data and results obtained from interviews and FGD.

3.0 Results and Discussions

3.1 Respondents' Profile

From the sample respondents, 194 or 50.8% are male and the remaining 188 or 49.2% are female; similarly, 189 or 49.5% are younger age /18-35 and 193 or 50.5% are older age group /36-68; economically, 113 or 29.6% are people within absolute poverty their daily income is less than 1.9 USD, 232 or 60.7% are poor and low-income group their daily income is between 1.9 USD to 13.00 USD and the remaining 37 or 9.7% are high and middle-income group and their daily income is greater than 13 USD this economic classification is based on the World Bank 2019 revised poverty illustration for East Asia and Sub-Saharan Africa, a new threshold.

3.2 Respondents' level of participation

The researcher was asked of the respondents whether they were participating in any of the municipal governance and service delivery process in the last year and how often they were participating if not participating whether or not have the interest to participate; Hence, the survey result indicated that about 163 or 42.70% were participating in municipal governance and service delivery process in the last 12 months.

And this finding is consistent with the study result (Kimutai, Gilbert Kiplimo, Aluvi Patrick 2018) which was conducted in the Kisumu county of Kenya. And this is also somewhat less than the research finding of (Papa, R. O. 2016) that illustrates that 52.3% of the respondents asserted that they were participating in project development activities in the Busia County of Kenya; similarly, it is also much less than the (Safari, K.H, et al 2013) finding of Salamas city of Iran, where about 70% of respondents were replied that they were consistently participating in municipal affairs.

3.3 Inclusiveness as a measure of effective public participation

Literature works in the field of study and International Association of Public Participation (IAPP, 2007) asserts that inclusiveness is among the prominent legitimate measure of effective public participation); however, the survey result revealed that the public participation process of the city has a critical challenge concerning inclusiveness. Of the total 163 respondents who were participating in the municipal governance and service delivery process, 114 or 70% were female, 119 or 74% were older-aged and 113 or 69% were the poor and low-income groups were participating. This indicates that the male, the younger age and the two extreme economic groups have less level of participation. Regarding the economic status it is also consistent with (Friedman's 2006) clarification, he asserts that the poor cannot gain a voice through structured participation forums because they are usually disorganized and they cannot participate and they are fully engaged in their day-to-day personal life; unlike the poor of the poor people the high and middle income has less level of participation is because they do not have the time and they are busy in their daily business, but they have the interest to participate if they get convenient participation platforms like e-participation.

Though different factors are influencing the citizens' level of participation based on the key informant discussion and triangulated with the survey result citizens' level of social networking or social connectedness and citizens' level of public service satisfaction have a higher positive effect on the citizens' level of participation; Besides the FGD finding revealed that the other major factor that creates problem to have inclusive citizen participation in the city is failure to implement diverse channels of participation which is accessible to the diverse needs of the community.

3.4 Participation and social networking

As (Putnam. 1993) cited in Siisiainen, M. (2003) the social networking or degree of citizens' connectedness refers to what extent that the ordinary citizens are involved in the formal and local traditional associations in their localities. Accordingly, from 382 respondents of the survey respondents 218 or 57% are not involved in any of the association or not a member of any social networking, but 164 or 43% are members of any social networking there may also duplication, anyone who is a member of any political party can also be a member in any civic or local traditional associations. On the other hand, of 382 respondents of the survey study 163 or 42.7% were participating in municipal governance and service delivery process of the city the last 12 months similarly, from 163 respondents who were participating 147 or 90% were a member of any social networking or socially connected citizens.

Table 1. : Cross tabs of citizens' extent of participation and their level of social networking or social connectedness

			The extent of participation in municipal governance		Total
			Not participate	Participate	
Citizens' level of Social networking/ connectedness	Not member	Count	202	16	218
		% within social networking	92.7%	7.3%	100.0%
	Member	Count	17	147	164
		% within social networking	10.4%	89.6%	100.0%
Total		Count	219	163	382
		% within social networking	57.3%	42.7%	100.0%

(Source; Own: Survey 2021)

Thus, the researcher has been tested the relationship between social networking or social connectedness and citizens' level of engagement in the municipal governance process; hence the investigated result using Spearman's rho correlation coefficient as shown in Table 2- below. The result indicates that there was a strong positive correlation between the two variables, rho = 0.74, n= 382, p = 0.00 with a high-level citizens' social networking there will high-level citizens involvement in municipal governance and service delivery process. This is also consistent with (Ganesh Prasad Pandeya, 2015) that asserts the establishment of vibrant social networks has a positive impact on the citizens' level of participation in the local governance affairs. This reveals that the establishment of vibrant social networking has the power to have effective citizens' participation in the local governance process.

Table 2. : Spearman's correlation result between citizens' extent of participation and their level of social connectedness

Correlations				
			Social networking	The extent of participation in municipal governance
Spearman's rho	Social networking	Correlation Coefficient	1.000	.743**
		Sig. (2-tailed)	.	.000
		N	382	382
	The extent of participation in municipal governance the last 12 months	Correlation Coefficient	.743**	1.000
		Sig. (2-tailed)	.000	.
		N	382	382
**. Correlation is significant at the 0.01 level (2-tailed).				

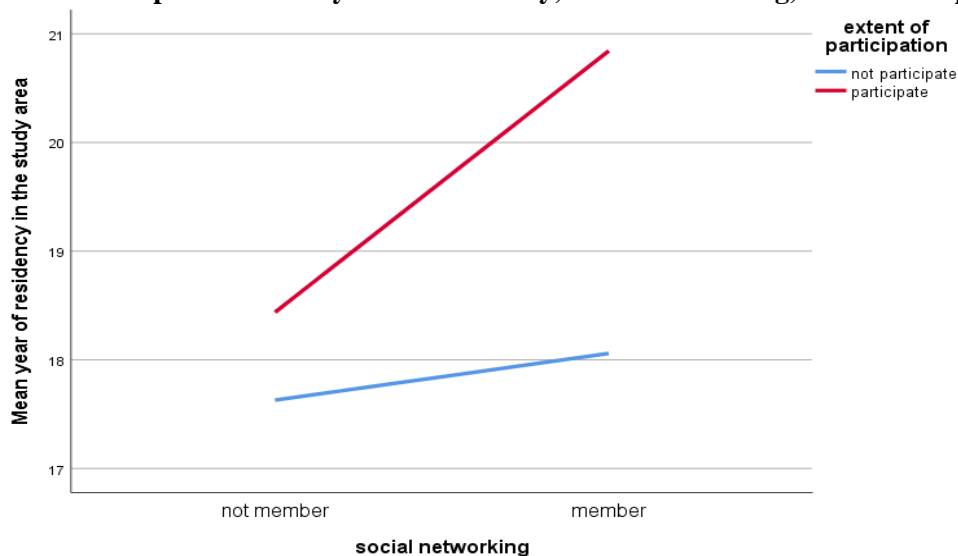(Source; Own: Survey 2021)

The survey result also shows that of the total 194 male respondents 50 or 30.5% are members in any social networking group; but, of the 188 female participants in the survey study, 114 or 69.5% are members in any of the social networking groups. Hence, the survey result indicates women in the study area were more socially networked than that of the male gender group.

Similarly, the study result indicates that the level of social networking increases with age level. The higher socially connected age group is the oldest age groups 36-68, which is about 62% of the old aged respondents are members of any formal or informal social, economic, and political organizations, whereas the level of social connectedness in the young age /18-36 is limited to 23% only. Thus, regarding the demographic features females and older-aged groups have a better social connectedness than the other counterparts; correspondingly their level of participation in the municipal governance and service delivery process is also higher than the other else.

Social networking and participants' year of residency in the city

The other variable which affects the extent of participation and social networking is the year of residency of participants; already it is statistically concluded that social networking or citizens degree of connectedness has a strong positive effect on the citizens' level of participation, on the other hand, citizens' year of residency also affects social networking and the level of participation in the other way round; i.e. as citizens' residency time in the city increases, they get a chance to strengthen their social relations and connectedness and this also increases their extent and frequency of participation in municipal governance and service delivery process.

Figure 2. Relationship between the year of residency, social networking, and level of pp

(Source Own Survey: 2021)

3.5 Participation and effective municipal service delivery variables

Based on table 3- below the correlation between citizens' participation and the effective municipal service delivery performance independent variables (demand-driven public projects and programs, improve service quality, timely accomplishment, improve a sense of ownership, and local resource mobilization). After full filling, the necessary assumptions of Pearson's product-moment correlation coefficient have been employed. The result indicates that there is a positive, strong, and moderate correlation between the citizens' level of participation in the municipal-governance process and the independent variables of effective municipal service delivery performance (demand-driven public projects and programs, improve service quality, timely accomplishment, improve a sense of ownership, and local resource mobilization). r=.709, r=.467, r=.496, r=.653, and r=.666 respectively; n=382,p<.01, with high levels of citizens' participation in the municipal governance process, there will a high level of the municipal service delivery performance independent variables.

Table 3. Pearson's Correlation between effective citizens pp and effective service delivery variables

		1	2	3	4	5	6
		Correlations					
Effective Citizens' pp	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	381					
Demand-driven projects	Pearson Correlation	.709**	1				
	Sig. (2-tailed)	0.000					
	N	381	382				
Improve service quality	Pearson Correlation	.467**	.528**	1			
	Sig. (2-tailed)	0.000	0.000				
	N	381	382	382			
Timely accomplishment of public projects & programs	Pearson Correlation	.496**	.802**	.482**	1		
	Sig. (2-tailed)	0.000	0.000	0.000			
	N	381	382	382	382		
Improve sense of ownership	Pearson Correlation	.653**	.743**	.495**	.540**	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
	N	381	382	382	382	382	
Local Resource mobilization	Pearson Correlation	.666**	.748**	.481**	.479**	.850**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	381	382	382	382	382	382

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

4.6 Citizens' perception of involvement and service satisfaction.

From the total 182 respondents who were responding a negative response that they are totally dissatisfied and unsatisfied by the service they get from the municipal government 168 or 92% were replying a negative response that the municipal government is totally un-involved and un-involved in the governance process; whereas from the 32 respondents who were replying that they are fully satisfied and satisfied with the service, they obtained only 1 or around 3% responded the government is uninvolved /negative response; this clearly shows how the citizens' perception of involvement is associates with the citizens' perception of service satisfaction. This is also parallel with research finding of (Abraham. 2013), the study result revealed that the citizens' level of satisfaction with service delivery is low shows not more than 40% of ordinary citizens are happy with the current type of projects undertaken, the cost they incurred, the completion rate and overall project management. This also corresponds with a low perception of citizens' involvement in the project management cycle.

Thus, local officials like municipal leaders and city planners' should be considered citizens as a vital resource that can contribute to improving the quality of life through involvement in the overall design, implementation and delivery of public services.

Table.4- Cross-tabulation between citizens perceived level of participation and service satisfaction

		How do you rate your level of service satisfaction with the city?					Total
		TDIS	DIS	NET	SAT	FSAT	
How do you rate the current participation performance of the city?	Totally un-involved	31	20	4	0	0	55
	un-involved	3	114	18	1	0	136
	Neutral	0	14	136	5	0	155
	Involved	0	0	9	25	0	34
	Fully involved	0	0	1	0	1	2
Total		34	148	168	31	1	382

TDIS (Totally dissatisfied), DIS(Dissatisfied), NET(Neutral),SAT(Satisfied),FSAT(Fully satisfied).

(Source; Own: Survey 2021)

Figure 3 . Relationships between participation and citizens' perception of service satisfaction
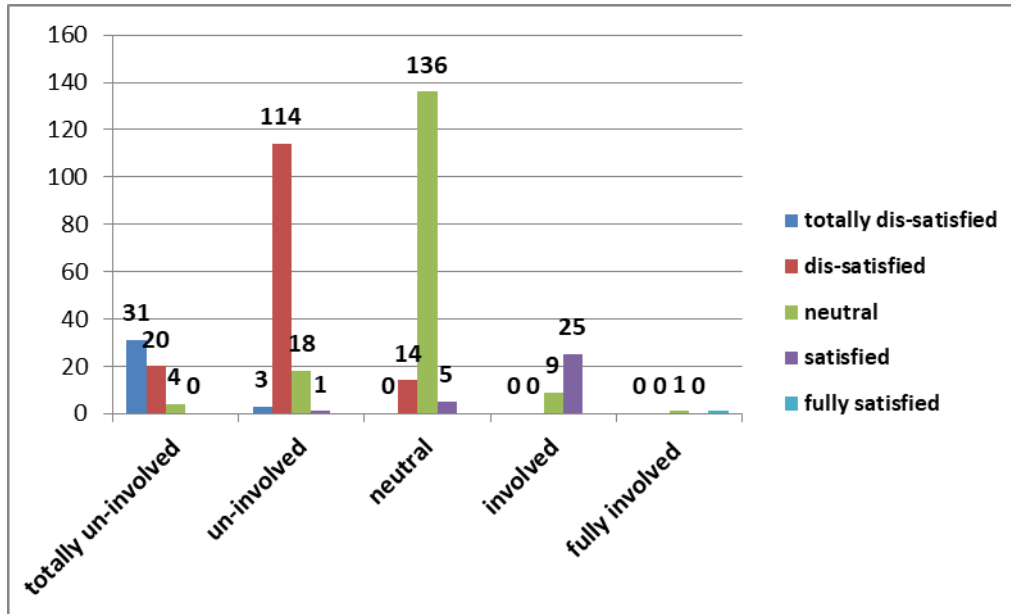
(Source Own Survey : 2021)

Similarly, the researcher has been tested the relationship between perceived levels of citizens' service satisfaction and extent of participation in the governance process; hence the investigated result using person moment correlation coefficient as shown in Table 5- below. Preliminary analysis was performed to ensure no violation of assumptions which fulfill for this analysis and it includes linearity, normality, and homoscedasticity. The result indicates that there was a strong positive correlation between the two variables, $r = 0.77$, $n = 382$, $p = 0.00$ with a high level of service satisfaction there will a higher level of perceived citizen participation in the governance process and vice-versa; this finding also supports (Heywood, 2007) which asserts that the effective cooperation of the municipal officials and the ordinary citizens could drive synergy where the optimal provision of public service better quality is achieved.

Table.5- : Pearson's correlation test result of citizens' perception of service satisfaction and levels of involvement

Correlations			Total_pp	Total_ssat
Total perceived level of participation		Pearson Correlation	1	.778[**]
		Sig. (2-tailed)		.000
		N	382	382
The total level of Perceived service satisfaction		Pearson Correlation	.778[**]	1
		Sig. (2-tailed)	.000	
		N	382	382
**. Correlation is significant at the 0.01 level (2-tailed).				

(Source; Own Survey: 2021)

Citizens' degree of participation and municipal service satisfaction

As indicated in the table below; of the total 163 respondents who replied that they were participating in the municipal governance process 47 or 28.8% are level one or they are informed what government decisions are / one-way communication; 83 or 50.9% were replying that they are at level two or consultation /two-way communication and 33 or 20% of the respondents are replying that they are at level three or collaboration / deciding together.

Table.6-Cross tabs between citizens' degree of participation and perceived level of service satisfaction

Citizen participation in the municipal governance process * degree of pp Cross tabulation						
			Degree of pp			Total
			Inform = level 1	**Consult =level 2**	**Collaborate =level3**	
Citizens pp in the municipal governance process	PP	Count	47	83	33	163
		%	28.8%	50.9%	20.2%	100.0%
Total		Count	47	83	33	163
		%	28.8%	50.9%	20.2%	100.0%

(Source; Own Survey: 2021)

Similarly, Table 7- below indicates the correlation between the citizens' level of participation in the municipal-governance and its corresponding service satisfaction. The correlation was investigated using Spearman's correlation coefficient. The result reveals that there is a strong positive correlation between the levels of citizens' pp and citizens' perceived service satisfaction r=.637 N=163, p=<.01, with a high degree of citizen participation there will a higher level of citizens' perceived municipal service satisfaction. This research result also supports the study finding of (Bostance, B., and Erdem, N. 2000) In Nyagna township Cap Town in South Africa. The finding revealed that as citizens' level of participation in water governance increases from no participation to citizens' power of Arnstein's theory of participation; citizens' level of water service satisfaction also significantly improves.

Table.7 : Spearman's correlation between citizens' degree of participation and perceived municipal service satisfaction

Correlations			Degree of pp	Service satisfaction
Spearman's rho	Degree of pp	Correlation Coefficient	1.000	.637[**]
		Sig. (2-tailed)		0.000
		N	163	163
	Service satisfaction	Correlation Coefficient	.637[**]	1.000
		Sig. (2-tailed)	0.000	
		N	163	382
**. Correlation is significant at the 0.01 level (2-tailed).				

(Source; Own: Survey 2021)

The researcher has been tested the level of citizens' perceived municipal service satisfaction across the three degrees of citizens participation; Kruskal Walis H test has been used thus, as indicated in the table below the mean rank for the three degrees of pp were 51.19, 79.43, and 131.29 for levels of 1, 2 and 3 respectively; Hence, with (N=163; statistical result=70.44; df2, p=0.00 it is justifiable to reject the null hypothesis and to conclude that the extent of perceived citizens' municipal service satisfaction is significantly different across the three degrees / hierarchies of citizens' participation process. The highest level of trust towards municipal government and corresponding service satisfaction was registered at the highest level of hierarchies. Based on Arnstein's theory of the ladder of participation, citizens have to be promoted to get engaged and participate in ways that further up the ladder.

Table.8 : Kruskal Walis H test of citizens' degree of participation and perceived level service satisfaction

Ranks			
Degree/ Hierarchies of citizens pp		**N**	**Mean Rank**
Perceived levels of citizen service satisfaction	Inform= level 1	47	51.94
	Consult =level 2	83	79.43
	Collaborate=level3	33	131.29
	Total	163	

Test Statistics[b]	
	Service satisfaction
Kruskal-Wallis H	70.444
Df	2
Asymp. Sig.	0.000
a. Kruskal Wallis Test	
b. Grouping Variable: the degree of pp	

Source; Own: Survey (2021)

Table 9 : The Kruskal Walis H test result of degree of citizen participation and their perception of trust and municipal service satisfaction

Ranks			
	degree of pp	**N**	**Mean Rank**
level of trust towards municipal governance	inform= level 1	47	32.14
	consult =level 2	83	89.51
	collaborate=level3	33	134.12
	Total	163	

level of municipal service satisfaction	inform= level 1	47	40.62
	consult =level 2	83	86.96
	collaborate=level3	33	128.45
	Total	163	

Source; Own: Survey (2021)

Figure 4 Arnstein's ladder of participation nexus to respondents' level of service satisfaction
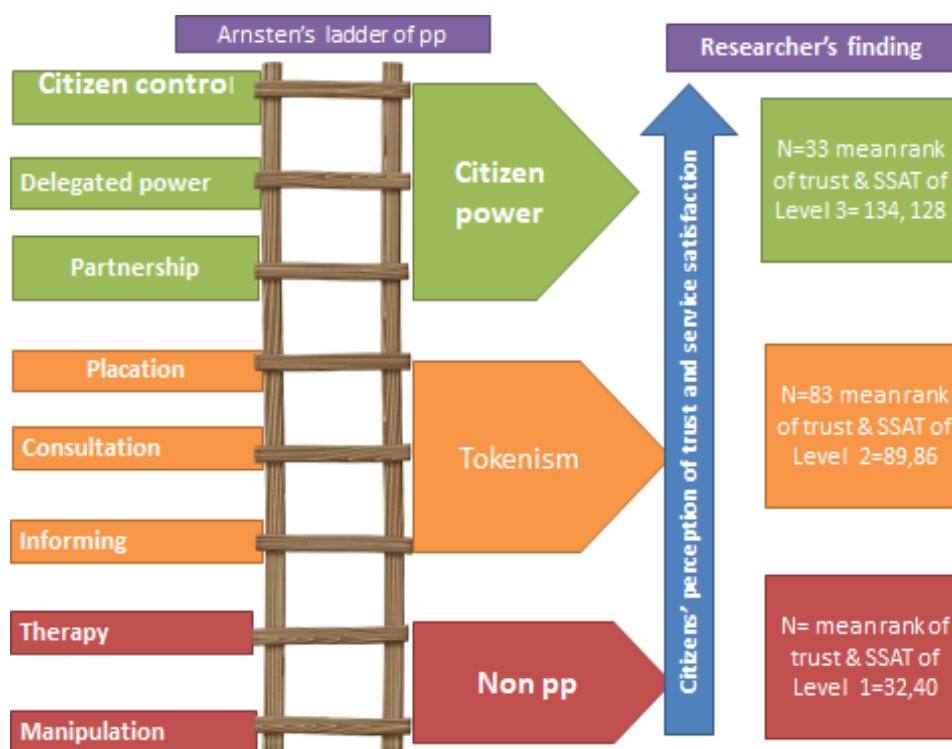
(Researcher's development 2021)

5.0 Conclusions

Citizens' level of participation in the study area is not inclusive the male, the younger age and the poorest groups have less level of participation than the other counterparts; the main reason to have a less participation level is because of their poor level of social connectedness, deprived municipal service satisfaction and lack of diverse channel of participation by the municipal government.

Relatively female, older aged and higher income groups are more socially connected than the other else; citizens' year of residency also has a positive effect on citizens' social networking.

The study critically investigates the roles and implementing challenges of public participation in terms of municipal service delivery process and performance. Though, the debate about the need for public participation in improving municipal service delivery process and performance took a long time; this study confirms the positive role of citizens' participation in municipal service delivery for the Mekelle city of Ethiopia. Those citizens with a higher level of involvement in the municipal governance process also greater perceived service satisfaction and vise-versa

The findings of this study have a significant implication to urban managers and city planners to have an effective participation towards collaborative governance and effective municipal service delivery process and performance.

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A Case Study On
The Environment Management System of Bauxite Mine

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Abstract: Western Ghats consist of high-rising hill ranges with extensive plateaus and are dissected by narrow valleys. Trellis drainage pattern is seen on the flat top and dendritic drainage on hill slopes. Several first-order streams of seasonal nature originate at higher elevations, and streams become perennial at lower elevations. The Western Ghats have a very high biological diversity. The Western Ghats also hosts economically site-specific recoverable ore mineralization like bauxite, iron ore, manganese, and several other minor minerals. The present study is restricted to the reclamation and rehabilitation of the bauxite mined-out area of the Dhangarwadi mines of Hindalco Company as part of the Progressive Mine Closure Plan. Hindalco Company has taken all possible precautions and protection measures for the conservation of natural resources and the environment by planning, implementing, and post-monitoring in the light of a sustainable development framework.

Key Words : Mining, Environment Quality, Plantation, Reclamation & Rehabilitation

Introduction:

Hindalco Industries is one of the leading producers of aluminum in the country. The Company's business involves bauxite mining to alumina refining. Alumina metal conversion, sheet, extrusion, and foil manufacturing are spread all over the country. The Company operates several bauxite mines in Maharashtra, Orissa, Chhattisgarh, and Jharkhand to feed the Alumina Plants located in Belgaum, Renukoot, and Muri. Hindalco is a Public Limited Company. Governmental Maharashtra has sanctioned a mining lease for the production of bauxite over an area of 41.80 Ha. for 30 years,at village Dhangarwadi (16°54'23.91742" N & 73°51'08.21277 "E), TalukaShahuwadi of Kolhapur district of Maharashtra. The total mineralized area is 32.3 Ha. out of a total leased area of 41.80 Ha. The location Plan of the study area is given in Figure No. 1.

Fig.- I : Location map with environmental monitoring stations.
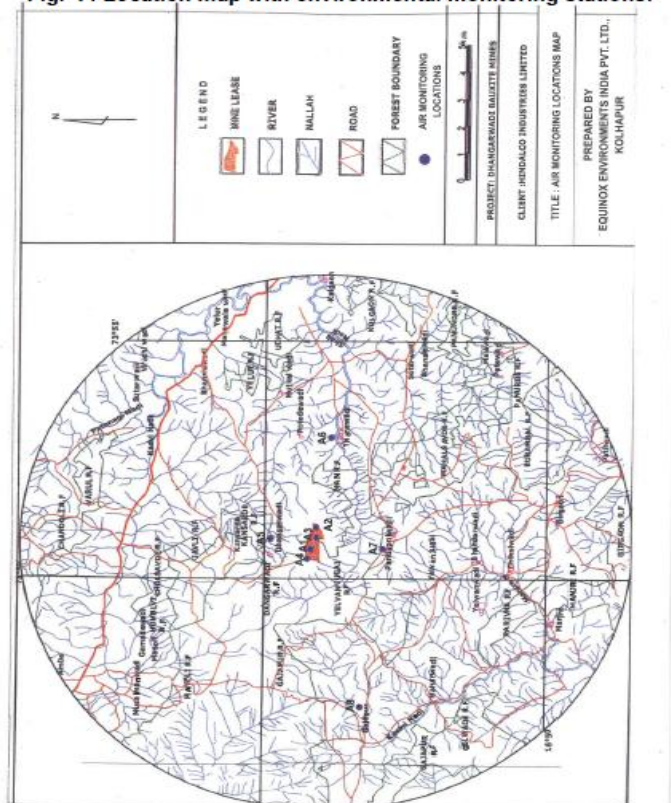
The Company has obtained Environmental Clearance from the MoEF for producing 6,00,000 TPA of bauxite and Consent to Operate from the Maharashtra Pollution Control Board. The mining

operations at Dhangarwadi bauxite mine started with infrastructure development from 2009 -2010, but the actual production of bauxite started in March 2012, and mining operations were suspended in 2019.

India is home to 1,531 operating mines, including open cast and underground mines that produces 95 minerals – 4 fuel-related minerals, 10 metallic minerals, 23 non-metallic minerals, 3 atomic minerals, and 55 minor minerals (including building and other materials, and the recently notified 31 additional minerals). The area occupied by mining in India is just less than 2%. Area occupied. The space occupied by major and minor minerals is approximately 60% and 40 %, respectively. Mining is one of the core sectors that drive growth in an economy. Not only does it contribute to GDP, it also acts as a catalyst for the growth of other core industries like power, steel, cement, etc., which, in turn, are critical for the overall development of the economy. Analysis has shown that every one per cent increment in the growth rate of mining and quarrying results in 1.2 – 1.4% increment in the growth rate of industrial production and, correspondingly, an approximate increment of 0.3 percent in the growth rate of India's GDP (FICCI, 2013).

Mining activities bring changes in the natural topography, which results in restrictions on the possibilities of using the land for other purposes, changes in the hydrogeological conditions with consequences for both groundwater and surface water, and changes in the geotechnical conditions of the rock .At the same time, Illegal small-scale mining in surrounding mines leads to increased erosion and loss of viability for agricultural purposes, among other uses; increased clearing of vegetation for mining areas has adversely altered the hydrological regimes (Albert K. Mensahet al.2015). Vegetation is important in protecting the soil surface from erosion and allowing the accumulation of fine particles (Tordoff et al. 2000; Conesa et al. 2007b). They can reverse the degradation process by stabilizing soils through development of extensive root systems. The plants accumulate these nutrients and redeposit them on the soil surface in organic matter from which nutrients are much more readily available by microbial breakdown (Conesa et al. 2007a; Mendez and Maier 2008a).

The mining disrupts the aesthetics of the landscape along with it disrupts soil components such as soil horizons and structure, soil microbe populations, and nutrient cycles that are crucial for sustaining a healthy ecosystem and hence results in the destruction of existing vegetation and soil profile (Kundu and Ghose, 1997). The overburden dumps include adverse factors such as elevated bioavailability of metals, elevated sand content; lack of moisture; increased compaction; and relatively low organic matter content. Acidic dumps may release salt or contain sulphidic material, which can generate acid-mine drainage (Ghose 2005). The effects of mine wastes can be multiple, such as soil erosion, air and water pollution, toxicity, geo-environmental disasters, loss of biodiversity, and ultimately loss of economic wealth (Wong 2003; Sheoran et al. 2008). In mined areas, the overburden dumps exhibit a completely modified ecological system, and the mine spoil lacks most of the physical, chemical, nutritional, and biological characteristics of normal soils. Eco-restoration is a complex and long-term process and requires a fundamental understanding of ecosystem structure and function, including the process of primary as well as secondary succession (Connell and Slatyer 1977; Thomson et al. 1984; Gibson et al.1985). Land reclamation in India has traditionally been associated with the reclamation of saline and sodic agricultural soils . However, within the last few decades, there have been numerous attempts to restore lands disturbed by mining to an acceptable or useful vegetative condition.

Materials and Method:

The Company has obtained necessary legal permission to produce bauxite for its captive consumption from the Ministry of Government of Maharashtra and the Government of India. Mine is well explored to understand deposit qualitatively and quantitatively with its shape to design mine planning. Opencast mine planning is carried out to exploit shallow, occurring ore deposits. Traditional cross-sectional and slice methods are adopted for mine planning. The mining Plan (MP) for the year-wise development & production of bauxite and the Progressive Mine Closure Plan (PMCP) prepared by the Company was approved by the Indian Bureau of Mines. The

Company implemented the approved plan in terms of production, reclamation & rehabilitation of the mined out pit. The environmental monitoring every quarter with respect to the quality of water, groundwater fluctuation, noise, air, and soil in the core zone and buffer zone of 10km. radius around the mine through Green Envirosafe Engineers & Consultants Pvt. Ltd. Pune. Year-wise plantation in the mined-out pit was carried out by using local plant species.

Result and Discussion:

Dhangarwadi plateau shows two types of bauxite deposits viz

1. Blanket deposit: The bauxite deposit is a blanket-type residual deposit formed by in-situ residual weathering of alumina-rich basaltic rocks, typically under tropical/sub-tropical climatic conditions. The blanket deposit is confined between 1010 M to 1020 M. MSL. The thickness of the blanket deposit type of bauxite varies between 6 to 8m.

2. Float Type of deposit: Geological Survey of India and the Directorate of Geology and Mining reported that float boulders are eroded from the main plateau and moved to variable distances due to rainwater. We confirm and propose that boulders are not eroded from the main plateau due to rainwater, but there is a retrenching of the plateau due to differential weathering of hard capping and soft clay at the bottom. Lithomarge clay has been eroded easily and faster, leaving behind upper hard capping as support less which subsequently collapsed. This phenomenon continued over time, leaving behind continuous and systematic boulder formations along the slope in the entire lithomarge clay profile. The thickness of float varies between less than 0.5m to 3m. In addition to many other features, the absence of erosional features in the boulders and recovery of boulders as estimated all along the contours, strongly supports retrenching plateau rather than the erosion of boulders from the plateau.

Environment Management:

The Company has Environment Management System in line with ISO14001 implemented and monitored effectively. Policy reiterates the Company's commitment to conserve resources, reduce fugitive emissions, perform more than statutory conditions in mitigating operational impacts on the environment and create awareness about environment management among employees and the surrounding community.

Top Soil Management:

The Bauxite plateau is a barren land devoid of trees except seasonal flowering plants i.e, angiosperms. The topsoil generated (if any) is properly collected at the development stage and immediately used for spreading over the backfilled mined-out area before carrying afforestation.

Air Quality Management:

Drilling operations are being carried out with the support of a mist water jet (wet drilling) to avoid airborne dust. Water is sprinkled in and around working faces and also on haul roads within mine using 2 Nos. of water tankers. The mobile screening plants' feed points and discharge ends are provided with sprinklers to reduce dust suppression. Workers exposed to dust areas were provided with dust trap PPEs. The Air quality testing was carried out during the summer, post-monsoon, and winter seasons of every year by monitoring eight locations and analyzing for PM10, PM2.5, SOx, and NOx levels as per statutory requirements. The data for the summer season 2019 is presented in this paper. The ambient air Quality in the core and buffer zone is given in Table no. 1.

Table No. 1 : Quality of ambient air in the core and buffer zone

Zone	Location	Particulate matter Microgram/cu.m				Gases Microgram/cu.m			
						S0$_2$		NO$_x$	
Season summer 2019		PM10 (size <10 micron m)		PM2.5 (size <10 micron m)		Min	Max	Min	Max
		Min	Max	Min	Max				
Core Zone	A1. Mine Pit area	46.2	70.1	13.7	23.1	13.5	20.0	23.1	28.9
	A2. Near dump	47.6	71.1	13.7	22.7	12.1	17.3	15.2	22.0
	A3.Haulage Road	55.4	70.4	15.5	21.3	12.4	18.5	15.0	27.0
	A4. Near office	59.9	70.5	18.5	23.1	12.4	19.5	18.0	21.6
Buffer Zone	A5. Dhangarwadi	49.5	65.4	13.9	21.8	12.8	16.4	18.2	22.0
	A6. Thanewadi	45.7	66.1	12.7	21.3	11.9	18.7	15.4	22.7
	A7. Pandapnwadi	49.8	67.4	14.5	21.5	12.2	21.4	16.5	21.9
	A8. Gajapur	50.8	64.7	16.7	21.7	12.5	20.4	15.0	22.0

There are four AAQ monitoring stations in the core zone (A1 to A4) and four in the buffer zone (A5 to A8). The location of the sampling stations is given in Figure No. 1.

The maximum value of PM10 in the core zone during the working mine was in the range of 70.19 to 71.1 microgram / cu.m against recommended standard of 100 microgram / cu.m and PM2.5 was 21.3 to 23.1 microgram / cu.m. against recommended standard of 60 microgram / cu.m . Similarly, in the buffer zone PM10 was in the range of 45. to 50.8 microgram / cu.m and PM2.5 in the range of 11.9 to 12.8 microgram / cu.m.

The maximum value of SO2 in the core zone during the working mine was in the range of 17.3 to 19.5 microgram / cu.m. whereas in the buffer zone, SO2 level ranged from a 16.4-2microgramrgram / cu.m to 12.7 – microrgram / cu.m. In both cases, SO2 values are within the permissible limit of 80 micr0gram / cu.m.

The maximum value of NOx in the core zone and buffer during the working mine was in the range of 21.6 to 28.9 microgram / cu.m and 21.9-22.7 micr0gram / cu.m, respectively. In both cases, NOx values are within the permissible limit of 80 microgram / cu.m.

The values obtained were compared with the revised Ambient Air Quality Standard given by the Ministry of Environment and Forests (2009).

The Ambient Air Quality (AAQ) during the mining operations was maintained within the permissible limit due to the proper arrangement of the dust suppression system, proper maintenance of the gradient of the hauling road, regular maintenance of mining equipment and also coverage of all ore transporting trucks with tarpaulin at the loading point itself to avoid spillage or ore on the road . The Company has dedicated water tankers for dust suppression all along the loading point. Due to this, the SPM levels in the working area and the buffer zone, are maintained within the permissible limit. There is hardly any impact of mining activities on the AAQ. The proper gradient of the hauling road is maintained with dust suppression to suppress the dust generated during the production and movement of bauxite transporting trucks. The mobile crusher inbuilt built dust suppression system.

Noise monitoring data for the summer season of 2019 carried from 6 am to 10 pm is given in the following Table No. 2.

Table No. 2 : Noise Monitoring data in the core and buffer zone

Location	Av.Value Leq10	Av.Value Leq50	Av. Value Leq 90
N1. Mine Pit area	54.1	60.8	62.1
N2. Near dump site	53.4	58.1	60.9
N3. Near Haulage Road	56.0	60.8	63.0
N4. Near office	54.4	58.6	59.9
N5. Dhangarwadi	40.6	45.7	48.5
N6. Thanewadi	40.2	45.0	48.5
N7. Pandapnwadi	41.0	46.4	48.8
N8. Gajapur	42.0	46.6	49.6

Noise values obtained in the core and buffer zone are compared with the noise level standard prescribed by Noise pollution (Regulation and Control) (Amendment) Rules 2000 and are found to be within the limit of 75 dB(A) Leq. Blasting was carried out by using Nonel technology to reduce ground vibration and noise pollution. Drillers are provided with ear muffs and a mist water jet (wet drilling). Adequate Personal Protective Equipment (PPEs) is provided to employees working in the mines. The Mining Machineries are periodically maintained in good condition.

Water Management:

There are no major perennial and seasonal water sources in the lease area. There is no possibility of encountering a groundwater table in mine workings as the ultimate depth of mining is within 10-12m, and the groundwater table is below 35 to 45m in the mine lease area i.e, contact zone of lithomarge clay and basalt. Hence, water management is restricted only to surface water during rainy seasons.

Mine area receives heavy rainfall during monsoon season, and mining stops during monsoon season almost for four months, from June to September. Due to torrential rains controlled by SW monsoon, all the nallahs / streams originating from the hill slopes get flooded. During the last four years variation in rainfall was 2133 mm, 3032mm ,4590 mm and 5481mm (2018). During the last four years, minimum rainfall was 2133 mm, and maximum rainfall was 5481mm. with an average of 3809.66mm.. Almost 2000 m garland drain is constructed all along the lower side of the lease area, and a series of silt check dams are also constructed in the valley portion to arrest the erosion of silt from mine runoff water during the rainy season. Water quality is monitored to test the efficiency of the garland and check dams.

The quality of Mine pit water is described in the following paragraph:

The pH of the water varies between 7.05 to 7.25, and the permissible limit is 6.6 to 7.5

Dissolved Oxygen (DO) which is temperature dependent varies between 6.0 to 6.7 mg/l. Desirable limit is 5.00 mg/l for the survival of aquatic life and Biochemical Oxygen Demand : 3.2 to 4.01 mg/l.

Total hardness of water was found to be in the range of 71.48 to 95.47 mg/l. By and large, water is soft to moderately hard. The chloride of the water sample collected in the study area was found to be in the range of 17 mg/l to 27.0 mg/l. The IS 20500 standard for chloride is 250 mg/l.

The iron content of the water was found to be in the range of 0.07 mg/l to 0.6 mg/l. As per IS 10500 standard for drinking water, the desirable limit is 0.3 mg/l, and the maximum permissible limit is 1.0 mg/l.

Being an open-cast mine and high rainfall area, the Total Suspended Solids (TSS) is a major cause of concern. The company has taken care to construct check bunds, and garland drains in the

working area so that erosion of silt can be minimized. The TSS of mine water sample analyzed during the rainy season showed values in the range of 50.61 to 56.4 mg/l The maximum permissible limit is 100 mg/l. and turbidity is 0.2 to 0.54 NTU. (< 5NTU).

All the heavy metals are either below the detection limit or much less than the permissible limit.

There is no hazardous waste to be discharged from the mine. During the rainy season, runoff water from the mine is channelized to flow through the garland drains into silt check dams and then flow into the nearby streams. Rainwater flowing through the mine is neutral.

Mining operations are suspended during the rainy seasons. The rainwater accumulated during the rain in the mined-out pits gets infiltrated into the lithomarge and there is no need for pumping of mine water for the production of bauxite. The company has constructed garland drains of 2000 m and a series of check dams to arrest silt from the rainwater flowing out of the mine during the rainy season. Water quality parameters are within the permissible limit. Mining operations suspended from 1st June to the end of September every year to minimize the adverse effect during the rainy season and also due to the high moisture content in the bauxite. The mine water requirement is around 90 cu.m. per day which is partly met by rainwater harvesting and partly drawn from the bore well.

Waste Management:

Overburden/Associated waste rocks generation in the mine is mainly the top soil cover over the ore up to 1m thick and associated soil with float ore zone, which is 2-3m thick. No external dumps are in the mine, as the waste generated in the mine is completely used for concurrent backfilling of the mined-out pits.

Hazardous Waste: As the mine is being operated by deploying contractual machineries, no garages and maintenance are required in the mine. The hazardous waste generated in the mine is restricted only to electronic waste. Contractual machineries are maintained in workshops in nearby villages. Even though there is little scope of provisions for hazardous waste, the mine has obtained authorization under the provision for collecting, storing, handling and disposing off through authorized vendors.

Reclamation and Rehabilitation of Mined out area: The Company has adopted three restorations models for the reclamation of mined out area

1. Grassland
2. Plantation by using local species
3. Water bodies (Only for insitu mined out area)

The grasses commonly used are Cyperusrotundus, Cynodon dactyl, Jasminummmalabaricum, Pterisacqurina and Cyperusbulbosus. Name of local plants used for the reclamation of mined out pit is given in table No. 3 .

Table No. 3 : Name of local plants used for the reclamation of mined out pit

Sr. No.	Common Local Name	Botanical Name
1	Bakul	Mimu sops elengi
2	Bahuniyan	Bauhinia
3	Chiku	ManikaraZapota
4	Chery	PrunusAvium
5	Peru	Psidiumguajava
6	Gholi	Portulacaoleracea
7	Hadaka	Sesbaniagrandiflora
8	Umbar	Fucusglomerata

9	Bava	Cassia fistula
10	Anjan	Memecylonumbellatum
11	Govonda	ButeaMonosperma
12	Apata	Bauhinia racemosa
13	Limbu	Citrus limon
14	Kokam	Garciniaindica
15	Kanchan	Bauhinia variegate
16	Shiras	AlbiziaLebbeck
17	Kashid	SennaSiamea
18	Gulmohar	Delonixregia
19	Pishali	Kalanchoepinnata
20	Bhoma	Glochidionellipticum
21	Kumbha	Careyaarborea
22	Hirda	Terminaliachebula
23	Karanj	Ongamiaglabra
24	Gilshidi	Gliricidia
25	Silver Oak	Grevillearobusta
26	Kanchan	Bauhinia variegate
27	Platopharm	Peltophorum
28	Fanas	ArtocarpusHeterophyllus

Year-wise, the overburden generated is simultaneously backfilled into the mined-out pit ,levelled, and then Plantation of local species is carried out as a part of the Progressive Mine Closure Plan. The total Mining Lease (ML) area is 41.8 ha. out of which the Mineralized area is 32.0 ha. The actual mined-out area is 30.0 ha, and the area developed for mining is 2.0 ha. Year wise reclaimed and rehabilitated area by Plantation of 61,700 saplings over an area of 28.0 ha . @ of 2200 saplings per ha. For Plantation, Pits are dug at a spacing of 2 m x 2 m (density of 2500 trees/ha). The pit size is 2 ft x 2 ft x 1.5 ft deep for tree species and 1 ft x 1 ft x 1 ft for shrub species

Post-plantation care included regular watering, weeding, and the addition of vermicomposting. The survival rate is almost 80% to 90%. About 0.1 ha of the mined-out area has been converted into a water body. A safety zone of 7.5m with fencing is maintained all along the lease boundary to prevent the erosion of mined-out material, protection of pits, and also to maintain the original plant diversity of small flowering plants. The total bauxite profile at the Dhangarwadi bauxite mine is only about 10m, including 4 to 5m of lateritic overburden and about 6m of bauxite. The entire lateritic overburden is backfilled into the mined-out area. After mining and backfilling, the elevation difference between the original topography and the altered topography is only about 5m.

Corporate Social Responsibility (CSR) : The Company has contributed significantly towards community development on year on year basin as a part of Corporate Social Responsibility activity. Details are given in the following paragraphs :

Spreading awareness among villages to encourage formal education for children.Special literacy drive for women & girls. The company endeavours to spark the desire for learning & knowledge at every stage through formal schools, Balwadis, for elementary education.
The company carries out the CSR activities like the construction/renovation of the school building and providing school uniforms & books. Organizing a career counselling program, supporting the school by providing computers for e-learning projects, and awarding scholarships to meritorious students. The company provides free medical services to needy people through our Mines dispensary. The company provides ambulances to the villagers for medical emergencies. The company regularly conducts health check-up camps and distributes free medicines. The company has formed Self-Help Group (SHG) at nearby villages and provides vocational training to the SHG women. Now, these SHG women actively participate & running Milk co-op dairy, Mushroom

cultivation, handicraft, Embossing, etc. The company is continually providing safe drinking water to the nearby hamlets and coordinating animal husbandry and cattle vaccination programs. The company has constructed roads, gutters, and latrines, installed street lights, pick up shed, community halls & houses, repairing the tribal community.

Conclusion: The Dhangarwadi Bauxite mine has adopted opencast mining operations as the bauxite profile is only about 6m thick. There are no external dumps as the entire overburden is backfilled into the mined-out area. The total mineralized area is 32.3 Ha. out of a total leased area of 41.80 Ha. Mined out area reclaimed is 28.0 ha with a total plantation of 61,700 local plants with a survival rate of 80% to 90% and also 0.1 ha of a water body. The Company has implemented an effective Environment Management Plan to maintain the quality of ambient air, noise, and water within the permissible limit. The efficiency of silt Check dams and garland drains is checked periodically with regular desilting.

Fencing of the entire mining lease area and water body is carried out and maintained 7.5 m safety zone as per the Mines Safety Act. The Company has significantly contributed towards community development in the nearby villages as part of its Corporate Social Responsibility (CSR) and contribution to the District Mineral Foundation (DMF) . Though the mining operations are suspended, the process of reclamation and rehabilitation remaining mined area and Plantation as a part of gap filling in the existing Plantation of the mined-out area is in progress to achieve a 100% survival rate. The Company has implemented an effective Environment Management Plan to ensure the least adverse environmental impact.

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Security Model for Banking Domain Based on Cardless QR Code Transactions

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Abstract: In the modern digital era, traditional banking is slowly becoming obsolete and is being replaced with mobile banking which has resulted in improved customer service in a banking sector. Convenient banking enables the customer to perform the financial transactions from anywhere at any time irrespective of the time zone and the geographical location where the customer is located. At the same time mobile apps are growing to be more and more power day by day offering a wide range of services to the end users. This prevents a customer from physically visiting the bank of availing different services. However, all this does not come for free. There is a cost involved. Convenience comes at the cost of security breaches. If the proper security measures are not taken care of in the design of mobile app it will have adverse effects which can prove to be costly in the long run. In the current research the authors have designed a model for secure banking solution based on QR Code transactions and QR Code based wallet. The encryption key is selected with an objective of key space minimization. The different RBI norms are integrated into the model to render it acceptable by any authorized bank. The layered security model is designed to address various security vulnerabilities that might creep in during transaction processing.

Keywords: ATM, Authenticity, Card-less Cash, Confidentiality, Integrity, Mobile Banking applications, QR code.

1.0 Introduction

The innovation of a mobile banking app has eliminated the need for physically visiting the bank by enabling the execution of any financial transaction such as inter or intra bank funds transfer, UPI, e-Passbook, bill payments and ticketing, mini account statement, branch locator, ATM locator etc. remotely irrespective of time zone and geographical location with a single button click. Hence the customers can reach their respective banks virtually through their mobile phones.In the COVID-19 pandemic situation financial transactions using Mobile Banking Apps became more popular (Varsha Agarwal 2020, Singh et al 2017).

2.0 Literature Review

There is lot of research currently being actively carried out in integrating security with banking solutions. Most of this work focuses on card-based transactions. For standardizing the mobile operations and securing the transactions RBI has brought out a set of operating guidelines to be adopted by all banks which are interested in rendering their services through their mobile apps. After downloading and installing a mobile banking app on mobile device, users can perform various financial transactions (Parul Deshwal 2015, Reshma S. et al 2017, Mirjana P. B. et al. 2020). Newly added services include one of card-less cash transactions. Several banks have launched the 'Card-less Cash Withdrawal' facility in their ATMs. Customers can withdraw cash securely and conveniently from ATMs. This facility can be used only on the respective bank's ATMs. iMobile by ICICI also allow Cash withdrawal at the local shop. Around 5 lakh local shops avail this facility. No other bank has this facility of card-less cash withdrawal at local shops. HDFC allow card-less cash withdrawal using net-banking facility. Option of providing QR based card-less ATM cash withdrawal service is also made available by SBI using YONO Lite App (Calin-Mihai Istrate 2014, Khaled Aldiabat et al 2019, Saprikis, V. et al. 2022).

3.0 Design of a Model for Secure Banking Transactions based on QR Code

The current research is divided into the following phases:

Phase 1: Selection of Encryption key with an objective of keyspace minimization.

In the current research authors employ asymmetric key encryption based on Public Key Infrastructure (PKI) for securing a QR Code in which a public/private key pair is generated by the sender. Either of the key can be used for encrypting the message. The message which is encrypted using public key can only be decrypted using the corresponding private key and vice-versa. For asymmetric key encryption RSA algorithm based on modular arithmetic is a good choice. However, as recorded in history on two occasions RSA algorithm has been compromised for the key sizes of 256 bits and 512 bits. Hence the only secure and reliable key size is 1024 bits. The same security can be achieved using Elliptic Key Cryptography (ECC) for the key size of 160 bits. Hence there is a huge reduction in key space by ~84% if RSA algorithm is replaced with ECC algorithm. As the no. of transactions grow exponentially, it would result in huge preservation of key spaced as depicted in Fig 1.

Fig 1. Key Space Minimization
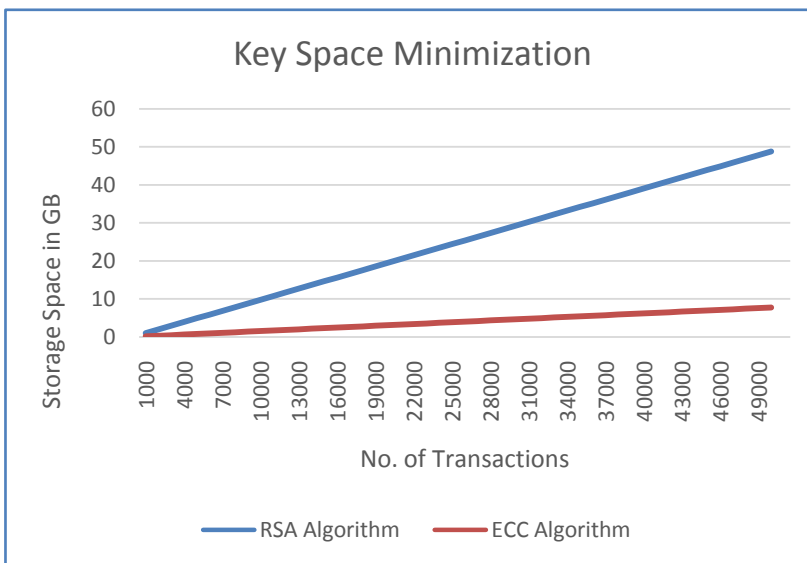
A word of caution. None of the encryption algorithms existing today are quantum immune. If the quantum computers are realized in future, the entire crypto system is going to break and the entire crypto system needs to be redefined. The active research is being conducted in both these areas of quantum computing and security implications of quantum computing. The solution is based on N-dimensional lattice theory.

Phase 2: Integration of few prominent RBI norms in the model implementation.

This phase focuses on few prominent RBI norms employed during the implementation of the mobile banking app:

1. Frequent connections to the bank server must be avoided.
2. Technology used for mobile banking must be secure and should ensure confidentiality, integrity, authenticity and non-repudiation.
3. All mobile banking transactions involving debit to the account shall be permitted only by validation through a two factor authentication.
4. Proper level of encryption and security shall be implemented at all stages of the transaction processing.

All the above mentioned RBI norms have been taken care of in the model design.

The first RBI norm is taken care of employing disconnected database architecture. A typical user can possess more than one account with the bank. First time the user connects to the banking

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server all the pertaining data is pulled from the database and stored on the client-side in the form of different DAO (Data Access Object) classes conforming to Plain Old Java Objects (POJO). All the processing will take place on the client side and the subsequent connection to the bank server is only established for updating the data to the server.

Most of the high level languages such as Java, Python etc. support security APIs and packages for incorporating authenticity, integrity, validity and non-repudiation into the model implementation. This addresses the second RBI norm.

Most of the banking applications use multi-factor authentication (at least two-factor authentication) for authenticating the user. Authentication refers to proving the identity of the user. There are three categories of authentication:

Category 1: What the user knows : - It could be password, pin etc., which is confidential and known to only that user and is remembered by the user.

Category 2: What the user has : - It could be any gadget which the user owns, such as credit card, debit card, hardware token, software token, or any device which is owned by the user.

Category 3: What the user is :- It refers to the biometric identity of the user such as iris, finger prints or facial recognition of the end user.

For multifactor authentication, two different authentication mechanisms from at least two different categories are to be selected. For example, banking applications employ authentication mechanisms from first two categories, username/password combination, and OTP which has been sent to the registered mobile of the user.

The model is based on PKI infrastructure employing public/private key pair for securing transaction at all stages of its processing which takes care of RBI norm 4.

Phase 3: Working of Model

Fig 2 shows the sequence diagram for the generation of QR Code.

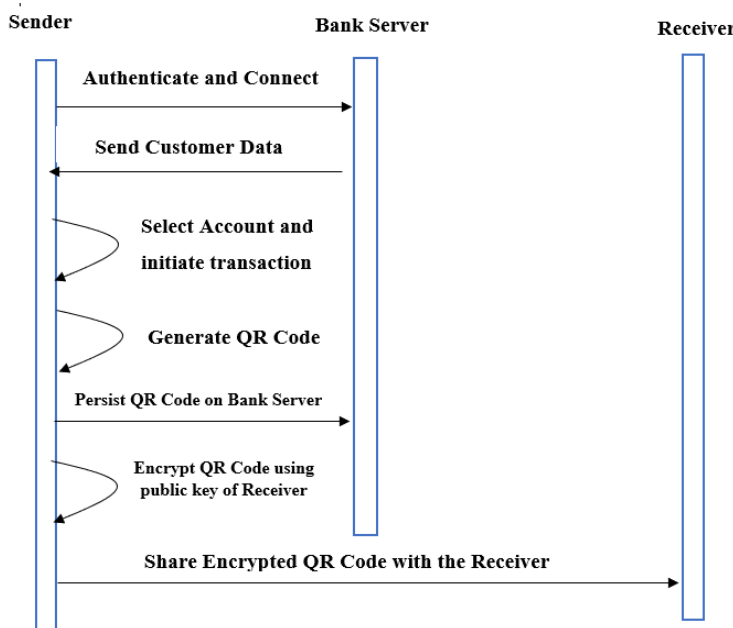

Fig 2. Sequence Diagram for QR Code Generation

We will consider a scenario where A wants to transfer some amount to B. For the execution of the transaction smoothly the following pre-requisites should be met:

•   Both A and B must be account holders of the bank since the model deals only with the intra bank transactions.

•   A must perform the transaction from his registered mobile device.

Generation of QR Code

The prominent steps involved in the generation of QR code holding the transaction information are depicted below:

- A sends a connection request to the bank server using his registered mobile device.
- On proper authentication with the bank server, the connection is established.
- A enters the transaction details, on successful validation of transaction data (account type, amount, balance) OTP is generated by the system for 'withdraw'transaction and sent to the registered mobile device of user A.
- A's mobile device retrieves OTP from the system and generates the QR code. If the user A is operating from another device, the transaction is aborted.
- A will request public key of B and encrypts the QR code using public key of B.
- The QR code encrypted with the public key of B is shared with B. This is another level of security. If the QR code of B is compromised and a hacker gets an unauthorized access to the QR code, he will not be in a position to decrypt it since the corresponding private key is owned by B.
- The unencrypted version of the QR code is also stored on the bank server.

The data stored in a QR Code for 'withdraw' and 'deposit' transactions is shown below:
For Withdraw transactions:

> **Withdraw Transaction**
>
> - Customer ID
> - Customer Name
> - Account ID
> - Date and Time of Server when the QR Code is generated
> - Amount
> - Unique 10-digit Transaction ID

For Deposit transactions:

> **Deposit Transaction**
>
> - Customer ID
> - Customer Name
> - Account ID
> - Date and Time of Server when the QR Code is generated
> - Amount
> - Denominations
> - Unique 10-digit Transaction ID

The validity of the QR Code generated by the system is 6 hours. Encashment request can be generated and send to the cashier by the customer by using the above system generated QR code at any time within 6 hours of generation of QR code

The naming convention used for QR code generated by the system is 'qrcode_year_month_day_hour_min_sec.png' where date and time correspond to the date and time when the QR code is generated as depicted in Fig 3.
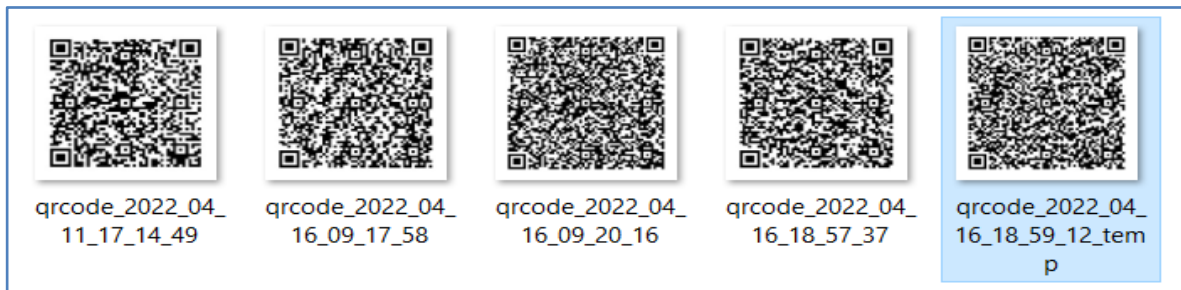
Fig 3. QR Codes Generated by the System

The above data is encrypted using the private key of the sender and is then concatenated with the public key of the sender before storing in QR code.

> *QR Code Data → Public key of sender + E {Cust_id + cust_name + account_id + date and time on server + amount + denominations + trid (10 digit)}Private key of sender*

Let D represent the QR code transaction data.

> $D = Cust\_id + cust\_name + account\_id + date$ *and time on server + amount + trid (10 digit)*
>
> *Doubly Encrypted QR Code = {Public Key of A + E(D)$_{Private\ Key\ of\ A}$ }$_{Public\ Key\ of\ B}$*

Phase 4: Design of layered security model.

- Both the sender and the receiver must be account holders of the bank.
- The sender can initiate the transaction and generate the QR Code only from his/her registered mobile.

In the current security model, the following securities are addressed during transaction processing:

1. *Validation of MAC Address :* When the cashier sends the connection request to the bank server, the MAC address of the cashier's machine is retrieved and sent along with the request to the bank server. Bank server maintains a list of allowed MAC addresses of the cashier's machine. The MAC address of the cashier initiating the transaction is looked up in the MAC table and if it is present, then the connection is accepted else is rejected. This is the first level of security which prevents a hacker from initiating the transaction from his machine.

2. ***Authenticity*** - QR Code is generated by the system : A copy of QR Code generated by the system is stored on the bank server. The naming convention used for the generated QR Code is

> *<QRCode_year_month_day_hour_min_sec>*

where, year, month, day, hour, min, sec refer to the timestamp when the QR Code was generated.
As a first security check, the date and time when the QR Code was generated by the system was retrieved from the QR Code and was compared to its filename.
If the first security check passes, then the second security check was initiated which retrieves the transaction id from the QR code and compares it with the transaction id of the QR code stored on the bank server. If both match, it is guaranteed that the QR code is indeed system generated.

3. Integrity- QR Code data is not tampered with since its generation: For verifying the integrity of QR Code data, the SHA-2 hash of the data stored in the scanned QR code is compared with the SHA-2 hash of the data stored in the bank server. If the two match, the integrity of QR Code data is proved which means the QR code data is not tampered since it is generated.

4. Validity - QR code is begenerated before six hour : To prove the validity of QR code, the date and time when the QR code is generated was compared with the time at which the transaction is processed. If it is less than 6 hours, then the QR code is declared as valid else is invalid.

5. Non-repudiation - QR code is decrypted using public key of sender : If the QR code data can be decrypted using the public key of the sender which is stored in QR code, it proves that the QR code has indeed been generated by the sender.

6. Double spending problem - Transaction table has trid as primary key : Since trid is a primary key in transaction table, duplicates are not allowed which automatically takes care of double-spending problem.

Each layer is a micro service rather than monolithic system to account for distributed banking database where data processing is distributed. If a bank adopts storing the data in a distributed database, it would be cumbersome and time consuming to process the transactions employing the systems based on monolithic systems.

Modules Designed in the System and Module Dependency Diagram.

The system comprises of the following discrete modules.
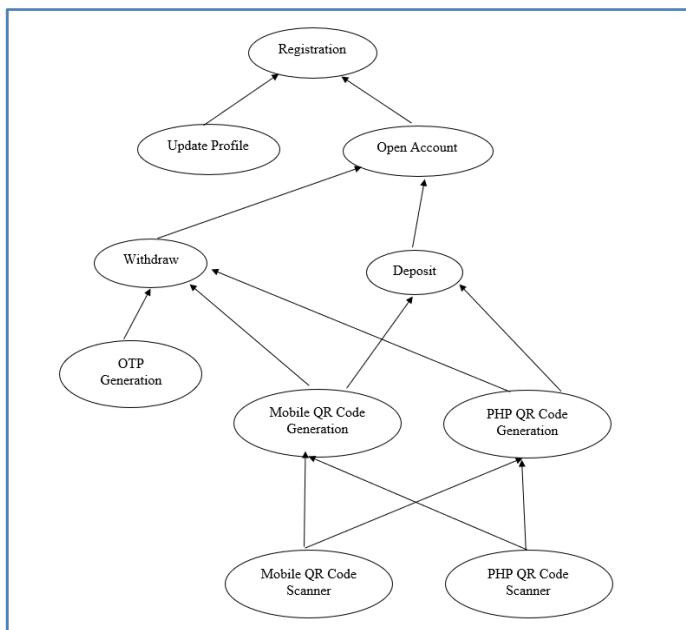
1. Registration Module
2. Update Profile Module
3. Open Account Module
4. Withdraw Module
5. Deposit Module
6. OTP Generation module.
7. Mobile QRCode generation module.
8. PHP QRCode generation module.
9. Mobile QRCode Scanner module
10. PHP QRCode Scanner module.

The dependency between different modules is depicted in Fig 4.

Fig 4. Module Dependency Diagram

Phase 5: Processing Encashment Request by the User B. : Fig 5. shows sequence diagram for transaction processing.
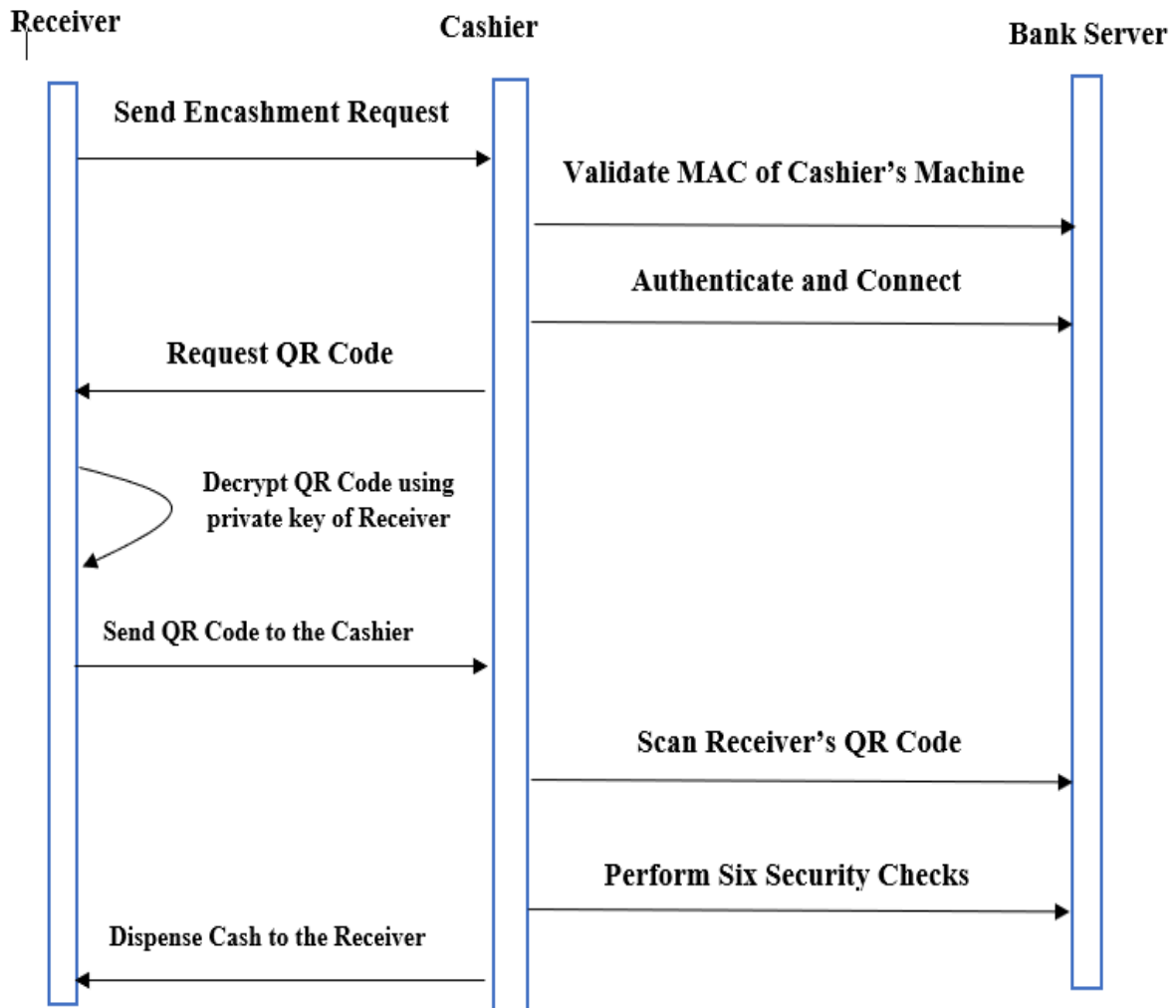
Fig. 5. Sequence Diagram for Transaction Processing

When the user B wants to encash his QR code within six hours of its creation, decrypts the QR code using his private key. B visits the bank physically and requests encashment to the cashier. The prominent steps involved in processing the transaction are depicted below:

- The cashier sends a connection request to the bank server.
- The bank server validates the cashier's machine from where the request is generated by retrieving the MAC id of the cashier's machine.
- On successful validation, cashier is prompted for username/password pair.
- On successful authentication, cashier is connected to the bank server for initiating the transaction.
- Cashier scans the QR code which performs several security checks are performed as depicted below:
  - o Validity of QR Code
  - o Integrity of QR code
  - o Non-repudiation
  - o Double spending of QR Code
- On successful security checks, the requested cash will be handed over to B.

Phase 6: Possible QR Code hacking attempts and proposed solutions : QR Code Hacking Attempts

Suppose A is a sender and B is a receiver

1. Hacker will generate a fake QR code by studying the data stored in it. Two cases arise:
   Case 1: Hacker is an account holder and has not performed any transaction which means the public key will not be available on the server. Hence the transaction will be aborted.

   Case 2: Hacker is an account holder and has performed at least one transaction which means the public key will be available on the server.Corresponding transaction id is not present and hence the QR Code is fake and as such will be rejected.

2. H Requests B for QR Code. Data is encrypted using private key of H. B Uses public key of H to decrypt QR Code data. Changes the amount, encrypts it using his private key and replaces public key with his own public key.

Data present in original QR Code

> public key of B
>
> E(D) Private key of B

Data present in tampered QR Code

> public key of H
>
> E(D') privatekey of H
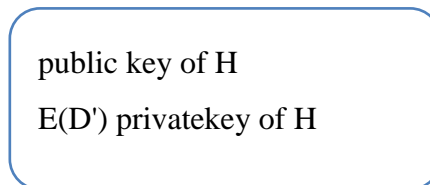
3. Hacker tries to change the date and time of the server recorded in QR Code. : Hash of scanned QR code does not match with the version of QR code stored on server and hence integrity fails

4. Double spending problem.: Double spending problem is genuinely addressed by making the unique transaction id generated and stored in the QR code is declared as a primary key in the transaction table which means not duplicates are allowed.
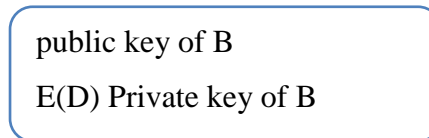
The layered security model consists of security header consisting of six bits corresponding to six security checks as depicted in Fig. 6.

Successful Validation of MAC Address of Cashier Machine	1	0	0	0	0	0
Non Repudiation	1	1	0	0	0	0
Authenticity of QR Code	1	1	1	0	0	0
Integrity of QR Code Data	1	1	1	1	0	0
Time Validity of QR Code	1	1	1	1	1	0
Double Spending Problem	1	1	1	1	1	1

Fig 6. Layered Security Model with Security Header

3 level authentication system has been explored by different researchers (Velasiri Dwarakamayi Amareswari et al 2021). Multi-layer security model has been designed and implemented by the authors to keep track of different security vulnerabilities. In the above layered security model, each layer updates a 6-bit header and sends it to the next layer. At the end of the sixth layer, the 6-bit header encapsulates the various security checks performed at each layer. Bit 1 indicates a security check is passed and 0 indicated the failure of security check. For example, the following six bit header indicates that the QR code is indeed generated by the sender, the request is indeed

generated by the cashier, the QR is system generated and QR code data is not tampered. However, the QR code is generates before six hours and hence is invalid. Hence the transaction is aborted. Transaction is successful if all the bits in the security header contain 1.

1	1	1	1	0	0

Phase 6: DesigningQR Code based wallet : The work can be extended to create a QR code based wallet since each QR code is associated with a monetary value. The wallet contains the public/private key pair along with the QR codes shared by the senders.

Description of Different Activities Employed in Software Implementation

Sr. No	Name of the Activity / Class	Description	Name of the Layout File
1.	HomeActivity	Launcher Activity containing main menu.	activity_home.xml
2.	MainActivity	Displays Login Form for authenticating the user.	activity_main.xml
3.	Customer	POJO class for storing customer information of logged in customer	N/A
4.	Account	POJO class for storing account information of logged in customer	N/A
5.	AccountActivity	Asynchronous task for invoking PHP script for creating account of user on bank server.	N/A
6.	AccountOpenActivity	Generates a random account no. and starts AccountActivity for creating account of user on bank server.	activity_open_account.xml
7.	CashierDashboardActivity	Displays cashier dashboard	activity_cashier_dashboard.xml
8.	CustomerDashboardActivity	Displays dashboard for customer.	activity_customer_dashboard.xml
9.	CustomerRegisterActivity	Persists customer registration information on PHP bank server using Asynchronous task.	N/A
10.	DepositActivity	Generates request for deposit transaction.	activity_deposit.xml
11.	ErrorActivity	Displays error page for authentication failure.	activity_error.xml
12.	IntegrityFailureActivity	Displays error page on integrity failure.	activity_integrity_failure.xml
13.	LogoutActivity	Logs out the currently logged in user from the system.	activity_logout.xml
14.	MobileQRGenerateAct	Generates a QRCode for the requested	activity_mobile_gene

	ivity	transaction and stores it in documents/qrcode folder in a mobile.	rate.xml
15.	OperationActivity	Displays a screen for performing withdraw/deposit transactions.	activity_operation.xml
16.	OTPActivity	Generates OTP for multi factor authentication.	activity_otpactivity.xml
17.	PerformTransaction	Asynchronous task for executing transaction on bank server using PHP from mobile.	N/A
18.	PHPQRGenerateActivity	Generates QRCode for withdraw/deposit transaction on the server.	activity_phpqrgenerate.xml
19.	ProfileUpdateActivity	Updates the profile of the customer	
20.	QRCodeActivity	Displays the transaction information for customer verification and allows the user to navigate to customer dashboard.	activity_qrcode.xml
21.	QRGenerateActivity		
22.	QRReadActivity	Reads the data of the QRCode scanned by the user on mobile.	activity_qrread.xml
23.	RegisterActivity		activity_register.xml
24.	SigninActivity	Asynchronous task for connecting to bank PHP server for checking the authentication of the user. If the user is successfully authenticated, pulls the customer and account data and stores it in POJO classes Customer and Account array. (Since a single customer can have multiple accounts).	N/A
25.	TransactionActivity	Invokes an asynchronous task for performing transaction on the PHP bank server.	activity_transaction.xml
26.	TransactionFailureActivity	Displays a screen on failure of a transaction.	activity_transaction_failure.xml
27.	TransactionSuccessfulActivity	Displays a screen on success of a transaction.	activity_transaction_success.xml
28.	UpdateProfileActivity	Updates the profile of a logged in customer.	activity_update_profile.xml
29.	WithdrawActivity	Performs withdraw transaction.	activity_withdraw.xml

Task / Activity Mapping Table

Task	Role	Activity Flow
Launch App	Customer Cashier	HomeActivity
Customer Registration	Customer	RegisterActivity
Profile Updation/ Change Password	Customer	UpdateProfileActivity
Authentication	Customer Cashier	MainActivity SigninActivity
Perform Transaction	Customer	OperationActivity WithdrawActivity/DepositActivitry OTPActivity MobileQRGenerarionActivity PHPQRCodeGenerationActivity QRCodeActivity
Execute Transaction from mobile	Cashier	QRReadActivity TransactionActivity TransactionSuccessfulActivity/TransactionFailureActivity
Signout	Customer Cashier	LogoutActivity

4.0 Results and Discussions

Account Opening Form

Account Holder Name :

Girish Naik

Customer ID

762945

Amount

1000

Account Type

◉ Savings

○ Current

Open Account

The model presented above is partially implemented employing proven cutting edge technologies, HTML5, CSS3, jQuery as presentation tier technology, java as middle tier technology, MySQL as backend and PHP for server-side processing. Fig 7. shows the account opening form for the user.

Fig 7. Opening Account with the Bank

On opening the account with the bank and on successful authentication, the customer dashboard is displayed as shown in Fig 8.
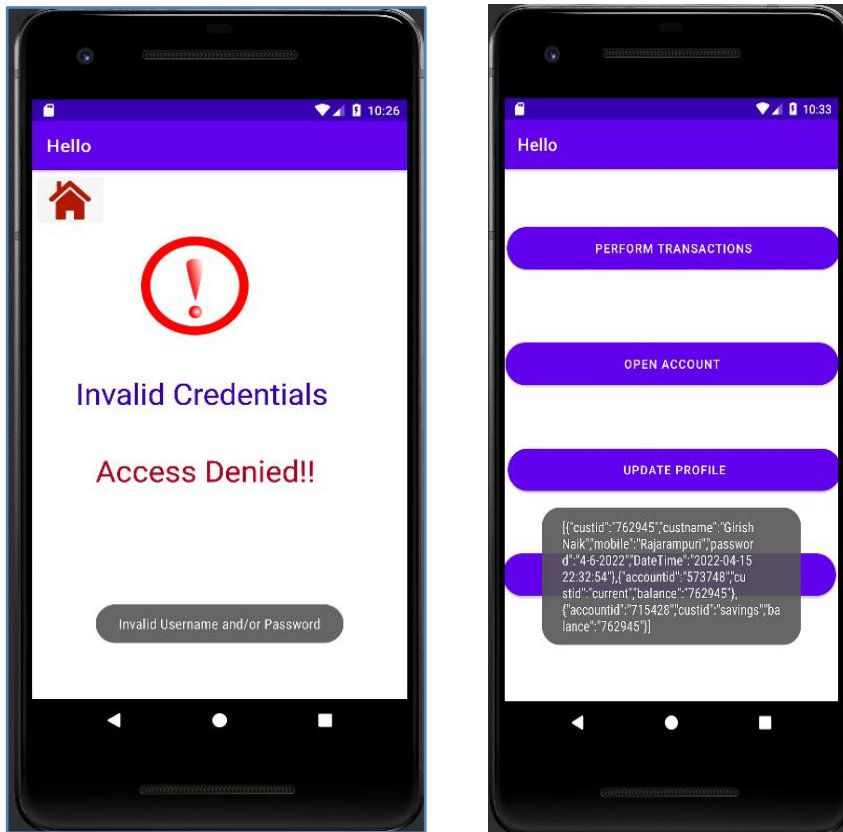
Fig 8. Authentication and Customer Dashboard

Fig 9. shows updating the profile by a customer .
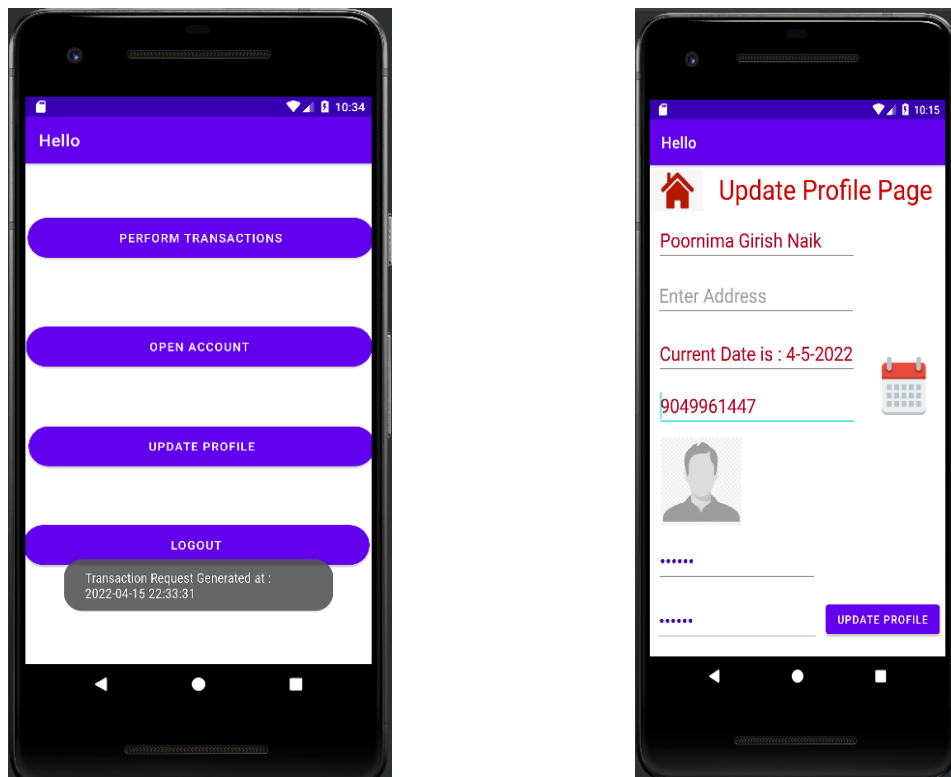
Fig 9. Updating Customer Profile

A customer can have multiple accounts with the bank. On successful authentication, all accounts are displayed on the client screen from which the user can select the account and the transaction operation. The data stored in the QR code is shown in Fig 10.
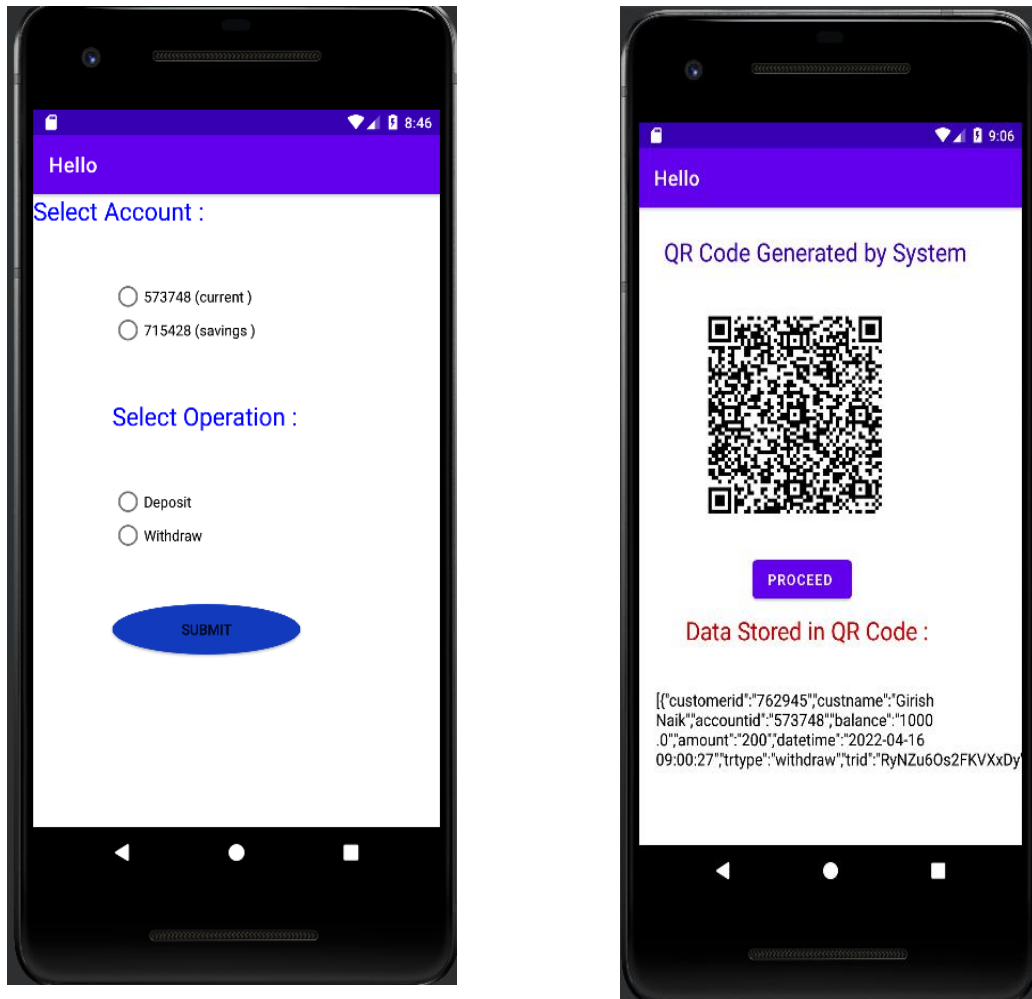
Fig. 10. Transaction Processing and QR Code Generation.

For the withdraw transaction, the OTP generated by the system is retrieved and QR code is generated as depicted in Fig 11.
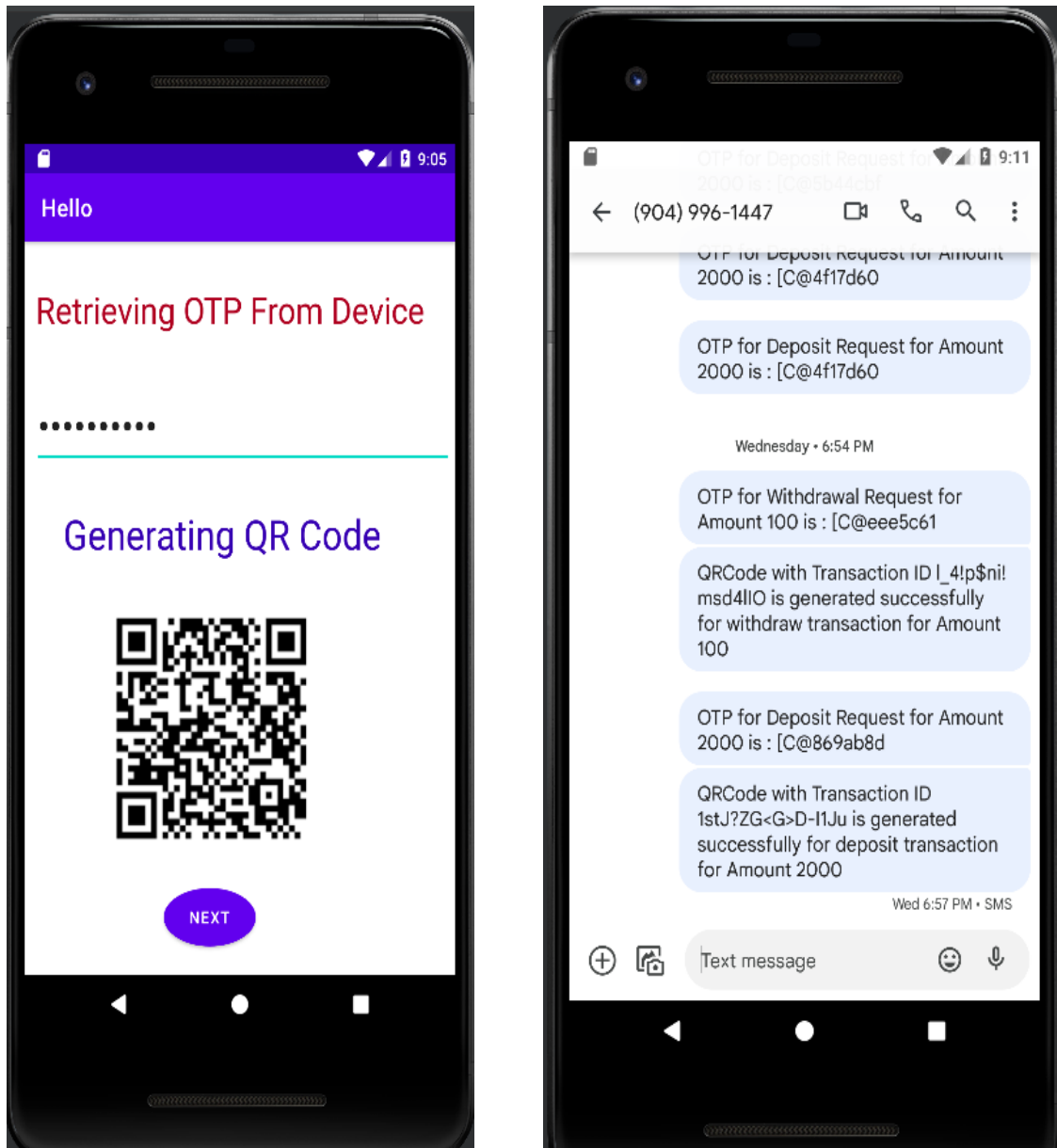
Fig 11. OTP Generation and Retrieval

For deposit transaction, the denomination information is entered as shown in Fig 12.
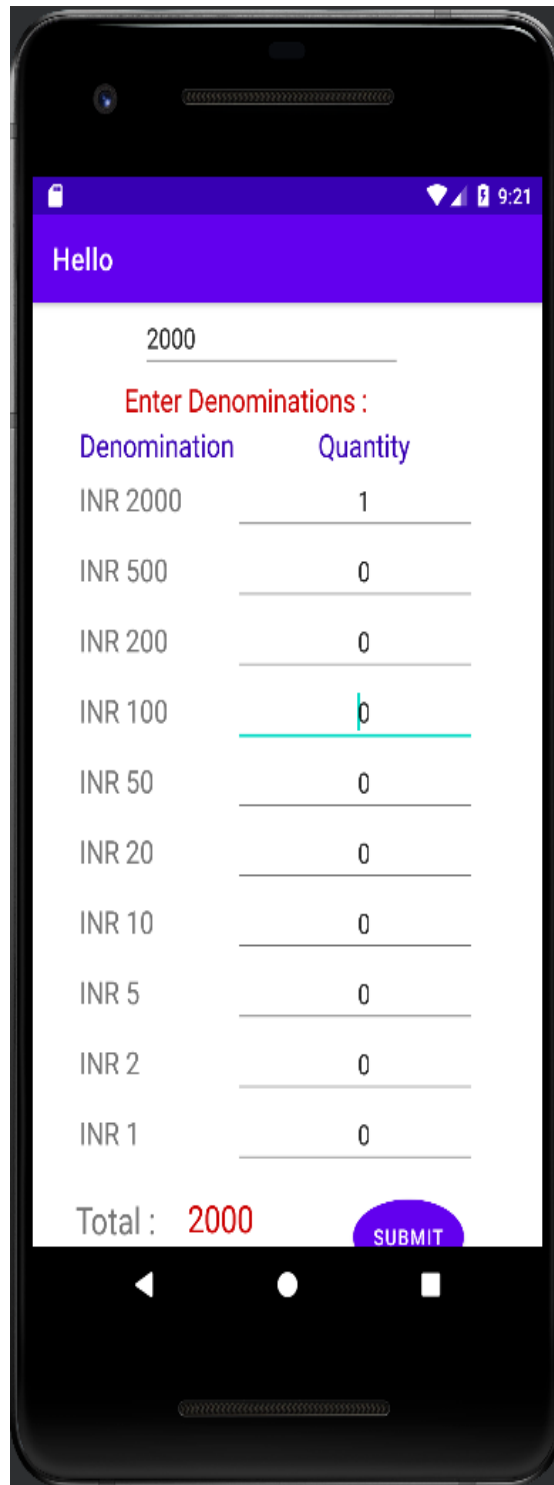
Fig 12. Denomination Information for Deposit Transaction

5.0 Conclusion and Scope for Future Work:

Card-less cash is an alternate and convenient option for cash withdrawal. Card-less cash withdrawal has made no compromise in security and banking norms. In spite of this it is not very popular due to its various limitations. In the current research, authors have designed a model for secure QR code transactions in N-tier applicable architecture. The model aims at providing a cost-effective solution for performing banking transactions. The prototype of the model is developed employing currently available server-side and client-side technologies. 6-level security checks are

performed to render the model highly secure and robust. The possibilities of QR code hacks are presented and the solutions are proposed. Double spending problem is tracked.

As a future amendment to the current research, the encryption algorithm can be replaced with the most robust ones which are quantum immune. The current model focuses on intrabank cash withdrawal by physically visiting the bank. Deposit transactions can be performed remotely. As a future enhancement the model can be updated to account for both intrabank and interbank fund transfers in virtual mode without the customer physically visiting the bank.

Acknowledgment:

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Behavioral Health Integration for India's Pediatric Population for Social Workers

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Abstract : Social work students rarely receive integrated pediatric behavioral health care education in India. Social work students should be knowledgeable about pediatric behavioral healthcare concerns and interventions and evidence-based treatment (EBT) to support their patient population. The Behavioral Health Integration for the Pediatric Population for Social Workers (BHIPPS) intervention was a webinar-based, two-and-a-half-hour training session designed for social work students at an international university. BHIPPS aimed to increase the knowledge of student social workers on pediatric behavioral health diagnosis and increase their confidence in identifying EBT. This study was quasi-experimental. A pre/post survey was designed to gauge if the BHIPPS intervention increased the student social workers' knowledge of pediatric behavioral health and confidence in identifying EBT. Data were analyzed using a one-tail paired samples t-test assuming unequal variances. The difference was not significant between pre- and posttest; therefore, the null hypothesis was rejected for both hypotheses (Hypothesis 1, $p = 2.58$; Hypothesis 2, $p = 8.10$). The primary implication of this study is that student social workers require more than two and a half hours of training on pediatric behavioral health and EBT to serve the pediatric behavioral health patient population better.

Behavioral Health Integration for India's Pediatric Population for Social Workers Problem Description Globally, there is a lack of trained behavioral health providers (Al-Dmour et al., 2020).

The training that behavioral health providers and students receive does not support brief evidence-based interventions that can impact whole health outcomes for the pediatric behavioral health population (McKerrow et al., 2020). Behavioral health providers and students can improve their pediatric knowledge and skills to significantly impact global health challenges through brief education and training on evidence-based pediatric behavioral health care treatment methods (Flearey et al., 2018). India is one such country that is lacking in pediatric behavioral health knowledge and training for social work students (Hossain & Pirchit, 2019).

Pediatric Behavioral Health

Ten percent of children worldwide have behavioral health diagnoses (World Health Organization, 2021). It is estimated that 80 million children worldwide, ages 10-14 years old, have behavioral health concerns (United Nations International Children's Emergency Fund, 2021). Two in seven children under eight years of age have a behavioral health condition (Tyler et al., 2017). Pediatric behavioral health must be addressed on a global level. Out of the estimated 40% of children who require behavioral health services, only 30% receive services (Aguirre Velasco et al., 2020). The 2016 National Survey of Children's Health found that children with disabilities are more likely to have unmet health care needs. Children with autism spectrum disorders have a rate of four times more unmet health care needs than their neurotypical peers (Karpur et al., 2018). Children whose families have limited financial resources encounter barriers to acquiring the behavioral health services they need to thrive and succeed (Chakawa et al., 2020; Karpur et al., 2018).

Children and their families who come from communities of color, diverse backgrounds and experience significant concerns related to the social determinants of health are more likely to have limited and delayed access to behavioral health treatment, resulting in increased symptomatology (Dickson et al., 2021). Limited access to youth behavioral health services disproportionally affects communities of color (Chakawa et al., Owens et al., 2021). Behavioral health service

implementation is vital in the pediatric setting (Polaha et al., 2018). Many children are not screened for behavioral health diagnoses and are overlooked for necessary services (Polaha et al., 2018). When children are screened early for behavioral health conditions in their primary care office, they can be connected with services that support their behavioral health care needs. (Dickson et al., 2021). When the correct evidence-based treatment (EBT) is implemented early on, the probability of favorable health outcomes is increased (Polaha et al., 2018).

Knowledge and advocacy are crucial to spreading awareness of pediatric behavioral health issues (Arora et al., 2017; Knight et al., 2019). In the past ten years, the identification and evaluation of behavioral health concerns and a focus on preventative medicine in the pediatric population have improved (Herbst et al., 2020 ;Polaha et al., 2018). Integration of behavioral health into pediatric settings has significantly increased, allowing for early identification of behavioral health concerns, improved access to services, and increased treatment options for children and their families (Owens et al., 2021).

A reported 50 million children in India have symptoms of behavioral health conditions (Hossain & Pirchit, 2019). A consensus among the Academy of Pediatrics on Early Childhood Development members is that children should receive behavioral health interventions before the age of three (Bharadva et al., 2020). India has minimal behavioral health services for the pediatric patient population (Fledderman et al., 2021). Pediatric medical providers acknowledge there is insufficient time or enough specialists to support the pediatric behavioral health population (Fledderman et al., 2021; Hossain & Pirchit, 2019).

Pediatric Behavioral Health Provider Shortage

Limited availability of pediatric behavioral health services presents significant gaps in care for children and their families (Webber, 2016). On a global level, children of all ages are underserved in behavioral health services, and those with access often do not have opportunities for early behavioral interventions (Al-Dmour et al., 2020; Tyler et at., 2017). Due to the high demand for behavioral healthcare those involved in pediatric care must participate in additional training in pediatric behavioral health to meet the demands and better serve their patient population (McMillan et al., 2020; Pidano et al., 2018; Walter et al., 2019). Although India has the Indian Academy of Pediatrics, there is no information listed on the organization's website noting a shortage of pediatric behavioral health providers. However, a recent call was issued by the American Academy of Pediatrics (AAP) for all pediatricians to gain additional certification to meet their patients' behavioral health needs through additional training to address the shortage of pediatric behavioral health professionals (McMillan et al., 2020, Walter et al., 2019).

Shortages in pediatric providers affect the ability to deliver appropriate and timely care to this population. In 2017 the top three pediatric healthcare providers that were in greatest need were developmental pediatricians (11.8%), child and adolescent psychiatrists (10.8%), and pediatric neurologists (9.7%) (Children's Hospital Association, 2017). The provider shortage can lead to an appointment wait time of up to 18.7 weeks which prevents the pediatric population from receiving the care they need in the time frame that would be the most beneficial (Children's Hospital Association, 2017). Pediatric staffing shortages in India are comparable to those in the United States. To provide the number of services required by India's National Rural Health Mission (NRHM), the number of medical providers specializing in the pediatric population needs to increase to meet demand and the NRHM requirements (Hagopian et al., 2012; Nair etal., 2022).

Pediatric Behavioral Healthcare Evidence-Based Treatment Protocols

Evidence-based treatment (EBT) is the cornerstone of ethical and impactful/effective medical and behavioral health care (Slocum et al., 2014). To ensure that patients receive the appropriate treatment and care, medical and behavioral health professionals should utilize EBT. Applied behavior analysis (ABA) is one such EBT. ABA consists of behavior modification using EBT,

such as prompt hierarchy, running trials of behavior modification, and behavior extinction. Cognitive behavior therapy (CBT) focuses on patients while collaborating with a therapist skilled in CBT, identifying negative thinking and adapting their behavior around newly developed positive thoughts (Mayo Clinic, 2019). Acceptance and commitment therapy (ACT) is another form of psychology-based EBT. ACT aims to have patients accept the medical and behavioral health diagnoses they cannot change and focus on the aspects of their lives that they can change to increase their quality of life (Dindo et al., 2017). Evidence-based treatment and training can improve children's quality of health care (Mayo Clinic, 2019).

Pediatric Behavioral Healthcare Intervention Knowledge

Integrated pediatric behavioral health care professionals have a variety of interventions available for use with the pediatric patient population (Ny & Weisz, 2016). Integrated behavioral health care professionals may have access to behavior analysts, therapeutic recreation specialists, or child life specialists. The environment the pediatric patient is being seen in will determine the intervention resources available. Few medical and behavioral health providers do not prescribe to the theory that interventions work (Bershal & Ross, 2019). Including the pediatric patient's family in behavioral interventions creates a team with a consistent approach to care for the child (Zimmerman et al., 2021).

Integrated Pediatric Health Care

Integrated pediatric health care (IPHC) benefits the patient, their family, and the healthcare system. Communication in an IPHC setting leaves less room for error within the patient's care team (Pidano et al., 2020). An additional benefit to IPHC is the inclusion of team-based family systems approaches that include the parents/guardians in the healthcare decisions for the child. Although the child is the patient, in most cases, the decision is up to the discretion of the guardians (Katkin et al., 2017; Pidano et al., 2020). Integrated behavioral health care increases the success of chronic care management and improves the quality of life for children with chronic long-term care needs while significantly reducing the cost of care (Lewis et al., 2021; Wolfe et al., 2020).

Children with disabilities often present with complex medical or behavioral issues that challenge caregivers, guardians, and healthcare providers (Altman et al., 2018). Having a child with a disability, specifically autism spectrum disorder (ASD), increases parental stress (Karpur et al., 2018). Decreased parental stress and anxiety, and increased trust, have been linked to the provider's knowledge of pediatric integrated health care and the provider's ability to address pediatric behavioral health problems with the child and parent. (Balbino et al., 2016; O'Brien et al., 2018). An essential aspect of pediatric integrated care is a focus on the family. Children are dependent on their families when they experience a medical condition. Family involvement is vital to the successful care of children, as well as offering family support and guidance (Pidano et al., 2020).

Limited pediatric medical and behavioral health providers in India leads to inadequate integrated health care opportunities for the pediatric patient population (Hagopian et al., 2012; Nair et al., 2022). With limited access to providers, pediatric patients can often not be seen by more than one provider during a visit, leaving unaddressed behavioral or medical health needs (Fledderman et al., 2021). There is a need for providers to work together to improve the health of the pediatric population through the practice of integrated health care (Fledderman et al., 2021).

Online Education and Training for Professionals

Online education is a considerable step toward spreading pediatric behavioral health knowledge to the professionals who treat children (Price, 2020). Video-based behavioral health lectures increase health care providers' knowledge of medical conditions and effective ways to support children and their families with behavioral health diagnoses (Suryavanshi et al., 2020). Online programs have

been developed to meet the educational needs of physicians who treat children by offering them free web-based training modules to gain information on pediatric behavioral health needs (Arora et al., 2017). There is an increased benefit of web-based lectures when provided on a live and interactive platform, such as Zoom (Jackson et al., 2018). Live web-based lecture participants can ask questions and expand their learning with active engagement and real-world case scenarios (Jeno et al., 2017).

There are fewer access barriers to learning using an online educational platform (Elzainey et al., 2020; He et al., 2019; Kyaw et al., 2019). Technology and online teaching bridge the learning gap for global learners (Narayan et al., 2015; Seymour-Walsh et al., 2020). Due to the Covid-19 pandemic, 83% of college students have reported participating in distance learning (Jackson et al., 2018) and medical graduate school students' online learning has significantly increased (Alsoufi et al., 2020). Distance learning has a significant value, especially during a global crisis like the Covid-19 pandemic (Al-Balas et al., 2020). By utilizing online web-based lectures, we reduce barriers and increase access to learning. However, the increased use of technology for education delivery has impacted seasoned educators may have an aversion to using an online learning platform ((Jackson et al., 2018; Smeraglio et al., 2020). Training educators in online education delivery is essential for improving students' learning experiences and outcomes (Jackson et al., 2018).

Medical doctors in India are not required to hold a certain level of education to practice in their field. Data from the 2001 census showed that 31.4% of practicing physicians achieved education up to the high school level; however, 57.3% held no medical qualification (Anand & Fan, 2016). Online education has filled a gap for the people of India in recent years, especially concerning Covid-19 and continued educational needs (Nimavat et al., 2021). Medical and BH providers are now able to access content and experiences that 10-years ago were not available to them, thereby increasing the skill level of these professionals (Nimavat et al., 2021).

Adult Learning Styles

There are different learning styles for adults that can be applied in different environments. For example, Kolb's Adult learning theory, experiential learning is where knowledge is applied in specific contexts. (Dhital et al., 2015; Long & Grummelt, 2019; Raducu & Stanculescu, 2021). The instructional design theory aims to empower adult learners to look forward to a specific result to be learned and achieved (Khalil & Elkhider, 2016). In contrast, the descriptive theory chains steps together to teach adults to a specific outcome Online learning takes the best of these learning theories to empower adults to take their learning wherever life takes them (Snyder, 2009).

Rationale/Conclusion

Pediatric behavioral healthcare services and providers are imperative to the health of the world's youth. Developing and implementing training programs that address the integration of evidence-based pediatric behavioral health care into post-secondary education is essential. As the access to post-secondary social, behavioral, and medical education improves, webinar-based learning increases the availability of pediatric behavioral health care education to current and future students. Education in integrated pediatric health care and how it impacts the patients, and their families can benefit each person on the child's healthcare team (McMillan et al., 2020).

India has the world's second largest population, with 50 million of their estimated 427 million children being diagnosed or displaying some symptoms of a behavioral health diagnosis (Hossain & Pirchit, 2019; Humanium, 2022). Taking steps toward educating India's future behavioral and medical professionals in pediatric behavioral health can improve the health care outlook for the country's growing pediatric population.

Problem Statement

CSIBER University, India, does not provide education and training on pediatric integrated behavioral healthcare for the Master of Social Work (MSW) students. MSW students have requested training in integrated pediatric care to fill their learning gap on integrated pediatric best practices and evidence-based treatments (EBT). For social workers to provide effective quality treatment, acquiring further education in pediatric behavioral health and EBT is crucial to address children's mental and physical health in India. In doing so, the student's knowledge and confidence in understanding IPHC best practices and EBT will improve, and their patients will experience a better quality of care.

Specific Aims

The MSW students engaged in an educational training webinar addressing integrated pediatric behavioral healthcare, evidence-based treatment protocols, interventions, and ways to communicate and build relationships with healthcare professionals to serve their pediatric behavioral health patients. The training was designed to increase MSW students' knowledge of pediatric behavioral healthcare and their confidence in identifying an evidence-based treatment protocol for pediatric behavioral health patients.

Research Questions

RQ1: Will clinical social work students significantly improve their pediatric behavioral healthcare-specific topic and intervention knowledge (DV) after participating in an integrated healthcare webinar series (IV)?

RQ2: Will clinical social work students significantly improve their confidence in their ability to identify an evidence-based treatment protocol for pediatric behavioral health patients (DV) after participating in an integrated healthcare webinar series (IV)?

Hypotheses

H1: Clinical social work students will significantly increase their pediatric behavioral healthcare-specific topic and intervention knowledge (DV) after completing an integrated healthcare webinar series (IV), as evidenced by pre-/post-test survey scores.

H2: Clinical social work students will significantly improve their confidence in their ability to identify an evidence-based treatment protocol for pediatric behavioral health patients (DV) after completing an integrated healthcare webinar series (IV), as evidenced by pre-/post-test survey scores.

Methods

Context

Chhatrapati Shahu Institute of Business Education and Research (CSIBER) University is located in Kohlapur, Maharashtra, India. CSIBER operates as an autonomous higher-learning program under the University Grants Commission (UGC) and Shivaji Universities (CSIBER, 2021). CSIBER is a higher education learning institution that offers in-person and online classes. CSIBER is accredited as a College with Potential for Excellence (CPE), Grade A+ NAAC, and Quality Enhancement and Excellence of Higher Education (CSIBER, 2021). CSIBER offers nine master's programs, with one in a healthcare-related field, the Master of Social Work degree. The CSIBER Department of Social Work supported 112 students (64 males and 48 females) during the intervention.

One module offering healthcare integration training was located within the Masters of Social Work degree. The university was focused on revising the curriculum to support student learning of integrated behavioral health. The addition of pediatric integrated behavioral healthcare to the CSIBER University Department of Social Work curriculum benefits the current students and the future pediatric patients with behavioral health diagnoses they support.

Project Site

This culminating project (CP) occurred at CSIBER University, Department of Social Work in Kohlapur, India. The Department of Social work offered graduate-level course work for students pursuing their Master of social work degree. Due to the Covid-19 pandemic, the Department of Social Work moved students to a hybrid learning model. Department professors instructed students in person at the university while other learning took place online. Students who participated in this intervention were learning from their home environment.

Project Participants

First and second-year CSIBER University social work graduate students were made aware of the additional learning opportunity presented through this project by their current instructors. Each year 60 students are added to the program making the potential number of students for this intervention 120. The CSIBER University stakeholders set intervention exclusion criteria as third and fourth-year social work students and students other than those enrolled in the Department of Social Work at CSIBER University.

Stakeholders

The Doctor of Behavioral Health (DBH) student met with Dr. Ronald O'Donnell, clinical professor in the Arizona State University Doctor of Behavioral Health program, to generate ideas for this CP. Dr. O'Donnell conducted research and training on integrated health care globally and had recently established collaboration with CSIBER University Department of Social Work. He suggested partnering with the CSIBER University Department of Social Work to develop a webinar that addressed the needs of the social work students in acquiring educational content on pediatric behavioral health. The DBH student met with the stakeholders identified on the project charter weekly to discuss the educational support needs of the CSIBER social work students (see Appendix A). The project stakeholders included four CSIBER social work faculty assigned to support this project.

The CSIBER University Department of Social Work benefited from the CP by increasing the educational content provided to their students and collaborating with Arizona State University. The social work students benefited from the CP through exposure to content not currently in the curricula. The pediatric behavioral health patient population benefits through the increased use of evidence-based interventions to support their unique medical and behavioral healthcare needs.

Quality Improvement

CSIBER University Department of Social Work did not offer students educational content to support integrated pediatric healthcare (IPC). By completing training and increasing knowledge on IPC and EBT, social work students may be able to improve patient care. With input from the project stakeholders, the project focus was determined, and the desired outcomes were developed. To increase the knowledge of social work students for the pediatric behavioral health population and EBT for pediatric behavioral health patients, a two-and-a-half-hour-long webinar was developed based on topics requested by CSIBER University stakeholders.

Social workers with increased knowledge to successfully support the pediatric behavioral health population can improve patients' and families' health care experiences by effectively applying EBT

specific to a child's diagnosis. Social workers may improve their experience providing care by learning how to support and treat the pediatric behavioral health population efficiently and effectively.

An A3 report was completed to assist the DBH student in mapping out the process for the intervention. Data collected pre-and post-lecture was displayed in graphical representation for analysis and inclusion in the report. The A3 report allowed the intervention team to view the project from beginning to end and plan for adaptations that may be needed for the project's success (see Appendix B).

Intervention Description

The Behavioral Health Integration for the Pediatric Population for Social Workers (BHIPPS) webinar used the Zoom platform. The webinar was implemented on a Wednesday from 7:30 PM to 9:30 PM Indian Standard time (IST). The lecturer was in the United States, Eastern standard time zone, and the students were in Mumbai, India, which is Indian Standard Time (IST).

The DBH student, who held a master's in educational leadership and administration with an emphasis on early childhood education practiced as an ABA therapist, conducted the webinar. As a subject matter expert (SME), the DBH student consulted with the CP stakeholders in choosing the lecture topics (See Appendix A and Appendix C). The BHIPPS webinar was presented with a PowerPoint.

Study of the Intervention

Pre-/post-surveys were conducted via Google Forms for all project participants. The pre-survey included three demographic questions and 12 subject matter content questions. The post-survey included six 'rate the presenter' questions and the same content questions as the pre-survey. The content-specific questions included one on autism, one on sensory processing disorders, two on EBT, two on asthma, one on stunting, one on medical diagnosis affecting mental health, two on obesity, and two on nutrition. Survey results were collected from Google Forms and compared pre-post BHIPPS intervention. A CSIBER University stakeholder and co-author of the pre-post survey included the requirement for students to list their email addresses for internal tracking purposes. Email addresses were used to match the pre and post-surveys.

Survey data analysis will guide any adaptations of the BHIPPS webinar better to meet the needs of future social work students. Surveys were administered via Google Forms at the end of the webinar. Data was downloaded from the interventionist's Arizona State University Google drive one hour after completing the intervention. One hour was chosen to allow students to complete the survey with adequate time.

Measures

BHIPPS Pre-Post Surveys

The BHIPPS pre-/post-surveys (see appendix D) measured CSIBER social work students' perceived increase in knowledge and confidence after participating in the BHIPPS intervention. Through collaboration with Drs. O'Donnell and Manson, the CSIBER University stakeholders, and the DBH intern, the BHIPPS surveys were developed. The measure was designed for ease in understanding, implementation, and data analysis. Understanding the students existing knowledge and confidence through pre-BHIPPS survey data compared to post BHIPPS survey data informed the interventionist on the success of the BHIPPS project and guided any adaptations to the webinar. A Likert scale ranging from one to four was utilized for data collection (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). Demographic questions included gender, age, and year in the social work program (see Appendix D).

Measure Development

Due to the multiple content areas of BHIPPS, the interventionist could not locate any previous studies that utilized questions appropriate for all BHIPPS subject areas. The BHIPPS surveys were not tested for reliability and validity; however, all questions were sourced from previous studies with reliability and validity. Questions were adapted from studies to match the intervention participants' educational specialization and applicability to the region of the intervention implementation. Adaptation of questions included change in study population educational focus, region of the world, or age. For example, the study conducted by Corsano et al. (2020) utilized nurses as the study population; in the BHIPPS survey, it was changed to social work students; the study by Donini et al. (2016) focused on adults diagnosed with malnutrition, the focus was changed to children diagnosed with malnutrition for the BHIPPS survey (see Appendix E).

Data Security

The Google forms platform was utilized for the collection of survey data. Data was kept on the secure Arizona State University Google drive servers until the interventionist logged on to access the data. Data were accessed post-intervention and transferred to the interventionist's secure laptop for data analysis.

Analysis

The BHIPPS intervention was a quasi-experimental pre-and post-intervention design study. The BHIPPS webinar was the independent variable, and the pre- and post-surveys were the dependent variables. Data were entered into an Excel spreadsheet provided by Arizona State University College of Health Solutions. The data set included a codebook that defined each type of data collected and all data received from the pre- and post-surveys. The pre- and post-surveys were analyzed using paired samples *t*-tests since they are the preferred form of data analysis for pre-/post-survey results (Rangraz et al., 2020; Xu et al., 2017).

Results

Implementation

The students of the Social Work School at CSIBER University in India were the target of the intervention. The targeted intervention was to fill in the educational gaps about pediatric healthcare and better the knowledge given to the students on this topic to help them better serve the pediatric patients that they will encounter and help. Over time, there were modifications to the intervention because initially, the intervention was supposed to be presented as a three-part lecture series, each lasting an hour. Instead, to increase attendance and make it easier to gain attendance and make it easier to gain student participation, it was decided by the interventionist and the CSIBER University stakeholders to combine the series into one lecture. The dosage was one time for two and a half hours during the students' standard class time (see Figure 1). The rationale for using online webinars instead of another approach is that online lectures have shown impactful results in imparting knowledge to college-level individuals. It was also appropriate to do an online lecture format due to the location of the intervention in India and the interventionist being in the United States. Due to serving those in India and teaching them with the lecture, the implementation had to be done in this manner. The DBH student led meetings each week to learn about the needs and experiences of social workers in India. By gauging the needs of the student learners through learning about gaps in their education directly from them, the training content areas that the students identified included autism, applied behavior analysis interventions, asthma, malnutrition, obesity, and common comorbidities of behavioral health diagnosis. The content areas were researched and used to create the BHIPPS intervention.

The DBH student then created and implemented a Google Forms pre-intervention survey to assess the personal perceived knowledge for each content area students had prior to the intervention. The pre-intervention survey had ten content-specific questions and four demographic questions. A stakeholder from CSIBER University included the requirement that all their students' email addresses; this was later used for pairing pre-and post-survey responses. The DBH student then implemented the intervention. After the webinar lecture, the Google Forms post-intervention electronic survey was emailed to each participant. The post-intervention survey included the same ten content area-specific questions as the pre-intervention survey and an additional five 'rate the presenter' questions. The interventionist then accessed results from the assigned ASU google drive and prepared the data for statistical analysis. The DBH student and CSIBER stakeholders held a post-intervention discussion to review the graphical display of survey results produced by Google Forms.

Figure 1 : *BHIPPS Implementation and Development Process Flow Chart*

Intervention Outcomes
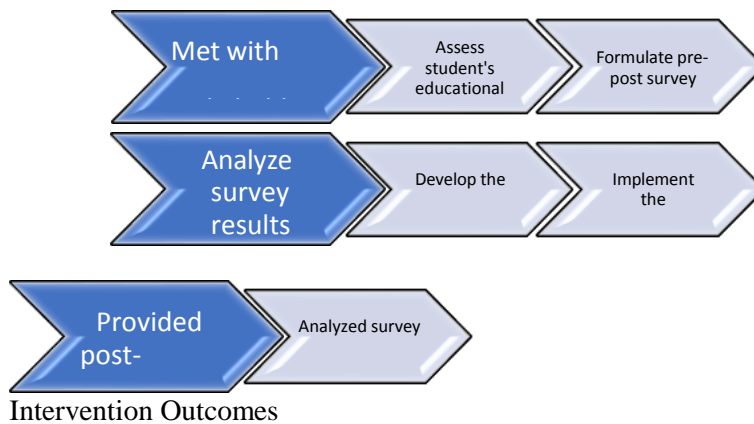
Participant Descriptive Variables

Descriptive variables for all study participants are presented in Table 1. Of the participants (*n*=149), 23 did not complete the pre-BHIPPS survey, while 43 did not complete the post-BHIPPS survey. The majority, 67 (61%) of Behavioral Health Integration for the Pediatric Population participants (BHIPPS), were male. Master of Social Work year one students were the most common participants, 96 (64%), with the mean student age being 23.42 years old (SD = 3.49The variable mean was used in place of missing data for further analysis. The pre-BHIPPS survey Cronbach's Alpha showed high internal consistency with a .95, whereas the post-BHIPPS survey had weaker internal consistency with a Cronbach's alpha of .66. The overall mean rose by 21 between the pre-BHIPPS survey and the post-BHIPPS survey.

Table 1 *Participant Descriptive Variables*

Variable	Frequency	Percentage	
Gender			
- Female	43	39%	
- Male	67	61%	
Participant Education Level Class			
- MSW1	96	64%	
- MSW2	48	32%	
- MSW Awarded	3	2%	
- MPHIL/PhD	2	1%	
	M	*SD*	Cronbach's α
Age	23.42	3.49	N/A
Pretest BHIPPS Scores	2.34	0.59	.89
Posttest BHIPPS Scores	2.98	0.91	.97

Hypothesis Testing

After completing an integrated healthcare webinar (IV), clinical social work students will significantly increase their pediatric behavioral healthcare-specific topic and intervention knowledge (DV), as evidenced by pre-/post-test survey scores. A one-tail two- sample assuming unequal variances t-test was conducted to determine whether clinical social workers increased their knowledge of pediatric behavioral health topics and interventions changed following the Behavioral Health Integration for the Pediatric Population for Social Workers (BHIPPS) intervention. On average, participants scored lower on their knowledge of pediatric behavioral health topics and interventions prior to the intervention ($M = 2.37$, $SD = 0.67$) compared to after the intervention ($M = 2.98$, $SD = 0.92$). This difference is not significant, and the null hypothesis was accepted [$t(179) = -6.14$, $p = 2.58.$] and represented an effect of $d = 0.78$ (see Table 1 and Figure 2).

Table 2 : Results Comparing BHIPPS Pretest vs. Posttest

	t	*df*	*p*
Knowledge scores	6.13	181	2.58
Confidence scores	7.14	203	8.10

Figure 2 : *Differences in Pre-Intervention Knowledge versus Post-Intervention Knowledge*
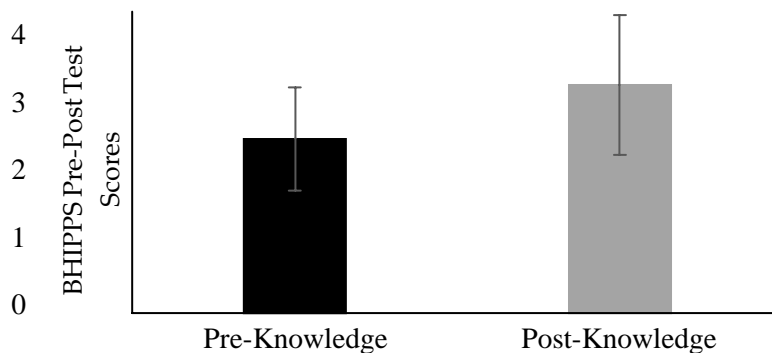
After completing an integrated healthcare webinar (IV), clinical social work students will significantly improve their confidence in their ability to identify an evidence- based treatment protocol for pediatric behavioral health patients (DV), as evidenced by pre-/post-test survey scores. A one-tail two-sample assuming unequal variances t-test was conducted to determine whether clinical social workers improved their confidence in identifying evidence-based treatment protocols for the pediatric behavioral health population following the BHIPP intervention. On average, participants scored lower on their confidence in identifying evidence-based treatment protocols for the pediatric behavioral health population prior to the intervention ($M = 2.19$, $SD = 0.89$) compared to after the intervention ($M = 2.96$, $SD = 0.95$). This difference is not significant, and the null hypothesis was accepted [$t(201) = -7.14$, $p = 8.10$] (see Table 2 and Figure3).

Figure 3 : *Differences in Pre-Intervention Confidence versus Post-Intervention Confidence*

Unintended Consequences

Unexpected Benefits

The unexpected benefit resulting from the implementation of the BHIPPS intervention included participants sharing knowledge with their peers, participants that did not attend the intervention, or that are further along in the program than they are Another unexpected benefit was the stakeholders' decision to fine-tune this intervention with the next DBH intern and grow the intervention content to meet the educational needs of future students. The addition of content to the curricula will provide the social work students the opportunity to learn about different populations, such as, the pediatric behavioral health population that BHIPPS focused on.

Negative Consequences

Although no negative consequences presented themselves during BHIPPS intervention, there is a possibility that they could occur in future implementations\A potential unintended negative consequence of the intervention may be a student utilizing an ABA technique incorrectly and unintentionally causing harm to the patient. Another potential unintended negative consequence could be the social work students who participated in the intervention using a non-appropriate EBT technique preventing the patient from improving.

Discussion

Summary

This project aimed to increase the pediatric behavioral health knowledge of the social work students at CSIBER University in India. The social work students do not receive training on pediatric behavioral health. Knowledge of pediatric behavioral health is a crucial topic that the CSIBER University social work students should be learning as social workers in training. The interventionist created a lecture on multiple pediatric behavioral health topics to decrease the learning gap in pediatric integrated behavioral health that the students currently face. A pre/ post-survey was used to gain data on the students' pre-BHIPPS intervention knowledge and confidence in the topics and again post-implementation of the BHIPPS intervention. The key findings were that many first-year students felt more knowledgeable than they were on topics presented in the BHIPPS intervention, as evidenced by pre-post survey analysis. Post-analysis survey data also suggested an increase in the students' confidence level in identifying evidence-based treatments.

Interpretation

Studies that have examined the role that social workers' play in the pediatric behavioral health population's treatment were not identified. Pediatric behavioral health knowledge is limited (Arora et al., 2017; Knight et al., 2019). There are 50 million children in India with symptoms of a behavioral health diagnosis (Hossain & Pirchit, 2019). The aim of the first hypothesis was to support the CSIBER University social work students in acquiring pediatric behavioral healthcare-specific topic and intervention knowledge through participation in the BHIPPS intervention. The analysis of the post-BHIPPS intervention survey data did not show a significant increase in the students' acquisition of knowledge of behavioral healthcare specific topics or interventions. The BHIPPS intervention was conducted online, and online education programs help disseminate healthcare knowledge (Price, 2020). The BHIPPS online intervention provided the CSIBER University clinical social work students exposure to novel integrated pediatric behavioral health care content.

Supporting children with a behavioral health diagnosis is challenging. Using EBTs provides the most effective and ethical treatment services (Slocum et al., 2014). The second hypothesis in the BHIPPS intervention was developed to promote the CSIBER University social work students in

increasing their ability to identify EBTs for the pediatric behavioral health patient population. The BHIPPS intervention post-survey data showed that the study participants did increase their ability to identify EBTs. There was not a significant increase in students' knowledge of EBT post-BHIPPS intervention survey analysis. Increasing the CSIBER University social work students' ability to identify evidence-based treatments compared to those not evidence-based prepares them to treat their future pediatric behavioral health patients (Polaha et al., 2018).

Limitations

Although online training has been successfully used for educating medical providers, the BHIPPS intervention was conducted with students in India while the interventionist was in the United States. Therefore, the difference in time zones and students' available times made the implementation of the intervention challenging. The BHIPPS intervention is technology-heavy which may be challenging for some instructors or some areas of the world due to internet availability (Smeraglio et al., 2020). A thorough understanding of current chat and texting applications, online collaboration, and survey instruments are essential for BHIPPS implementation. Yet another limitation was that the BHIPPS intervention was implemented during Covid-19 restrictions, which prevented all CSIBER University social work students from learning in one location; the students participated in BHIPPS from their homes. The learning environment did not allow for engagement with the interventionist on a level where students could learn from each other. The BHIPPS intervention was further limited due to time constraints. Instructing students with no prior experience with the pediatric behavioral health population either in-person or through lecture within two hours left many topics uncovered or not explored fully. The BHIPPS intervention was not designed for generalizability outside of the country of India. Prevalent comorbidities for children in India were extensively discussed during the intervention. Not all participants completed both the pre and post-intervention surveys which created a gap in data. The students were not required to participate in the intervention, which could be related to this incomplete dataset and be considered selection bias. The survey instrument had not been previously used; this pilot study was the first of its kind. Further implementation of the BHIPPS intervention with the accompanying survey tool will be needed to determine validity and reliability.

Conclusions

Pediatric behavioral healthcare services and providers are imperative to the success of the world's youth. Developing and implementing training programs that address the integration of evidence-based pediatric behavioral health care into post-secondary education is essential. As the access to post-secondary social, behavioral, and medical education improves, webinar-based learning increases the availability of pediatric behavioral health care education to current and future students. Education in integrated pediatric health care and how it impacts the patients, and their families can benefit each person on the child's healthcare team (McMillan et al., 2020).

India has the world's 2nd largest population, with 50 million of their estimated 427 million children being diagnosed or displaying some symptoms of a behavioral health diagnosis (Hossain & Pirchit, 2019; Humanium, 2022). Taking steps toward educating India's future behavioral and medical professionals in pediatric behavioral health can improve the health care outlook for the country's growing pediatric population. CSIBER University School of Social Work has taken the initial step by integrating content from the BHIPPS intervention into their curriculum, which places their social work students at an advantage over those that do not attend CSIBER University. The addition of the BHIPPS content to the curriculum improves the confidence and knowledge of the social work students in treating the pediatric behavioral health population.

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State of Solid Waste Management Challenges as Exacerbated by COVID-19 Pandemic Related Littering in Addis Ababa City Administration.

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Abstract : This study was concerned in the examination of state of solid waste management and the challenges related to exacerbation of COVID-19 attached littering in Addis Ababa city administration .The study explored the challenges and effects of COVID -19 in one of the areas/sector where the environmental impacts of the pandemic are most prominent, the solid waste management sector.A total of 455 survey questionnaires were distributed and collected with a response rate of 100% from under 7 sub-cities considering some specially identified problematic areas which are known to have recurrent unattended littering problems due to human& economic activities as pathway. A mixed cross sectional survey research approachwasusedwith structured questionnaires, reconnaissance survey& sideline interviews administered as primary source of data collection. As one prime focus/objective of the studyis to assess and evaluate the magnitude of the problem of the challenges resulted due to COVID -19 pandemic on the solid waste management.Likert scale type survey questionnaires were administered which wereanalyzed quantitatively by using mean score and percentages.The result shows that, the challenges and magnitude of the problems resulted due to COVID-19 pandemic to exacerbation of littering rise on the solid waste management /SWM and on the overall aspects of the sector was found to be a moderately significant as having or acquiring an average mean score value of 3.42 or (68.46%).Considering the full extent of the problem in terms of the computed percentage amount, this may probably sound in a justifiable sense that, the magnitude of the problem of the challenge of COVID-19 on the SWM sector had been by about 68.46%during the tough times of the COVID-19 pandemic.

Key words: Littering, Covid-19,SWM, Personal Protective Equipment, single use items

Background of the study

According to International Finance Corporation estimate, (2020) every year the world generates over 2 billion metric tons of municipal solid waste.

The World Bank assessment likewise predicts that by 2050 global annual waste generation will increase by 70 per cent—to 3.4 billion metric tons. According to the same source in low-income countries, the extent of waste is expected to increase threefold by 2050, mostly in sub-Saharan Africa. As a consequence of this rapid growth of waste generation, there has been serious challenges prevailing in low income or emerging economies.

COVID -19 is an emerging global pandemic over the last few years since its outbreak that has been affecting in unprecedented way almost all areas of the globe broadly which needs cross-cutting intervention. The economic, social, health and environmental costsand damages caused/resulted due to COVID -19 are considerably high.The adverse effects of COVID-19are being sensed in different sectors of the economy globally affecting the smooth functioning of different socioeconomic activities.

In this sense, the waste management sector is not exception as one of the sector that has felt the effect of the burden considerably.Waste management is an important municipal activity that

affects the human health and the environment.Thus, waste management is an essential public service required to contain the spread of different epidemics such as of COVID-19 (UNEP, 2020). Following immediately the outbreak of novel Corona virus(COVID-19) since 2019 a growing body of literatures both published and unpublished indicate that due to the associated mandatory protective/ preventive safety measures implemented globally that include social distancing and lockdown, there has been increasing quantity of waste and environmental pollution. As a consequence of this, globally there has been wide spread use of personal protective equipment that has resulted in the discarding of uncontrolled single used protective equipment waste affecting the quantity adding an enormous increasing amount of littered waste changing the scenario of waste management.

According to WHO (2020)there has been a growing potential widespread discarding, open burning and incineration practices that could affect air quality and health outcomes due to the exposure to toxins . Also, there could be a severe implication and impact for developing countries without standard waste management technologies and waste emergency policies to curb the pandemic. Unmanaged littered personal protective equipment waste is particularly concerning due to its implications to natural ecosystems and public health and safety.

Like most other developing countries, the government of Ethiopia and the city administration of Addis Ababa is being challenged by the low participation of the public, ignorance and the low level of attention and understanding of the public to the adverse effect of COVID -19 preventive equipment related waste, unavailability of proper facilities for collection and disposal of communal COVID-19 generated waste to entire city inhabitants due to also low municipal capacity and absence of predefined responsibilities.

In the context of developing countries like Ethiopia along with the lack of proper/poor environmental monitoring and inspection, lack of proper handling problem, awareness and ignorance, well informed inhabitants of environmental law and effects of COVID 19 related waste as emerging issue and the lack of COVID -19 related enabling institution to determine how far activities are carried out
In the COVID time the city government is not still providing separate waste collection facilities. As a result, a lot of dangerous items (such as discarded masks and other healthcare wastes,and potentially infected &contaminated items) may cause risks of contamination or poisoning, particularly to scavengers and school going children.

The lack of proper SWM practice, coordination and awareness and cross cutting intervention are also key gap identified in the existing COVID-19 related waste management.

Another observable common issue is that the existing waste collection, treatment and disposal technologies, options & facilities to Covid-19 pandemic related waste are not well designed, well-built and well managed in the study areas. In addition to this, the present state of waste management practice has limited compliance to environmental health standards and health care waste stream guidelines.

Currently, more than ever, following the outbreak of COVID 19 around many parts of the world ,especially in urban centers, there has been wide spread unpleasant infectious municipal waste littering in public places caused by personal protective equipment /PPE discarded materials as there has been restrictive measures imposed to use the equipment as critical issues. These days more than ever in the study area, Addis Ababa, the area coverage and volume of COIVD -19 related littering of solid waste is significantly on the rise like many other urban centers of least developing related to the crisis.

Materials and Methods Research Design

The design of the research is cross-sectional survey study using descriptive and explanatory research design where a mixed research approach was employed to collect data from a total of 455sample respondents of which 352 were selected by using multistage stratified randomly sampling techniques from commercial and residential centres while the rest 103 were respondents from institutions. For the selection of the representative sample respondents from the target population(commercial, residential, hotels and cafes respondents), Kerejice and Morgan table of sample selection was used.

Sample size and Sampling Technique

The unit of analysis for the study constitutes residents found in most problematic enumeration sites/districts. They include busy pathways, commercial and residential neighborhoods and actor institutions that are found in the most affected and problematic sub cities. These areas are characterized by high vulnerability of waste littering that encompasses also private waste collection enterprises and rag pickers, including households. The sampling frames for the study were selected from seven identified enumeration sub-cities of the study area.

In this context, based on geographical orientation from among the existing actual 10 sub-cities of AA, by using simple random sampling technique from each, one representative sub city was selected. In this respect from among the five clusters(north, south, east, west and center), Arada sub-city representing north, Yeka & Bole from east, Addis-Ketama representing west sub-city, Kerqose from central Addis Ababa and Akaki-kality from south were drawn or included purposively. The sample size of each cluster sub city and the targeted woreda were determined based on Krejcie& Morgan's (1970) tableof sample size determination.

In this context from among the seven selected sub cities, some 10 woredas /districts which are most problematic and vulnerable to uncontrolled and rampant generation of waste are identified with the assumption that these parts (woredas) of the city are commercial and business centres where there is a high mobility of people due to presence of some facilities and infrastructures such as bus terminal and taxi station. Based on statistical data reference from the AA, city ATLAS (2015GC/2007EC) the total population residing in the selected woredas was reported as close to 200,000.

Accordingly, the sample size of each cluster sub city and the targeted woreda for the residential questionnaire was determined based on Krejcie & Morgan's (1970) table sample size determination rule of thumb where **N =193,038 S** that is the required sample size is 377.

In addition to this, a questionnaire was distributed to randomly selected experts and work unit heads/coordinators working in AA city administration/ institutions, some federal level institutions that have stake in waste management, urban sanitation health, environment protection and private waste operators.The relevant sectors/ institutions were selected purposively by using non-probability sampling technique and drawn from among relevant federal, city and sub-city level targeted institutions. Accordingly, some 78 purposively selected sample respondents were involved. Hence, the desired sample size for the present survey in total was455(377+78).

In addition to this, for the categorical data that was collected from the different schedule interview platforms such as face to face structured interviews of human inquiries.Some 30 interviews were considered for such a data base.

Table 1: Krejiec& Morgan: Table of Sample Size Determination

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: Krejcie & Morgan, 1970

Data Source and Data Collection Instruments

In search of addressing, the research objectives all reasonable efforts were made by carrying out primary data that was collected by employing interviewer administered survey questionnaires platform, structured interviews, and field reconnaissance observations and based on desk review from secondary data/sources.

In an attempt to properly collect the necessary data from the survey respondents, a five point Likert scale was designed where the final obtained result was analysed and compared with mean score delimited by Zaid Aton and Bagheri (2009).

For field based data collection purposes, multiple data gathering techniques/ instruments were used. The largest proportion of the data were collected and generated from primary sources i.e.survey questionnaire is one key instrument. For the collection of relevant secondary data for each thematic area a checklist was used.

The field investigation and monitoring activities were carried out systematically and reasonably through field observation and visits of the different potential litter source sites by using a checklist. The household level survey questionnaires for the intended purpose were distributed based on the administrative layers /arrangement that follow city, sub-city and woreda level.

The questionnaire was administered by using self-administered and interviewer administered approaches. For the greater majority of the survey respondents from the commercial, hotels and restaurants and residential including street vendors an interviewer administered mixture approach was employed. For public institutions and key actors as most are known tobe literates, a self-administered approach where the participants filled-up the questionnaires ~~were~~ was employed.

The questionnaire was pretested and validated by a post-test and a pilot survey was conducted with a sample of 60 respondents, with representations from the various strata of the study respondents.
The study instrument generally has seven sections comprised of 6 questions for assessing the socio demographic back ground of the participants, 7 questions for assessing current aspects of solid waste management, 9 questions designed for assessing littering aspect, 6 questions on solid waste, reusing,recycling and recovering aspects, 5 questions for assessing SW handling and segregation aspects(technical issues) and the last part of the questionnaire, part 7 focused on assessing the subsequent impacts of COVID-19 pandemic on the waste management sector comprising of 11 questions in total.The questionnaire consists of a kind of Likert type questions with agree/disagree/no not sure/somewhat responses and with yes/ no and sometimes responses.

The Interview and Interviewees Background

To supplement/complement the quantitative data from the survey questionnaire, a thorough data was gathered, in in-depth and extensive face to face and telephonic interviews were conducted

from among the potential key informant participants. The study for the interview made use of an interview guide/ or schedule supported by a checklist designed in the structured interview strategy/technique covering of comprehensive thematic inquiry.

The interview schedule was designed in English language that was administered /presented to the interviewees directly by translating the main points of the themes in Amharic language. Then the recorded audio interview notes and handwritten interview notes were translated into English language, categorized with codes according to the thematic areas and the variables.

The participants for the interview were drawn from among the existing key SWM actors and stakeholder institutions of the study area selected by using purposive sampling technique that involve also snowballing techniques.

In the interview session, a total of almost 30 participants had participated that were recruited on voluntary basis. In this regard in both the face to face and telephonic interview secessions exhaustive data were gathered from each sub-city SWM office heads and work unit coordinators,such as AASWMA, EPA,EEFRI (Ethiopia, Environment& Forest Research Institute) representatives from each sub-city private-public partners and enterprises and operators in SWM.

Prior to imparting the interview authentication and permission letters were submitted, where the participants were all confirmed that personal profiles and bio-data such as names including their interviews are confidential and will not be revealed as individual report officially. The identity of the study participants' was retained anonymous at several phases of the study.

Data Analysis Methods

The type of data analysis method employed in the present study included only a group of descriptive statistics using frequencies, measures of percentages, measures of variance, range, mean where the results of the study are presented by using table, figures and graphs .The reason for carrying out only descriptive statistics only was partly with the research objective as it is primarily and essentially interested to investigate on current status of the problem and the comparative situation of the selected sites. Hence, the issues being dealt are still existing, on-going and prevailing that could be adequately dealt or analysed with the application of a family of descriptive statistics.

In an attempt to properly collect the necessary data from the survey respondents a five point likert scale was designed. The final obtained results were analysed and compared with mean score delimited by Zaid Aton and Bagheri (2009).

According to these scholars the mean scores are classified and organized the respondents into three different categories organized as <3.39 low indeed poor or, 3.40 to 3.79 moderate and sufficient and > 3.89 as high and good enough. Along with this, the attempt to compute and analyse descriptively from the Likert result/value was done based on the five point Likert scale by converting the result obtained. The frequencies were then converted into percentages to ensure comparison and contrasts. The details of the analysis based on the score points are presented in table-2.

Table 2:   Standard table for analysing the Likert type results to determine the condition or statusof SWM

Low/poor/inadequate/not adequate enough/insignificant	Moderate/medium	High/good enough/sufficient enough/significant
≤ 3.39	3.40 – 3.79	≥ 3.8
≤ 67.8%	68% - 75.6%	≥ 76%

Source: Zaid Aton and Bagheri (2009); Yalegama, Chileshe, & Ma (2016)

Finally, to analyse the collected quantitative data in line with the overall objective of the research, statistical procedures were adopted by using Statistical Package for Social Science (SPSS) version 25. The qualitative data that were collected from the different subsequent interview schedules and, desk review & field observations were processed and analysed thematically. The data that had been obtained from directives, proclamations and reports were analysed by using content analysis method.

Result and Discussions

Table 3: Survey Questionnaire Distribution areas and sample respondents taken from sectors &Actors

S/N	Actor sectors	Institution	Frequency	Sub-city Yeka, Arada, Gulele,Kirkso, Addis Ketema, Bole, and AkakiKality							
1	Public institutions AA city SWM agency	All the three work units staff in SWM	61								
2	AA city EPC										
3	Sub-city Sanitation/SWM administration office	• Community mobilization and awareness work unit • Reuse and recycling work unit • SW transportation	70								
4	Commercial centers, street,		265								
5	Residential areas		65								
6	Hotels ,cafes& restaurants		26								
	Total		**455**								

Source: Field survey,2021/2022

Table 4: Overall Demographic Characteristics of Survey Respondents

		Frequency	Percent
Gender	Male	316	69.5
	Female	139	30.5
	Total	**455**	**100.0**
Age average	18-30	266	58.5
	31-40	174	38.2
	41-50	10	2.2
	51-64	4	9
	64 & Above	1	2
	Total	**455**	**100**
Education Status	Illiterate	11	2.4
	Read & Write	12	2.6
	Some Primary School	48	10.5
	Some Secondary School	94	20.7
	Diploma	59	13
	Degree	194	42.6
	MA Degree	37	8.1
	Total	**455**	**100**
Institutional Affiliation	Residential areas	65	
	Commercial centers & street vendors	265	
	Public institutions	78	17.14
	Hotels & Restaurants, cafes	26	5.7
	Total	455	100

Source: Field survey result (2021/22)

List of Interview Participants

The relevant actors for interview were selected based on purposive non probability sampling technique. The selection of relevant KII from among the selected institutions was under taken purposively in steps. First, the list of relevant work units/office was identified .Then the list of teams and staff registered in the work unit and institutions including their phone number were identified and cleared where by valid individuals were selected for the purpose

Table5: List of Interview Participants

Related sectors	Area/instituti on interview administered	Participants position	Number of interview questions	Remarks
AA city SWM Agency	2	Swm expert	10	
Yeka sub-city Sanitation administration office head& enterprises involved in SWM	3	Three work unit heads of swm	10	
AA city Environment protection Authority and forest development and research institute	2	Senior experts	10	
Gulele sub-city Sanitation administration office head and SW enterprises/partners involved	3	Three work unit heads of swm	10	
Arada sub-city Sanitation administration office head and enterprises/partners involved in SWM	3	Three work unit heads of swm	10	
AddisKetamasubcity Sanitation administration office	3	Three work unit heads of swm	10	
AkakaiKaliti sub-city Sanitation administration office head& enterprises involved in SWM	3	Three work unit heads of swm	10	
Kirkos sub-city Sanitation administration office head & enterprises	3	Three work unit heads of swm	10	
4involved in SWM				
Yeka sub city Sanitation administration office head & enterprises involved in SWM	3	Three work unit heads of swm	10	
Informal waste pickers(rag pickers)	4	Individual informal waste pickers	5	
TOTAL	**29**			

Source: Field survey,2021/2022

Current state of management of solid waste in the midst of COVID-19 pandemic

In order to measure this research question, the respondents of the survey were required to rate genuinely the all-encompassing statements of attributes or dimensions and the real situation based on their rational mind, acquaintance and intuitive experience and skills to detect. From the mean score analysis result depicted in Table -6 below. The overall result was computed and compared by calculating the average mean score based on mean score analysis standard as given by Zaid Aton and Bagheri (2009). In this respect ,as depicted in the same table below ,the overall mean score analysis result is 2.87 much lower value than the cut-off point that explicitly implies and sounds like literally, the current state of SWM is significantly at deeply worrying condition or inappropriate status having excessive and in big question at all as the computed mean score value

is much lower and that may sound if not in a justifiable sense that like it is not in good enough condition as the mean score value is below the cut-off point .

In realizing and interpreting the result of the mean score value based on the computed all-encompassing statements of attributes or the dimensions, it is indicative of automatically that, the current SWM condition is not in better well deserving condition that may also imply literally there is a real problem as the result is not promising and encouraging.

Table No. 6: DescriptiveStatistics Result on Respondent Insight Agreeing on State of SW

Statements of Attributes/Items	N	Minimum	Maximum	Mean	Intensity/degree	Std. Deviation
1.How would you rate the overall municipal solid waste management aspect (planning, financial ,legal & institutional aspects)?	455	1	5	3.31 (66.2%)	Low	.935
2.How would you rate the existing municipal solid waste management institutional capacity and arrangements?	455	1	5	3.26 (65.2%)	Low	.816
3.How would you rate existing municipal waste management in terms of comprehensiveness of existing laws and regulations?	455	1	5	2.76 (55.2%)	Low	.880
4. How would you rate municipal waste management services in terms of effectiveness of enforcement of laws and regulation in addressing waste issues?	455	1	5	2.69 (53.8%)	Low	.886
5.How do you rate Waste Management service in terms of public awareness	455	1	5	2.76 (55.2%)	Low	.880
6. How do you rate existing municipal SW service being provided in terms of effectiveness	455	1.0	5.0	2.69 (53.8%)	Low	.88259
7. How do you rate the existing solid waste management practice in terms of safety to the protection of the environment and to safeguard human health and wellbeing?	455	1	5	2.63 (52.6%)	Low	1.720
Valid N (listwise)	455					
Overall mean				**2.87 (57.4%)**	**Low**	

Source: Field survey, 2021/2022

Interestingly, the field observation result somewhat reflected congruence that, the existing solid waste management of the study area under the COVID –19 periods was not proper as the collection of potentially infectious COVID-19 related waste had been noticed mixed with the general waste together. Likewise,based on the field walk through observation in the different enumeration study sites, it was noticed that the transportation routing of the vehicles carrying SW and the handling of all fresh waste items is improper where the normal public road is being used for hauling without covering that is causing sometimes odour and litter into the streets/ground.

The level and trajectories of littering situation of solid waste due to exacerbation of Covid-19 pandemic adverse effect

In order to address or detect this research question, the respondents of the survey were required to evaluate the real situation issue by applying genuinely their rational mind, acquaintance and intuitive experience and skills

Likewise, this was also confirmed from the side-line interview secession and walk through observation data collection strategies that the existing SWM, the collection and disposal is not based on international and national guidelines and procedures of hazardous and health care waste management that has the potential riskAnother outstanding areas of observation noted during walk through field observation was the improper management and handling of COVID-19 related litters and refusal with other general waste.

Table 7:   Insight of survey respondents on prevalence of litter& refuses around their neighbourhood/locality /city in relation to COVID19 Pandemic?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	155	34.1	34.1	34.1
somehow	221	48.6	48.6	82.6
3. Never	78	17.1	17.1	99.8
Total	455	100.0	100.0	100.0

Source: Field survey, 2021/22

The result as depicted above in Table-7concerning the existence of COVID-19 related waste indicate that a little lower than half of the respondents, 48.6% (n=221) from among 455 survey respondents have dominantly affirmed somehow on the prevalence of litters exacerbation level. But a considerable number of respondents 34.1% (n=155) rated or affirmed the presence of litter and refusal related to COVID-19 around their neighborhood and the entire city. On the contrary 17.1 percent declined or chose to remain never.
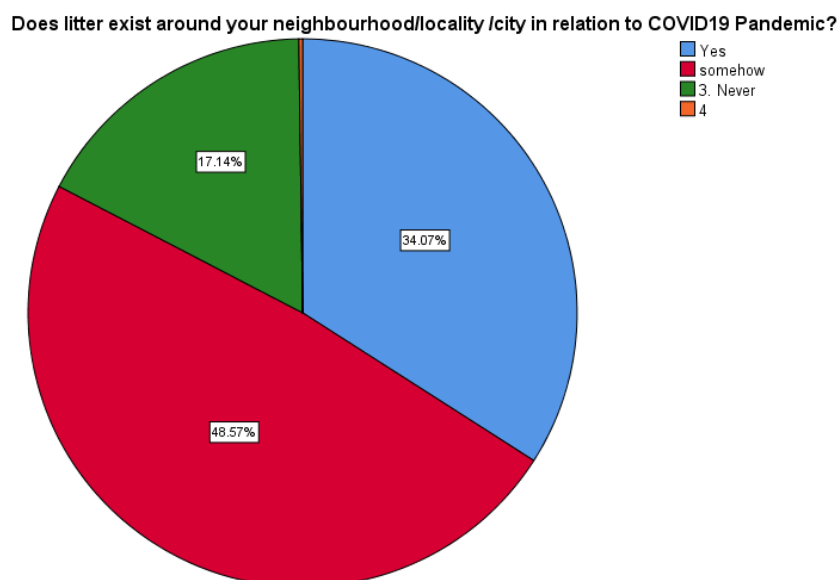

Does litter exist around your neighbourhood/locality /city in relation to COVID19 Pandemic?

Table 8: Insight of respondents on the dominant types of litter item occurrence in the midst of COVID?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Papers, sanitary pads &cartoons packaging's	161	35.4	35.4	35.4
Face masks, plastics dis indicant bottles	207	45.5	45.5	80.9
Clothes &shoes	22	4.8	4.8	85.7
Scrap metals& electronics	14	3.1	3.1	88.8
Glass	3	.7	.7	89.5
Other specify	48	10.5	10.5	100.0
Total	455	100.0	100.0	

Source: Field survey, 2021/22

The result as outlined in Table-8literally it indicates that most significantly face masks and COVID-19 related Personal protective items equipment /PPE/ are identified as the most dominant litter items and refuses dropped on the ground and into the environment as it is observed and rated by a little fewer/lower than half of the respondents, 45.5% (n=207) followed by papers ,sanitary pads and cartoon packaging items as rated by 35.4%(n=161) of the survey respondents. One of the most important effects of the pandemic seen presently globally is in unprecedented use and generation of potentially contaminated face masks, gloves and PPE which have been discarded inappropriately littered in public places and the environment. In terms of this, several studies have confirmed that after the out broke of the pandemic, the increasing use of masks and gloves has led to the rise in urban litter (Kalina and Tilley 2020).Based on the result of the table and the figure as mentioned above, it reveals that face masks are the most discarded common personal protective litter item pilling up rated as having medium (45.49%) during the pandemic which has increased during the time.

Much of previous studies that have been conducted in several countries have also concurrence result on the situation that following the outbreak of COVID-19 a significant increase on the amount of face masks and PPE post used material litter was widespread phenomena in most parts of the world.

Table 9: Insight /Percentage of respondents on the extent and level of litter and refuse occurrence/prevalence situation since the outbreak of COVID19 around their areas of Premises, neighbourhood/city?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
lower level	145	31.9	31.9	31.9
Medium level	239	52.5	52.5	84.4
Higher level	59	13.0	13.0	97.4
Very worrying	12	2.6	2.6	100.0
Total	**455**	**100.0**	**100.0**	

Source: Field survey, 2021/22

As outlined in Table-9 above, the result indicate essentially that the extent of prevalence of litter and refuses / discarded COVID-19 related waste and its pilling up situation is observed and rated by the survey respondents as medium level as confirmed by a little higher than half of the respondents, 52.5% (n=239) during the pandemic. Contrary to this, about 31% (n=145)

respondents claimed the occurrence of littering situation as lower level and the remaining 13 % (n=59) identified as lower level.

The result obtained from the subsequent side line interviews held with KII and field /site observation in the different parts of the city reveled also that, due to the increasing use of face masks, disinfectants and PPE, there are in properly discarded litter items around public places and the environment which requires proper management due to the possibility of their potential contaminationincluding likelihood of secondary spread of the virus through municipal solid waste.

The results of a study done in Toronto, Canada, found that disposable gloves and face mask accounted for about 44% and 31% of debris related to personal protective equipment, which is known as a new source of plastic pollution (Ammendolia et al. 2021).Another Kenyan study illustrated that up to 16.5% of the total litter experienced in the streets is related to the COVID-19 items, while litter associated with COVID-19 was not found on recreational beaches (Okuku et al. 2021).

To what extent do you observe littering is happening around those areas in your Premises neighborhood/city since the outbreak of COVID19?
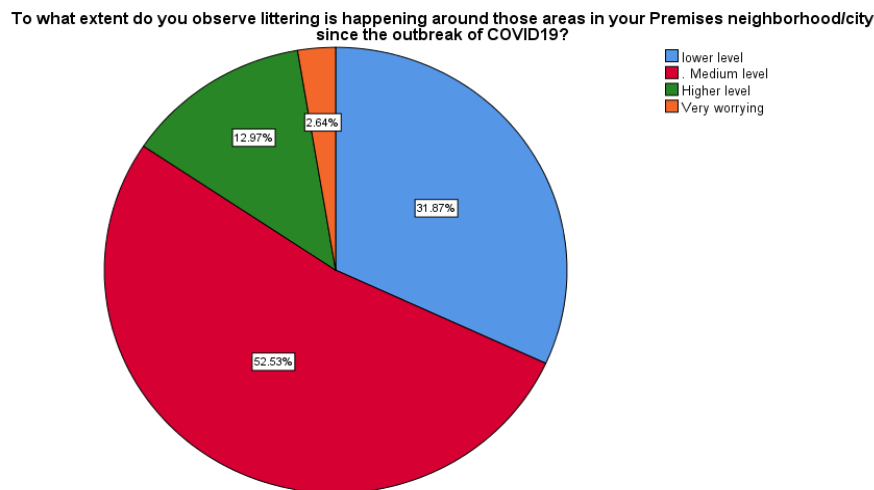
Table 10: Percentage of respondents agreeing on state of dropping of any post used PPE & packaging litters into the environment?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Yes	123	27.0	27.0	27.0
Sometimes	181	39.8	39.8	66.8
Never	151	33.2	33.2	100.0
Yes	123	27.0	27.0	27.0
Total	**455**	**100.0**	**100.0**	

Source: Field survey,2021/22

As depicted inTable-10 above, the result concerning on the state of appropriately discarding of litters such as face masks ,gloves, packaging and disinfectant bottles from among 455 survey respondents a fairly good proportion, 39.8% (n=181) considered and admitted sometimes in the dropping of any post used PPE litters inappropriately into the environment . As contrary to this 33.2% (n=151) indicate as never to have littered or discarded inappropriately post used PPE in to the environment/ground and about 27.0 % (n=123) admitted in the dropping of PPE litters inappropriately into the environment or ground. On the other hand in light of this,the KII

participants in explaining further who litters more and where littering occurs, the KII reported that although individuals in all age and sex category tend to litter, however ,slightly some participants explained that in terms of sex difference, men tend to litter more than women.

On the other hand, the data obtained from the field reconnaissance observation supported also the survey finding that individuals of any age and sex group did not keep their refusal properly and had been noticed in dropping of litters anywhere even in the presence of dustbins which may be related to inappropriate littering behavior of residents.

In light of this, studies /data conducted in the UK, USA, Australia and Canada in 2006 and 2008 on who litter and where much of the litter occurs including why this happens related to the difference in attitude have shown that men were more likely to drop litter more than women and that young people when in group under the age of 25 years were more likely to drop/do than the old people.Also, these literaturesidentified differences in attitudes towards littering by different groups in society.

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Table 11 : Insight of Respondents in to reason/ or driving force for the emergency/prevalence of litter and refuses during Covid1 9 time?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Complete absence of containers	73	16.0	16.0	16.0
Inadequate number of containers	145	31.9	31.9	47.9
Initial unawareness on the user side	69	15.2	15.2	63.1
Negligence	31	6.8	6.8	69.9
In efficiency in Municipal collection	10	2.2	2.2	72.1
In convince around containers	9	2.0	2.0	74.1
In efficient regulatory framework	27	5.9	5.9	80.0
COVID19DRIVEN SITUATION	3	.7	.7	80.7
All could be possible answers	88	19.3	19.3	100.0
Total	455	100.0	100.0	

Source: Field survey, 2021/2022

The result concerning the possible reasons for the presence of littering around their locality/neighborhoods and citywide are presented in Table-11 above. As outlined on the same table, the result indicate that a good proportion of the survey respondents, 31.9% (n=145) have reported inadequate number of dustbins/or waste collection containers availability as reason/driving force for littering that is followed by all of the factors mentioned as driving reason as rated by 19.3% (n=88) of the survey respondents.

The data obtained from the subsequent sideline interview secessions held and the walk through field observations rather suggest and reveals contrary situation in that individuals have been observed in discarding/littering of waste even in the presence of a litter bin under their nose. Again the various sidelines KII discussion result indicate as mentioned by most of participants, negligence of residents and inefficiency in the implementation and enforcement of existing SWM regulations including weak social norms in inhibiting littering behavior and nurturing compliance were mentioned as possible reason.

Even some informants indicated, that there are individuals in the society that tend to consider disposing of some type of litter as normal and acceptable. There are also some literature that substantiate this outlook that, when the prevailing social norm considered littering as normal and appropriate practice and the context , there is a growing tendency in the generation of more litter

dropped of wide spread .Also existing literature indicate that the availability of facilities, infrastructure including its distance and the location affect littering tendency .

What are the most possible reason for the emergency of littering during this time?

Legend:
- Complete absence of cont
- Inadequate number of containers
- Initial unawarness on theus side
- Negligence
- Inefficency inMuncipal coll
- Inconvience around contain
- Inefficent regulatory framev
- COVID19DRIVEN SITUATI
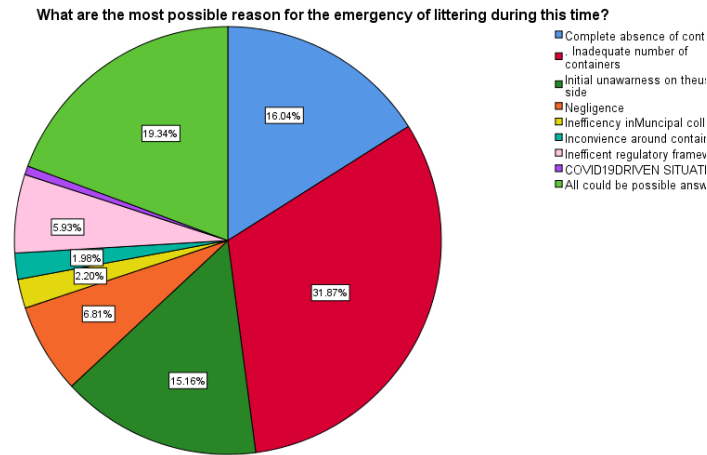- All could be possible answ

Table12 : Insight of respondents in to realizing the condition of littering extent and level in their premises/ neighbourhood/city during the COVID -19 pandemic time?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Yes	172	37.8	37.8	37.8
Sometimes	217	47.7	47.7	85.5
Never Know	64	14.1	14.1	99.6
Yes	1	.2	.2	99.8
	1	.2	.2	100.0
Total	455	100.0	100.0	

Source: Field survey, 2021/2022

The Table above indicates some results on question items included to evaluate the opinion of the survey respondents on the likely situation of extent and trend of littering city wide and around their premises. Comparing the results of the survey as indicated in the table above across it reveals that from among 455 respondents almost a little fewer/lower than half of the survey respondents, 47.7 % (n=217) rated 'somehow' in to realizing littering extent is increasing in the midst of COVID-19. In the survey result again about 37.8 % (n=172) rated or said 'yes' in realizing littering amount on the rise after COVID-19. While about 14.1% (n=64) rated/or considered never know about the situation.

Table 13 : Insight of survey respondents on most known littered area where much of the littering is prevalent/happening?(multiple answers is possible)

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Around the street	238	52.3	52.3	52.3
Around Cafes/coffee houses, hotels restaurants	86	18.9	18.9	71.2
Around bus station	73	16.0	16.0	87.3
Around stadium	14	3.1	3.1	90.3
Around Public meeting halls/areas	43	9.5	9.5	99.8
other specify	1	.2	.2	100.0
Total	455	100.0	100.0	

Source: Field survey, 2021/22

The result in Table-13above concerning where much of the littering of face masks and PPE is prevalent and abundant due to the persistence COVID-19 indicates that , discarded face masks and other litter items are known to have been found dropped on streets as overwhelming majority slightly higher than half, 52.3% (n=238) of the survey respondents identified and rated streets as most littered areas where much littering is prevalent. About 18.9% (n= 86) have also indicated cafes, coffee house and hotel and restaurant area as most littered areas. And this is followed by bus stations areas as most known littered part as identified by 16% (n=73) of the survey respondents where much of the littering is happening.

There are emerging literature/studies that have been conducted on the quantity and composition of litter that substantiate the present study result that much of the growing litters such as discarded face masks and gloves have been abundant in various public spaces such as around beaches, recreation areas during the pandemic ,which has increased during the time. For instance the conducted studies/literatures in the USA, Spain ,South America (Zambrano-Monserrate et al. 2020; Fadare and Okoffo 2020; Saadat et al. 2020; Ardusso et al. 2021; De-laTorre et al. 2021)) illustrated that the widespread use of masks and gloves play a crucial role in increasing litter in coastal areas.

Plates-1. Footage on unattended improper littering situation on open spaces, street/ditch line, around CMC &Megnagna areas

Plates-2.Footage on unattended improper littering situation on open spaces, street/ditch line, around CMC&Megnagna areas.

Table 14: Insight of Respondents agreeing on how they are cautious & concerned about littering while walking by and travelling?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Yes	343	75.4	75.4	75.4
Some how	88	19.3	19.3	94.7
No	24	5.3	5.3	100.0
Total	**455**	**100.0**	**100.0**	

Source: Field survey, 2021/22

As depicted in Table-14above,the overwhelming majority of survey respondents, 75% (n=343) claimed they are caution and extremely concerned in the dropping of litter while walking and travelling by without dropping. On the other hand referring the same table, fewer survey respondents, 5.27% (n=24) claimed that they are not cautious and concerned about the dropping of PPE post used litter while walking and traveling on land. Contrary to the survey result in reality based on systematic observation result from different site indicates that most pedestrians and travellers on land were caught and observed actually dropping of their post used litter items on the ground while traveling and walking as they wish which could suggest that there is a broader littering behaviour problem. On the contrary based on the subsequent side-line KII, most of the participants have stated that in principle by any means for whatever reason littering is unjustifiable and unacceptable.

Table 15: Percentages of Respondents agreeing onhow often do you litter into the environment/ ground?

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Always	74	16.3	16.3	16.3
Some times	241	53.0	53.0	69.2
Never	140	30.8	30.8	100.0
Total	455	100.0	100.0	

Source: Field survey, 2021/22

Table – 15 above show the result on how often survey respondents do litter in to the ground in their daily life. Accordingly, the largest share of the respondents slightly higher than half, 53% (n=241) have rated sometimes and 30% (n=140) have identified never littered into the environment. On the other hand, 16.3% (n=74) rated always for they have been committing littering. Although the survey result have shown like this , contrary to this, the sideline walk through field observation and interview analysis results have shown different situation that people/residents practice litter dropping anywhere and at any time even in the presence of collection containers even under their nose
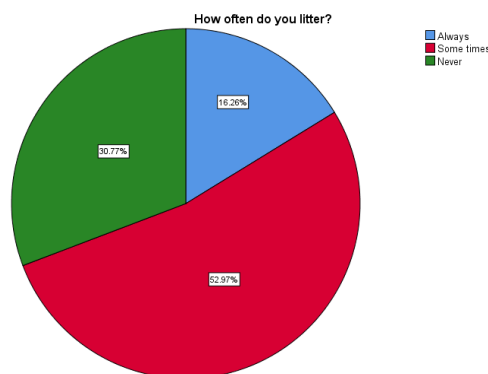
.

How often do you litter?
- Always
- Some times
- Never

16.26%
30.77%
52.97%

Table 16: **Percentage of respondents agreeing on who is responsible for the amount of litter in their neighbourhood and around the city?**

	Frequency	Per cent	Valid Per cent	Cumulative Per cent
Municipality	76	16.7	16.7	16.7
The littering Person	72	15.8	15.8	32.5
Thekebele administration	33	7.3	7.3	39.8
All the community	274	60.2	60.2	100.0
Total	455	100.0	100.0	
Total	455	100.0	100.0	

Table-16above shows the result on who is responsible for most of the littering problem in the study area. Based on the descriptive analysis result by using percentage from the total 455 survey respondents the largest share , 60.2 % (n=274) identified for all the community as responsible. About 16.7% and 15.8% claimed municipalities/local government bodies and the littering person respectively as accountable. In line with the subsequent side-line interview secessions most have also mentioned that littering is un-justifiable by any means.

On the other hand, the data obtained in the different subsequent side line interview secessions to identify the issue on who litter most , indicated that most of the participants have mentioned/or account the pedestrians and travellers on land and on vehicle in the study area as the main cause and largest source of litter and refuses. A study conducted in Australia in (2009) on sources and types of litter had also shown similar result that pedestrian and travellers land based litter accounted or identified for up to 87% of the general litter of the total types and number of litter.
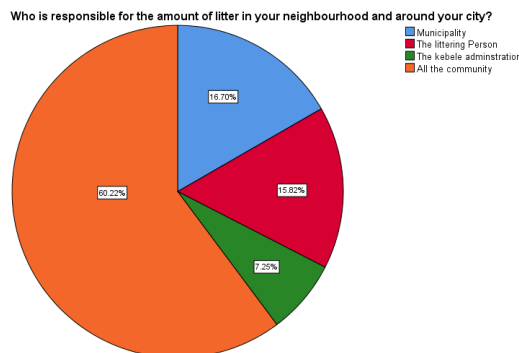
Potential real challenges and magnitude of the problems of the challenges due to COVID-19 pandemic are presently felt with the SWM sector

The study has attempted to analyse the real challenges and magnitudes of the problems of COVID-19 challenges on the SWM by applying some families of descriptive statistics i.e. mean score to measure the variable, construct by designing a likert type questions(items) to measure the opinion of survey respondents .The effect of the independent variable with dimensions related to COVID -19 related waste were evaluated based on a 5-point Likert-scale ranging from '1' strongly disagree, '2' disagree,, '3' Neutral(N), '4' being Agree(A) and "5" "strongly agree".

Lastly, the overall result was computed and compared by calculating the average mean score based on mean score analysis given by Zaid Aton and Bagheri (2009).

According to the explanation of the promoters of the Likert-scale and mean score analysts explanation & interpretation, the mean score result below 3.39 is considered as low; themean score from 3.40 to 3.79 is considered as moderate and a mean score value of above 3.8 is considered as high
.

Table17:   Descriptive Analysis Result on overall challenges and magnitude of the problem COVID -19 challenges on SWM

S/n	Dimensions/ statements of attributes	N	Mean	St. Deviation	Per cent	Intensity/ degree
1	Is covid19 related waste a problem/ challenge for your setup/ neighbourhood and the city"	455	3.54	1.237	70	moderate
2	The safety of solid waste management workers and the livelihoods of those informal workers who depend on the SWM sector have been heavily affected& challenged by the lockdown due to COVID-19?	455	3.58	2.518	71.6	Low
3	Increased shift in the volume and quantity of solid waste production and redistribution has occurred in residential areas than industry& commercial centres due to COVID19 .	455	3.55	2.597	71	Low
4	The volume of medical waste has increased extensively unlike the ordinary time due to COVID -19 Pandemic related wastes.	455	3.28	.993	65.6	Low
5	Industrial and commercial waste production has fallen drastically due to the slowdown in manufacturing activity unlike the ordinary time due to COVID-19 pandemic driven impacts.	455	3.36	1.054	67.2	moderate
6	Driven byCOVID-19 pandemic hazardous waste production has grown with higher production from the pharmaceutical and medical sectors unlike the ordinary time.	455	3.16	1.022	63.2	low
7	Existing hazardous waste treatment capacity in the city is overwhelmed leading to storing/hoarding of waste and potentially inadequate disposal of this category of waste due to COVID 19 Pandemic.	455	3.15	.922	63	low
8	After COVID-19 outbreak, municipal waste has increased in volume that effectively overwhelming existing waste collection and disposal systems.	455	3.39	1.053	67.8	low
9	Changes in waste treatment activity has occurred as Government focus has been on the collection and transport of waste away from population centres.	455	3.53	1.075	70.6	moderate
10	Recycling of plastic and other products has slowed/decreased substantially, while the immediate driver for the slowdown is the perceived risk of COVID-19 transmission	455	3.24	1.047	64.8	low

11	After the outbreak of COVID-19, unlike the normal time, disposal at landfills has increased, in part, because more recyclable materials, such as plastics, are being sent to municipal waste channels .	455	3.53	2.193	70.6	moderate
12	The use of single-use plastics plastic-based personal protective equipment (PPE), such as gloves, masks, and disinfectant bottles, as well as packaging material has largely increased due to/driven by COVID -19 unlike the normal/ordinary time?	455	3.85	3.971	77	High
13	Increased generation of municipal waste due to COVID 19 related waste has made it financially and physically challenging for municipalities to cope	452	3.41	1.001	68.2	Moderate
14	Small and medium enterprises (SMEs) which are involved in waste collection and transport are being squeezed as most are unable to continue providing this critical service in the absence of continued payment.	455	3.37	.998	67.4	low
15	Due to COVID-19 most collected solid waste from the different premises of the city is currently transported to landfills or accumulates at temporary dumps unlike the normal/ordinary times?	455	3.42	.932	68.4	moderate
16	A reduction in recycling activities due to COVID-19 has further compounded challenges in the collection and disposal of municipal waste	455	3.41	.868	68.2	moderate
	Overall mean of COVID19 Impacts on SWM	**455**	**3.42**	**.981**	**68.46**	moderate

Source: Field survey, 2021/2022

Analysis result in Table -17above shows that, the overall challenges and magnitude of the problem of COVID-19 pandemic related challenges on SWM based on analysis of average mean score. Accordingly, based on the overall computed aggregate average mean score analysis result of the respondents' opinion as depicted above which is computed by taking the overall mean score analysis results of the statement of attributes indicates that, the challenges and magnitude of the problems of resulted due to COVID-19 pandemic on the SWM and on the overall aspects of the sector is a moderately significant as having an average mean score value of 3.42 or (68.46%).

Alongside with the survey analysis result, the different subsequent side- line interview secessions made with different key actors in SWM, have also confirmed that, shortly after or in the early active periods of the pandemic, there had been relatively more generation of single use waste materials generated from PPE waste used to protect the pandemic.

Table 18: Overall Result on Challenges and Impact of COVID-19 on the SWM

	No.of respondents	Lowest	Highest	Average	St. Deviation	Percent %
Overall Impact of COVID-19 on SWM	455	1	5	3.42	.979	68.46

Source: survey result, 2021/2022

Conclusions

This study aimed primarily in the examination of state of solid waste management challenges exacerbation due to littering in Addis Ababa city administration during COVID-19.The study explored the challenges and magnitude of the problem of COVID -19 challenges in those areas where the environmental impacts of the pandemic are most prominent, i.e. the solid waste management sector. A total of 455 survey questionnaires were distributed and collected with a response rate of almost 100%. from under 7 sub-cities some especially identified problematic public places which are known to have recurrent littering problems due to much people activity and high mobility and events. As with other cities of the world due to the fallout from the COVID-19 pandemic, the SWM sector in the study area suffered significantly and has felt substantial impact that was manifested in terms of improperly accumulated and collected waste, increase in the volume of single use disposable littered PPE waste, volume of waste dispose at landfill has increased, fall or reduction in reuse and recycling practice that was manifested at the early out break period of the crisis/pandemic. Based on the KII result, Small and micro enterprises involved in waste collection were challenged physically and financially as they were unable to collect SW as required to get fee or generate their revenues in return.

Likewise, another outstanding finding obtained from the present study as compared or contrary to other previous studies and parts of the world based on the qualitative data analysis, from the interview result is that, the generation of commercial, public areas and institutional areas waste production has increased as opposed to residential areas. However, at global context during the active pandemic period in most nations, the amount or volume of collected waste in residential areas had increased while in commercial areas there hadbeen decrease almost by half.According to a side-line key informant interview held with public-private partners/associations and micro and small enterprises representatives involved in Solid waste /SW collection and transportation activities, the impacts and challenges of COVID-19 had even been observed in temporal abandoning or quitting of their daily operation and service to zero level .Likewise, this has even challenged their business and firms sustenance resulting in overall income or revenue reduction and finance constrains as because they were not gaining payment from the collection and transportation services fees as there was lower supply of SW .

Also they had mentioned that as a result of this, they were forced to lay off some workers in their firms as there had no been active and longer works due to lower supply of SW from residential collection points .From further interview discussions report on the impact of COVID-19 on firms engaged in recycling operation, the vulnerability status was not different as they were challenged and affected to operate at full-scale capacity due to again short supply of recyclable materials where markets places of recyclables were closed.

Authors' Contribution

The author has given final approval of the version to be published. Also the author has made contribution in the analysis and interpretation of the data manuscript to meet the expectations of readers

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Competing Interest

There is no conflict of interest so far in terms of the originality of the piece of knowledgeand nowherethe work has not beenunder review for publication.

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Challenges for Teachers in E-education Transformation at Yangon University of Education

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Abstract : The use of digital technology and skills is an essential factor in changing the teaching and learning styles of the 21st century. Teacher education needs to emphasize ongoing implementation and evaluation procedures related to students' computer literacy. The paper aims to upgrade E-education and develop teachers' digital competency at the Yangon University of Education(YUOE). This study explores why teachers are weak in the use of digital technology and the barriers to using digital technology in the classroom at YUOE. According to this observation, the main challenges for teachers are a lack of ICT knowledge, not wanting to change the teaching style, and a lack of knowledge in using digital technology; computers and accessories are insufficient. There are also discussions about how to deal with these difficulties.This article has examined the key factors to consider in the implementation of digital technology.

Keywords; Challenges, E-education, YUOE

1. Introduction

E-learning or electronic learning is used for online learning. E-learning supports or replaces other learning and teaching approaches. The roles of e-Teachers are to enhance learners' cognitive engagement and interaction. (Soonhwa,2008)Online education can provide a flexible learning environment to a student from anywhere, as long as an Internet connection is provided.

Nowadays, e-learning is a new paradigm shift in higher education from teacher-centered to learner-centered and enhances the quality of teaching and learning by integrating ICT and internet technologies. Furthermore, it can compensate for the weakness of traditional education methods and enables the instructors to transfer their knowledge to a relatively large number of students without space and time limitations(Aung&Khaing, 2016).Myanmar realizes that conventional education alone cannot cope with all the demands of higher education, and ICT-based education will play an important role in Myanmar's higher education reform. (Tint, 2012) So, Myanmar universities need to reinvent learning environments to expand and complement digitalization transformation. (Mary&Ni,2021)

1.1 E-learning awareness in Myanmar

As the way of teaching and learning in today's world has changed, digital technology has become an essential technical resource for each learner. In Myanmar, a few educational institutions were implementing online or blended learning methods before COVID-19. At that time, schools, universities, and ministries of education have begun enforcing them, but at a very slow implementation. Only early adopters, enthusiasts, and visionaries were willing to try. Teachers and professors at the university level of the higher education sector are weak in teaching using digital technology, so the need to use it more now is a major challenge in my country.However, there is growing interest in technology use beyond covid crisis.

In the past, the internet connection was not good, and the cost was also very high in Myanmar. Therefore, E-education was weak in the teaching/learning system. Most Myanmar universities have weaknesses such as a lack of evaluation of ICT activities, a lack of a specific plan, a lack of understanding of technology, and a lack of ICT training for teachers. When the pandemic hit,

everyone had to switch from offline to online classes. At this time, even the pragmatists and conservatives decided to switch to online learning methods because they could not offer on-site lessons. That's why we should accelerate the digitization of the Education sector.

Now, Myanmar has access to stable electricity and the internet except in a few places. At the moment, E-education awareness and implementation should be an important agenda for Myanmar education. However, teachers face many challenges and barriers in E-education transformation.Until now, teachers need to motivate themselves and also attend interactive training and workshops about interactive online teaching.In addition, the teaching style needs to change in Myanmar's education system based on digital.

1.2 Implementation of E-education at Yangon University of Education

Yangon University of Education (YUOE) is the leading university of teacher education, producing high school teachers and educationists. The Yangon University of Education is located at 317, PyayRoad, Kamayut township, Yangon region in Myanmar.In the 21st century, digital literacy is essential for active participation in work and society. One of the purposes of Yangon University of Education is to nurture students to become well-qualified teachers and educationists for the national and global community. Therefore, awareness and implementation of E-learning for teachers is an important factor in YUOE.

The ICT team was composed of representative teachers from various departments interested in ICT at the Yangon University of Education. The specific objectives of the YUOE-ICT team are to promote the ICT awareness of the university staff and to conduct effective ICT training at YUOE. Currently, the ICT team members are involved in ICT awareness programs and the preparation of online learning materials for E-learning.

The university provides bachelor's, master's, and doctoral degrees in education to the country's prospective school teachers. Now, the university offers educational course training and post-graduate diploma courses using online and offline methods.YUOE offers training in educational courses for teachers of educational colleges throughout Myanmar. Moreover, a Post Graduate Diploma in Multimedia and Art (Education) opens and train young teachers annually. Therefore, updating teachers' capacity for E-education is the main factor in YUOE. So, we should know what barriers to E-education implementation are. If we understand these challenges, we can solve this problem. That's why this paper studied the main point of this problem.

Figure: Yangon University of Education

1.3 The purpose of the study

The purpose of this paper is to promote the role of E-education at the Yangon University of Education and improve the knowledge of technology integration for teachers.

2. Methodology

As a fundamental process, university teachers required a readiness assessment before e-learning implementation.(Mon &Tsuyoshi ,2018)This research focused on three aspects of the main challenges of E-learning at YUOE. These are

- Basic ICT knowledge of teachers
- Barriers tousing digital technology in the classroom
- Weakness and strengths of teachersin E-learning

The data is used based on peer observations, questionnaires, and individual interviews. It also reviews the references related to this study. The representatives from different departments answered and discussed the challenges faced by the focus area. This study is conducted based on feedback from teachers at YUOE. The reference was the published papers and Internet articles related to this study.

3. Findings & Discussion

This section includes the findings of three main areas and discusses observations based on them.

3.1 Basic ICT knowledge of teachers

Today, the use of computers in our daily was constantly increasing for communications and work. The knowledge of computer systems, word processing, data management, and spreadsheet and data analysis program has become an essential requirement for many positions. (Concordia University,2011) So, the basic ICT knowledge for teachers is an essential factor in E-education. Teachers' computer knowledge had evaluated using a three-point Likert scale (fundamental, intermediate, proficient). Approximately half of the teachers participated in the survey. According to this finding, 15% have proficient, 67% have an intermediate level and 18% have poor computer skills. In general, older teachers are poorer in information technology than younger teachers.

Therefore, ICT awareness training should hold more than before. In particular, older teachers should enhance their computer literacy. And, they should attend special training to become skillful in using computers. In addition, Rectors, Pro-rectors, Administers, and professors are necessary to encourage teachers to use digitalization.

3.2 Barriersto using digital technology in the classroom

In this section, the discussion is based on data from individual interviews with teachers from YUOE. Half of the interviewees may not be willing immediately adopt E-learning. On the teachers' side, there are many challenges in the change of E-learning. They will require more time to prepare appropriate quizzes and other out-of-class activities. (Howitt&Pegrum, 2015) Furthermore, technology accessibility and technology competency can also cause problems due to the lack of technology use among many teachers. They complained about spending more money on electronic devices and phone bills. They also say that electricity and Internet assess are sometimes weak.

Another point is depending on the nature of different subjects. Although digital technology used was commonly found in science and related subjects. But some social science subjects were weak in the use of technology. From the observations, most science teachers are more interested in digitalization than others.

According to the data, the main challenges causing are individual's morale, self-confidence, interest, satisfaction with digital technology, and the specialized subject nature. However, there are many advantages of E-learning. So, teachers need to understand this. Therefore, the benefits of E-learning should share more than ever for teachers. The university should provide infrastructure and ICT upgrading training for teachers and staff. Only then will teachers be interested in E-education and overcome barriers to using digital technology in the classroom. Moreover, significant public investment in Internet technologies for teaching and research is critical. (Martin,2013)

3.3 Weakness and Strengths of Teachers in E-learning

Teachers should create engaging and motivational lesson plans that integrate technology into E-education. Therefore, it was necessary to consider the weaknesses and strengths of teachers in E-learning. This section is based on peer observation and in-person interviews.

According to interviews with some older teachers, they complain that they disagree with the transformation of E-education for various reasons. Among the reasons, it was observed self-confidence and worry about technology. From these findings, they need to learn more about technology. They should study how to use electronics. Enough time should be necessary to prepare for teaching.

Younger teachers say they use technology in the classroom for many benefits. They also said that they use digital tools to expand the learning opportunities for students. Moreover, they can do to increase support and engagement for students. They remark that teachers can use technology to transform a motivating classroom and bring back joy in learning and teaching.

According to the observations, the effort and motivation of individual teachers is the main factor. So, the attitude of teachers needs to change. They must be able to upgrade traditional teaching methods and adapt to new teaching methods.

4. Conclusion

In conclusion, the main challenges for teachers in E-education transformation are weak ICT knowledge and a lack of self-confidence in the digital technology used. Also, computers and accessories were insufficient at this time.

Each teacher can face these challenges if they can improve their skills. Altitude, technical knowledge, trust in technology, and collaboration are needed more than other qualities. Moreover, they also require time management, training, technology approach, experience, and teaching style regarding digital technology. As a results, it is necessary to hold ICT training programs and workshops to overcome the challenges of digitization.Teachers should be involved in these programs as well.

In addition, new research must conduct on the needs encountered in the practical implementation of digital technology.In further research, age differences, gender differences, specialized subject differences, may have differences in opinion for digitalization. Therefore, the new research would have to be done on the basis of those variants.

The university should support infrastructure, computers, and accessories more than before. Furthermore, the university should implement specific plans and educational strategies for E-

education to increase the use of digital technology. Only then will E-education gradually develop in the future.

Suggestion

The main reasons why university teachers are unwilling to use digital technology are lack of technical knowledge, pedagogy and lack of support for computing infrastructure and accessories. In addition, there is a lack of a specific plan for digital teaching-learning at the university level and a lack of practical implementation in Myanmar.

Therefore, specific projects should be established and encouraged to implement digital technology in universities effectively to develop. Only then digital teaching -learning will be developed in higher university education. Furthermore, the policymakers should formulate a specific plan, and E-education will be higher to enforce the implementation. The above suggestions aim at developing the E-education system in Myanmar.

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The Effects of Organizational Culture on Employee Commitment as Mediated by Job Satisfaction in Addis Ababa City Administration

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Abstract : The purpose of this study was examining the impact of organizational culture on employee commitment through the mediating role of employee job satisfaction in Addis Ababa city Administration. To this end, descriptive design with deductive approach was employed to test the hypothesis; and analyzing the data collected through standardized questionnaire from 606 employees was conducted. The respondents were selected by simple random sampling representing both Wereds and sub-cities for quantitative data. The standardized questionnaires comprises 30-items measuring organizational couture (OC) 20- items measuring employee job satisfaction and 22-items measuring employee commitment; and three composite score/variables were generated during data analysis so as to analyze at interval scale. Hayes macro process model (4) along with SPSS (V.23) was used to analyze simple mediation. Prior to mediation analysis reliability of the instrument and normality of data were established. In this regard, the instrument was confirmed to be reliable on the basis of alpha Cronbachs coefficient greater than 7; and also the data were normal in distribution as of the results of kurtosis and skewness. The results indicate that organizational culture affects both employee satisfaction and employee commitment significantly. In the same way employee job satisfaction positively and significantly affects employee commitment. Overall, mediation role of job satisfaction between organizational culture and employee commitment was confirmed; and all hypotheses were supported. The study result further implies that organizational culture has partial mediation role as it affects employee commitment directly. The study, therefore, recommends that managers in the public organizations should design and establish organizational cultures that are more suitable to staff as they are confirmed to be significantly affecting employee job satisfaction and commitment.

Keywords : Organizational Culture, Employees, Commitment, Satisfaction, Mediation

1.0 Introduction

In today's competitive world, every organization is confronted with new challenges regarding sustained productivity and creating committed workforce. Hence, it is important to understand the concept of commitment and its feasible outcome (Dixit & Bhati, 2012).It is no longer good enough to have employees who come to work faithfully every day and do their jobs independently. Employees are the greatest resource in organizations and play an important role through their involvement and commitment to make the organization competitive (Roodt et al., 2002).Employees who are committed are liable to increase their performance and devote their time to the organizations success. Organizational commitment is often described as the key factor in the relationship between employees and organizations (Raju & Srivastava, 1994). Satisfied employees by means of an affective orientation or a positive attitude, achieve a positive result in relation to his/her job, in general, or to specific personal aspects (Stanton et al., 2002). This results in improved communication among employees and workforce support for the organization, organizational commitment and job satisfaction (Lok & Crawford, 2004).

The existence of job satisfaction is the result of organizational culture that comprises new approach of leadership style, the value, and belief and perception practice in the organization. Organizational culture is the shared understanding of the beliefs, values, norms and philosophies

of how things work in the organization (Wallach, 1983). Employee behavior (their commitment and job satisfaction), their expectations and their performance would determine the successful implementation of plans, policies and strategies that enhance the competitiveness of organizations.

This study thus examined the influence of organizational culture on employees' commitment and a kind of mediating effect of job satisfaction on this relationship within employees of public organizations. It can be clearly realized that the success of organization can nearly always be ensured through the contribution of unreserved efforts of employees who are working within it. This is possible if the organization has employees who have been satisfied in their current jobs and show the highest committed for ensuring their organizational competitiveness. It also shows that how strongly employees are involved in and identify with the organization highly depends on conducive culture within the organization (McCunn & Gifford, 2014). Many researchers have discussed the positive aspects of organizational commitment and its effects on work productivity, motivation, turnover intention, and absenteeism, and that it is a powerful tool for employees and organizations to increase productivity and effectiveness (Genevičiūtė-Janonienė & Endriulaitienė, 2014).

The commitment of employees traced directly back to the good organizational culture practiced. Therefore, having effective and good organizational culture for the organization is critical to retain competent employees to ensure the competitive survival of organizations. Also Ashraf et al. (2012)depicted that employee commitment can be affected by the quality of the leadership exercised, and culture practiced in the organization. In this regard, the current study aims to systematically examine the influence of organizational culture on employees' commitment which is critical for competitive and productive survival of public organizations. In addition, it addresses how job satisfaction can determine the relationship between organizational culture and employees in context of public institutions in Addis Ababa.

1.1 Statement of the problem

Organizational culture has received a lot of attention in recent decades due to its possible impact on organizational success. This means that an organization's ability and success in achieving its aims and objectives may be influenced by its culture. In addition, an individuals' commitment from employees is also essential to ensure that the organization's policies and strategies are implemented successfully (Tsai, 2011). Individuals who are more enthusiastic about their jobs are more likely to participate in organizational activities and demonstrate positive in-role and extra-role behaviors (Meyer & Allen, 1991).

Allen and Meyer (1993) noticed that an individual's relationship with their workplace is described by organizational commitment, regardless of the company's great or negative situations, that is psychological conditions, which allows a loyal employee to stick with it. Also the study result of Pinho et al. (2014) confirmed the impact of organizational culture on employee commitment. More recently, Karem et al. (2019) established the fact that individuals who are passionate about and satisfied with their jobs, on the other hand, are more likely to work hard and exhibit positive work habits.

Changes in organizational culture will certainly have an impact on enterprises' and governments' broad patterns and established institutions. Managers are becoming more conscious of organizational culture elements such as traditions, rules and processes, regulations, and standards, which will help employee, perform better. Both organizational culture and commitment are being investigated because they have an impact on organizational performance and can influence organizational outcomes Pinho et al. (2014).

In support to this ideas, a study result of Grein et al. (2020) highlighted that organizational culture is crucial in establishing a set of fundamental ideas, understandings and a healthy workplace environment in which dedicated people contribute positively to the organization's success. Public organizations are becoming increasingly devoted to make significant change in response to the increasing demand for services such as raising customer service quality requirements and establishing efficiency and effectiveness. In this context, the adoption of different reforms as to human resource incentive package, redeployment of employees based on job evaluation appraisal and grading; and improving workplace conditions by public organizations in Ethiopia generally, and Addis Ababa particularly are considered as critical components playing roles in improving organizational performance.

However in reality, most civil service organizations in Ethiopia have been obliged to hold less satisfied and committed employees and this is because of poor remuneration and benefit package (Getahun et al., 2016; Mariam et al., 2020; Kefyalew et al., 2020; & Aklilu et al., 2020). This could make the public organizations to hold employees who are not committed and losing well experienced employees from time to time. This would adversely affect the competitive survival of organization in meeting the changing service demand of citizens (Kassaw & Golga, 2019; Kefyalew et al., 2020; Gebru, 2021; &*Warga , 2019*, 2019).

Previous researches on employee commitment have mainly focused on organizational culture dimensions rather than including the mediating role of job satisfaction as mediating variable and determining its effects on employee commitment (Dima et al., 2019; Elizabet & Anggrain, 2021); Inanlou & Ahn, 2017). However, almost a few scholars such as Nigusie (2018) have studied the effect of organizational culture on employees' commitment with mediating role of job satisfaction in this relationship by considering employees in a public enterprise Oromia Forest and Wild Life Enterprise.

Therefore, the study regarding the impact of organizational culture on employees' commitment with mediating role of job satisfaction for employees across different public institutions is very scant. Thus, examining the existing organizational situations, and providing solutions to improve employee satisfaction and commitment, calls for rigorous empirical study. Furthermore, this study aims to enrich the body of knowledge in public organizations under study settings and; to find the impact of organizational culture on employees' commitment through the mediating role of employee job satisfaction. In order to realize the aim of this study, the researcher set the following four hypotheses to be tested.

H1. : Organizational culture significantly predicts employees' job satisfaction
H2. : Employee job satisfaction significantly employee commitment
H3. : Organizational culture significantly predicts employee commitment.
H4. : Employee job satisfaction would mediate the impact of organizational culture on employee commitment

2.0 Concepts of organizational culture

According to Shahzad et al. (2013), organizational culture is defined as a set of acceptable values is always right, which helps a person in the organization to understand the actions that are unacceptable and which actions are unacceptable and values are communicated through stories and other symbolic ways. Meanwhile, according to Schein (2010), organizational culture can be considered as what the organization has or what the organization is depending on whether it is being treated as a construct or a metaphor. Sithi-Amnuai (1996) limits the understanding of organizational culture as a pattern of basic assumptions and beliefs held by members of an organization from the process of learning to the problems of external adaptation and internal integration problems. Organizations have cultures through learning, inheritance, adaptation and

verification of the value adopted or termed Schein (1983) considered an invalid value is proven benefits.

According to Sashkin and Rosenbach (1990), elements of organizational culture include: Managing change, coordinated, teamwork, goal achievement, customer orientation, and building strong culture.

Managing change: -This area of action concerns how well the organization is able to adapt to and deal effectively with changes in its environment. All organizations are open, to some extent, to be influenced from their environments; that is what it means when we refer to organizations as "open systems." This fact has become even more obvious today, in times of rapid technological and social change, than it was in the past. In earlier times it was possible to ignore the organization's environment and the effects it had on the organization; this is no longer possible.

Achieving goals: - All organizations must achieve some aims or goals for clients or customers. Having a clear focus on explicit goals has been proven repeatedly to have a very strong relationship to actual success and achievement. Goal achievement is also facilitated when the goals of the organization's members are "in line" or aligned with one another and with the overall goals of the organization. When organization members share the belief that is important to be doing and achieving, this will help the organization to attain its goals.

Co-ordinated teamwork: Long term organizational survival depends on how well the efforts of individuals and groups within the organization are tied together, coordinated and sequenced so that people's work efforts fit together effectively. What is less obvious is that it can be equally counterproductive to attempt to have everything carefully planned from the top, down to the smallest detail. With work and the world becoming more and more complex, what is needed are more effective ways of meeting unpredictable coordination demands, ways for organization members to "mutually adjust" their actions to take into account unplanned and unpredictable circumstances.

Customer orientation:-While organizations often have specific product or service goals or a standard of quality or a type of product or service for which the organization is known, the crucial question is whether these internally-derived and defined goals match or fit with what clients or customers want of the organization. No matter how strong the culture and no matter how well the other functions are performed, if no one wants what the organization produces or does, then the organization is not likely to prosper.

Cultural strength: -A strong culture will provide greater stability of organizational functioning. When the culture is based on values that do not support the functions of managing change, organizational achievement, customer orientation, and coordinated teamwork--or when the values actually work against the effective performance of these functions--then a "strong" culture might actually hamper organizational survival.

2.1. The Concept of Employees' Job Satisfaction

Job satisfaction can be defined as a positive effect towards employment (Mueller & McCloskey, 1990) and it is arguably a fairly stable evaluation of how the job meets the employee's needs, wants, or expectations (Fisher, 2003). In research, job satisfaction has been assessed using global aspects as well as multiple facets like salary, career progression, supervisor (Fisher, 2003). Job Satisfaction has been playing a leading role in management research (Petty et al., 1984; Fisher, 2003). Many studies share that satisfied employees will perform their work more effectively, which is the basis of many theories of performance, reward, job design and leadership (Shipton et al., 2006). Simply put, job satisfaction is the extent to which people like their jobs (Spector,

1997).Job satisfaction, a concept that is widely studied in organizational behavior research, is 'commonly conceptualized as an affective variable that results from an assessment of an individual's job experience' (Fritzsche & Parrish, 2005). In a simpler term, job satisfaction is 'the extent to which people like their jobs'(Peterson & Wilson, 1992). Accordingly, Armstrong, (2006) defined the term job satisfaction as the attitudes and feelings people have about their jobs. For Armstrong, positive or favorable attitudes about the work and the work environment indicate job satisfaction, and the inverse, referring to negative or unfavorable attitudes towards the work to indicate job dissatisfaction. Job satisfaction may also refer to the fulfillment acquired by individuals in respect of the various job activities, and the rewards for their jobs and job-related matters.

Saiyadain and Khanna (2007) viewed job satisfaction as an employee's end-state of feeling after accomplishing a task. This feeling may lead employee to have either a positive or a negative attitude towards the job. According to Spector (1997), job satisfaction refers to the extent to which employees or individuals like or dislike their jobs and the various aspects of their jobs. For Spector (1997), job satisfaction can be a diagnostic indicator of how a person is doing in one of the major domains of his or her life-role. Spector further stated that the absence of job satisfaction suggests that a problem exists either in the job or in the person, whereas job satisfaction is indicative of good work-adjustment and positive well-being. Falkenburg and Schyns (2007) are in agreement with the definition given by Spector, and argue that the term job satisfaction is seen as satisfaction with different aspects of the job and the work environment/situation.

Employee job satisfaction refers to the overall attitude and views of teachers toward their working conditions and profession (Xuetao et al., 2008). The definitions given above suggest that the job satisfaction of employees in Ethiopia includes the overall feeling they may have about their work when they evaluate their job and their job-related experiences or work factors. Work factors include salary and benefits, management, work characteristics, and interpersonal relationships.

2.2.   Dimensions of Employees' Job Satisfaction

The constructs of employee job satisfaction have been approached from many directions. Contributing factors have been often identified as intrinsic or extrinsic. According to Samuel and Chipunza (2009), combinations of intrinsic and extrinsic rewards influence employee decisions to remain in the profession. Herzberg and Howe (1959) brought attention to the distinction between intrinsic and extrinsic factors in the workplace in their theory of job satisfaction. Intrinsic factors are matters related to the self-actualization of the worker, that is, the need for a sense of self-accomplishment on the job or, as commonly labeled, intrinsic job satisfaction. Intrinsic job satisfaction is derived from the composite of intrinsic factors experienced in the job. Intrinsic job factors are factors such as responsibility, self-defectiveness, skill development, and observed accomplishment associated with doing the work.

Conversely, extrinsic factors are factors such as company policies, supervision, external rewards such as reflected in satisfaction with pay, and workload, which define the external context and reward system within which the worker labors. Researchers in earlier studies on the framework offered by Herzberg and colleagues found that both intrinsic and extrinsic job factors predicted levels of job satisfaction, although intrinsic factors had a stronger association with satisfaction level than extrinsic factors (Ewen et al., 1966). Also, the results of Sharoni et al. (2012) study suggest that intrinsic job satisfaction has an affective basis, whereas extrinsic job satisfaction does not. In general, this study examines the employees' job satisfaction using the following most commonly applied dimensions of job satisfaction.

Table 2.1: Dimensions of employees' job satisfaction

Intrinsic Scale	Description
Ability utilization	The chance to do something that makes use of my abilities.
Achievement	The feeling of accomplishment got form the job
Advancement	The chances for advancement on the job.
Recognition	The praise for doing a good job.
Responsibility	The freedom to use own judgment
2. Extrinsic Scale	**Description**
Company policies and practices	The way company policies are put into practice
Compensation	The pay and the number of work employees do
Co-workers	The way co-workers get along with each other
Supervision-human relations	The way the boss handles his men
Supervision-technical	The competence of the supervisor in making decisions
Working conditions	The working conditions

Source: Weiss et al., (1967)

The assessment of employees' job satisfaction uses the Minnesota Satisfaction Questionnaire which was one of the outputs from the "Work Adjustment Project" at the University of Minnesota; the underlying theory is based on the assumption that work fit is dependent on the correspondence between the individual skills and the reinforcements that exist in the work environment (Weiss et al., 1967).

2.3. Concept of employees' commitment

Commitment has been defined and measured in many different ways O'Reilly and Chatman (1986) defined organizational commitment as "the psychological attachment felt by the person for the organization; it will reflect the degree to which the individual internalizes or adopts characteristics or perspectives of the organization".

2.3.1. Models of organizational commitment

According to Meyer and Allen (1991), organizational commitment reflects at least three general themes: "affective attachment to the organization", "the perceived costs associated with leaving it" and "the obligation to remain with it". These three approaches are referred to as "affective", "continuance" and "normative" commitment. Common to these three approaches is the view that commitment is a psychological state that characterizes the employee's relationship with the organization and has implications for the decision to continue membership of it. These psychological states also have different implications for work-relevant behavior.

I. Affective commitment

Affective commitment refers to the employee's emotional attachment to, identification with, and involvement in the organization. Employees with a strong affective commitment continue employment with the organization because they want to. According to Lerner (1982), the antecedents of affective commitment generally fall into four categories: (1) personal characteristics, (2) structural characteristics (organizational), (3) job-related characteristics, and (4) work experiences. Although various research studies have been conducted to link demographic characteristics such as age, tenure, gender, and education to commitment, the relations were neither strong nor consistent, the reason being too many variables such as job status, work rewards and work values moderating the relationship.

II. Continuance commitment

Continuance commitment refers to an awareness of the costs associated with leaving the organization. The potential costs of leaving an organization include the threat of wasting the time and effort spent acquiring nontransferable skills, losing attractive benefits, giving up seniority-based privileges, or having to uproot the family and disrupt personal relationships Meyer and Allen, 1991. Apart from the costs involved in leaving the organization, continuance commitment will also develop as a function of a lack of alternative employment opportunities (Meyer & Allen, 1991).

III. Normative commitment

Normative commitment reflects a feeling of obligation to continue employment. Employees with a high level of normative commitment feel that they ought to remain with the organization. Wiener (1982) suggests that the feeling of obligation to remain with an organization may result from the internalization of normative pressures exerted on an individual prior to entry into the organization (family or cultural orientation), or following entry (organizational orientation). However, normative commitment may also develop when an organization provides the employee with "rewards in advance" (e.g. paying college tuition) or incurs significant costs in providing employment (e.g. head-hunting fees or the costs associated with job training). Recognition of these investments causes employees to feel an obligation to reciprocate by committing themselves to the organization until the debt has been repaid (Scholl, 1981).

2.4. Relationship between organizational culture, job satisfaction, and employees' commitment

There are many studies investigating the relationship between organizational culture and organizational commitment that found there is a positive relationship between organizational culture and organizational commitment (Achieng'Odembo, 2013)&Gan et al., 2014). Organizational culture has been identified as a major driver behind employee longevity (Desselle et al., 2018). A corporate culture is a significant tool for improving organizational commitment, and the better the adjustment between stated and perceived values, the better the organizational commitment (Brewer & Clippard, 2002).

In regard to the relationship between organizational culture and employees' job satisfaction, the study by Cameron et al. (1991) has found that organizational culture has a significant impact on several key organizational variables such as employee satisfaction, employee performance, turnover and so forth. Furthermore, in the body of literature, there is evidence that assures the impact of organizational culture on individual attitudes and behaviors of which job satisfaction has been shown to be directly impacted by organizational culture. Concerning the relationship between job satisfaction and employee commitment, Huang and Hsiao (2007) stated that job satisfaction is the precursor of commitment which may benefit both changing human behavior outcomes and increasing commitment. They further explained that people will be more committed to their work if they felt satisfied and appreciated. The study by Nigusie (2018) stated that job satisfaction does act as a fully mediating role in the relationship between organizational cultures and organizational commitment and suggesting that effective improvement in job satisfaction is a critical aspect of the organizational success.
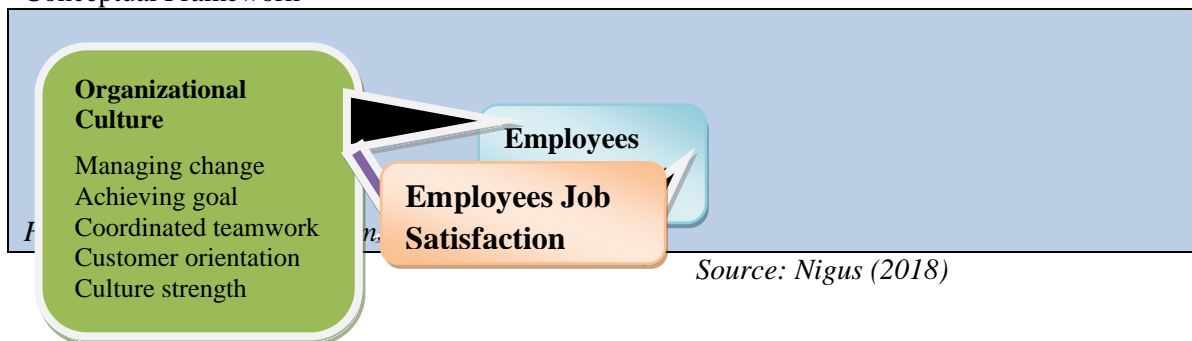
2.5. Summary of empirical studies

As a matter of fact, globally, various studies have been done in the areas of organizational culture and emphasized the significance establishing proper organizational culture to have a better future and performance. A study result of Achieng'Odembo (2013) established the forward and backward

linkage of employee job satisfaction and organizational culture. The study result of Habib et al. (2014) proved the effect of organizational culture on job satisfaction, employee commitment and retention. Studies by Acquah et al. (2020), Zanabazar et al. (2021) and Sarpong et al. (2021) revealed a positive significant relationship between organizational culture and employee commitment.

In Ethiopian case, a study result of Getahun et al. (2016) on primary school teachers; Addisu, (2018) on college teachers; Kassaw and Golga (2019a) academic staff at university; Kefyalew et al.(2020) at education office workers proved the effect of organizational culture at education Sector. The other studies by Bekele and Mohammed (2020) on Ethiopian Airlines; *Warga* (2019) and Gebru (2021) on Commercial Bank of Ethiopia; Addisu (2018) on leather industry; Dinku (2018) on Sugar industry proved the direct effect of organizational culture on employee satisfaction and commitment. By the same token, Aklilu et al. (2020) and Yemi et al. (2020) confirmed its effect on health professionals at different levels and disciplines. As can be seen from the above studies, it is evident that they have shown a strong correlation between organizational culture, organizational commitment, and job satisfaction.

Nevertheless, previous researches on employee commitment have mainly focused on organizational culture dimensions rather than including the mediating role of job satisfaction as mediating variable and determining its effects on employee commitment. Subsequently, this study examines whether the employee's job satisfaction plays a mediating role in the relationship between organizational culture and employee commitment in public institutions of Addis Ababa using the following framework.

Conceptual Framework

Organizational Culture

Managing change
Achieving goal
Coordinated teamwork
Customer orientation
Culture strength

Employees

Employees Job Satisfaction

Source: Nigus (2018)

3.0 Methodology

This study employed a descriptive design with deductive approach. The study used the questionnaire to collect the data from employees in public institutions located in Addis Ababa city Administration. For this study 606 employees, representing both sub-cities and woredas, were selected using both simple and stratified random sampling techniques. The sample size was determined by the Slovin's formula before stratifying the total sample. To this end, 606 questionnaires were distributed for individual respondents selected through simple random sampling method from each stratum. In this regard, the researcher assumes that the study was designed carefully to ensure the representativeness of the employees and believes that the sampling strategy is robust to increase the likelihood of even participation; and reduces the likelihood of deriving faulty conclusions from outcomes of the investigation.

Accordingly, 606 questionnaires were distributed and the response rate was 100%. The questionnaire comprises two sub sections: the first was about the demographic information of the respondents; the second section includes 72-items with 10 dimensions. Of the 72 items adopted from the previous studies, organizational couture (CO) measured by 30 items adopted from

Sashkin and Rosenbach (2013), employee job satisfaction 20 items adopted from Wiss et al. (1967); and employee commitment 22 items adopted from Meyer and Allen (1991). All items were measured by a five points Likert scales during data collection and three composite score/variables were generated during data analysis so as to analyze at interval scale.

The study employed SPSS V.23 as a tool for analysis for both descriptive and inferential statistics. Prior to quantitative analysis, the data were classified and tabulated to enter into SPSS software. Preliminary analysis was done to confirm the normality of the data, validity and reliability of the instrument before proceeding to the next analysis. In this regard, the data were confirmed to be normal as the result of kurtosis and skewness indicated in table (). In addition, the instrument reliability was confirmed by the overall Cronbachs alpha coefficient greater than 7 as indicated below in Table (). Specifically, for mediation analysis, the study used Hayes macro process Model (4) which allows the bootstrapping approach for estimation of mediation effects.

4.0 Results

The objectives of this study were confirming whether the organizational culture predicts employee job satisfaction (H1), whether the employee job satisfaction predicts employee commitment (H2), whether the organizational culture predicts employee commitment (H3); and confirming the mediating effects of job satisfaction between organizational culture and employee commitment (H4). To these ends, mediation analysis using SPSS macro process model (4) was conducted and the results are as indicated below.

RQ1/H1 Organizational culture significantly predicts employee job satisfaction

4.2 : Employee job Satisfaction (ES)

Table 4.1.Model Summary

R	R-sq	MSE	F	df1	df2	p
0.7282	0.5303	0.1780	682.0268	1.0000	604.0000	0.0000
Model	coeff	se	t	p	LLCI	ULCI
constant	.8311	.0855	9.7226	.0000	.6632	.9990
Organizational Culture (OC)	.7339	.0281	26.1156	.0000	.6787	.7891

***OC->ES

As can be seen from table 4.1 above, organizational culture (OC) is a significant positive predictor of employee job satisfaction (b=.7339, s.e=.0281, p<.001). This coefficient reflects the direct effect of organizational culture on employee job satisfaction with in the path model; thus, H1 is supported. Pictorially it can be depicted as:-
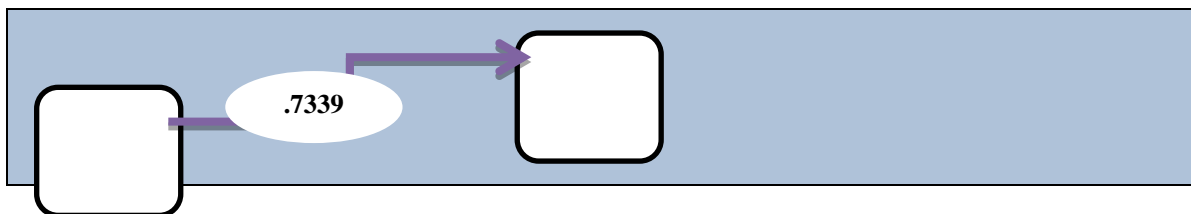

Figure 4.1 Paths OC->ES
RQ2/H2 Employee job satisfaction significantly predicts employee commitment

4.3. Employee Commitment (EC)

Table 4.2.Model Summary

R	R-sq	MSE	F	df1	df2	p
.9087	.8257	.0685	1428.1383	2.0000	603.0000	.0000
Model	coeff	se	t	p	LLCI	ULCI
constant	.1354	.0570	2.3746	.0179	.0234	.2474
Employee Job Satisfaction (ES)	.1468	.0252	5.8188	.0000	.0973	.1964

The above summary table number 4.2, indicates that employee job satisfaction (ES) is a significant positive predictor of employee commitment (b=.1468, s.e=.0252, p<.001). This coefficient reflects the direct effect of employee job satisfaction on employee commitment with in the path model; thus, H2 is supported.
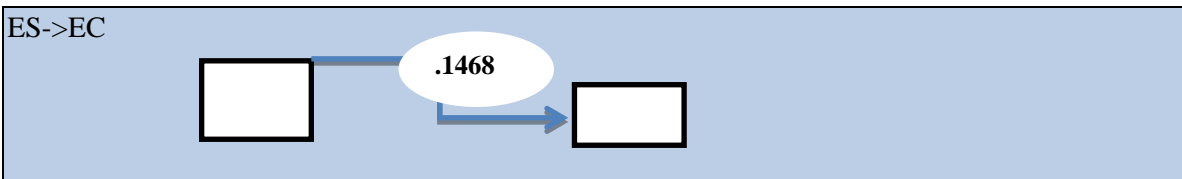
Figure 4.2 Paths ES->EC
RQ3/H3 Organizational culture significantly predicts employee commitment

4.4. Employee Commitment (EC)

Table 4.3.Model Summary

R	R-sq	MSE	F	df1	df2	p
.9087	.8257	.0685	1428.1383	2.0000	603.0000	.0000
Model	coeff	se	t	p	LLCI	ULCI
constant	.1354	.0570	2.3746	.0179	.0234	.2474
Organizational Culture (OC)	.8182	.0254	32.1711	.0000	.7682	.8681

As can be seen from table 4.3 above, organizational culture (OC) is a significant positive predictor of employee commitment (b=.8182, s.e=.0254, p<.001). This coefficient reflects the direct effect of organizational culture on employee commitment with in the path model; thus, H3 is supported.
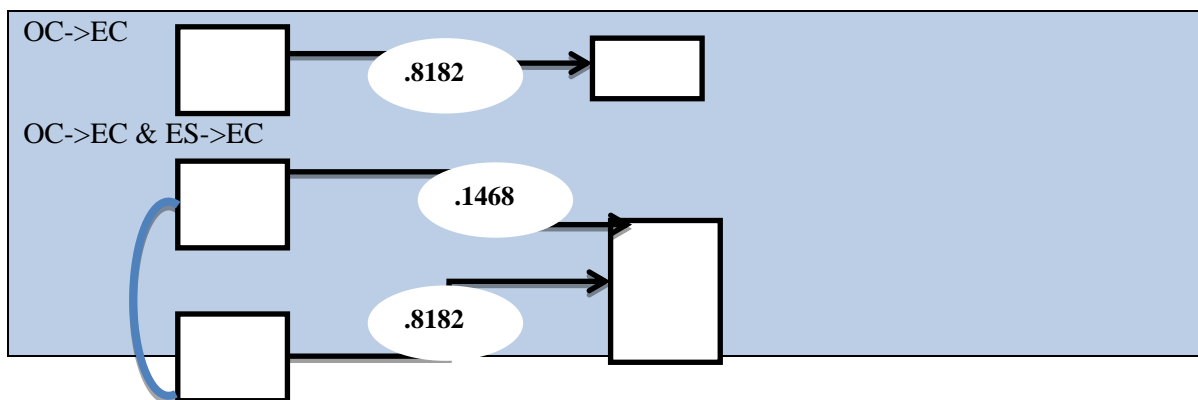

Figure 4.3 Paths OC->EC; and Paths OC->EC & ES->EC combined

RQ4/H4 Employee job satisfaction would mediate the impact of organizational culture on employee commitment.

Table 4.4 Total effect of OC on EC

Effect	se	t	p	LLCI	ULCI
.9260	.0179	51.7378	.0000	.8908	.9611

The above table indicates the total effect of organizational culture on employee commitment computed as the direct effect of organizational culture (DE=.8182) and indirect effect of organizational culture on employee commitment through employee job satisfaction (IE=.1078) add up to .9260. This total effect is positive and significant as zero (the null) does not fall between the lower (LLCI=.8980) and upper (ULCI=.9611) bound of the 95% confidence interval. From this we can infer that the total effect of organizational culture on employee commitment is significantly different from zero.

Table 4.5 Indirect effect(s) of OC on EC

	Effect	BootSE	BootLLCI	BootULCI
ES	0.1078	0.0318	0.0482	0.1723

The unstandardized indirect effect indicated in the table above, that is (.1078) is assumed to be the product of two coefficients represented by OC->EC (.8182) and ES->EC (.1468) even though the analysis was done by Hayes (2018) macro process model (4). This indirect effect is significant as zero does not fall between BootLLCI (.482) and BootULCI (.1723). Based on the evidences provided in two tables above, the researcher is keen to justify that employee jobsatisfaction mediates the impact of organizational culture on employee commitment in the study area. Thus, H4 is supported.

Table 4.6 Hypothesis summary

Item summary	coeff	se	t	p	LLCI	ULCI
H1. OC->ES	0.7339	0.0281	26.1156	0.0000	0.6787	0.7891
H2. ES->EC	0.1468	0.0252	5.8188	0.0000	0.0973	0.1964
H3. OC->EC	0.8182	0.0254	32.1711	0.0000	0.0973	0.1964
Indirect	Effect	BootSE		BootLLCI		BootULCI
H4. OC->ES->OC	0.1078	0.0318		0.0482		0.1723

**OC =organizational culture; ES= employee job satisfaction; and EC= employee commitment
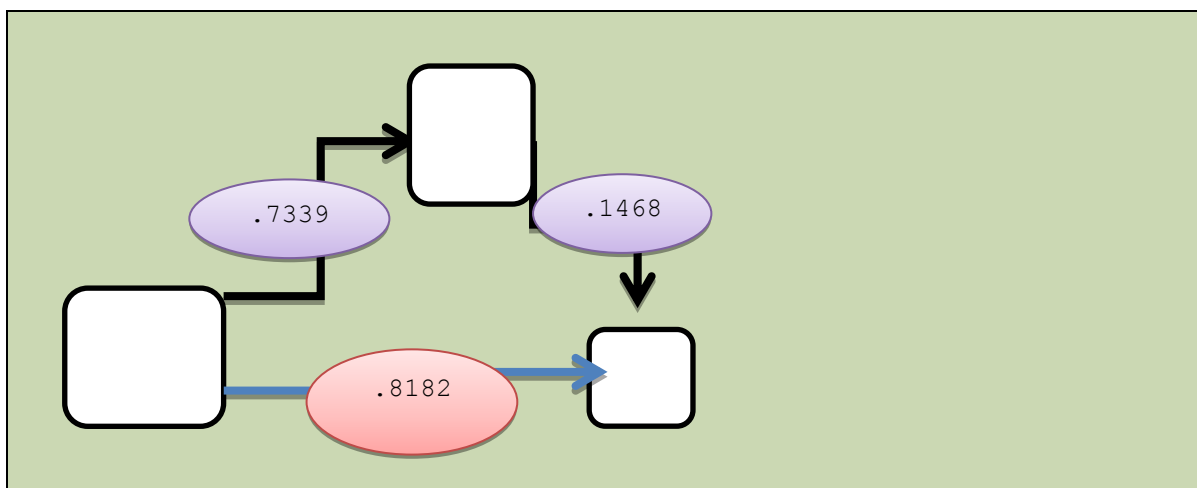
**Figure 4.4 Path Model

5.0 Discussions

Now days the most important organizational asset is the human resource which determines the success of an organization. In other words, it is possible to say that the success of an organization highly depends on its employees' commitment. In this regard, any condition affecting employees' commitment will affect organizational the organizational performance in the end. From the outset of this study, the researcher posed questions and proposed four hypotheses to be confirmed after the data collection and rigorous analysis. Evidently, the purpose of the study has been achieved and substantiated as indicated below.

Firstly, the hypothesis that is the direct effect of organizational culture on employee job satisfaction was conducted and the result indicates that organizational culture has significant positive effect up on employee job satisfaction in the area under study settings. The result is in line with previous (Odembo, 2013 &Habib, 2014; Desselle, Raja, Andrews, &Lui, 2018; Cameron & Freeman, 1991). When it comes to boosting employee job satisfaction, organizational culture is crucial. However, Organizational culture should be mandatory for all members and workers since this will foster uniformity among the organization's members. It will also improve staff productivity, commitment, and overall performance, emphasizing the importance of organizational culture in fostering consistency among employees. Thus, it may enhance group efficiency, commitment, and overall performance.

Organizational culture is a set of fundamental ideas that contribute to the organization's strength and stability due to cultural transformation. The advantages of good organizational culture in the workplace include improved mutual collaboration, unity, integrity, kinship, improved communication, and increased performance. Therefore, paying more attention to organizational culture is one way to increase employee job satisfaction in the workplace. However, culture refers to an organization's values and qualities that differentiate it from its rivals. Therefore, job satisfaction is positively influenced by organizational culture. In addition, employee behavior is influenced by organizational culture, which motivates them to seek positive outcomes.

Secondly, the hypothesis that is concerned with the direct effect of employee job satisfaction on employee commitment was conducted and the result indicates that employee job satisfaction has significant positive effect up on employee commitment in the area under study settings. This result is supported by several previous results (Huang & Hsiao (2007); Odembo, 2013Girma&Tesfaye, 2018).

Thirdly, the hypothesis that is concerned with the direct effect of organizational culture on employee commitment was conducted and the result indicates that organizational culture has significant positive effect up on employee commitment in the area under study settings. This result is supported by several previous results (Huang & Hsiao (2007); (Odembo, 2013 &Habib, 2014 (Desselle, Raja, Andrews, &Lui, 2018) (Brewer &Clippard, 2002)). There are many studies investigating the relationship between organizational culture and organizational commitment that found there is a positive relationship between organizational culture and organizational commitment (Odembo, 2013 &Habib, 2014). Organizational culture has been identified as a major driver behind employee longevity (Desselle, Raja, Andrews, &Lui, 2018). A corporate culture is a significant tool for improving organizational commitment, and the better the adjustment between stated and perceived values, the better the organizational commitment (Brewer &Clippard, 2002).

Employees with a strong organizational commitment and more innovative and stable will drive the company to greater profitability. Individuals with a high organizational commitment are vital in achieving organizational goals; those with a low commitment are more concerned with fulfilling individual interests than those of the organization. This result also illustrates individuals'

commitment to making businesses successful, and respondents' strong organizational commitment demonstrates how inventiveness and consistency help a company to be lucrative and wealthy.

Lastly, the hypothesis concerned with the mediating impact of employee satisfaction between organizational culture and employee commitment. The result indicates that the employee jobsatisfaction partially mediates the impact of organizational culture on employee commitment in the study area and the mediation effect is significant. This result is slightly in line with the study result of (Nigus, 2018). This is because the previous study of Nigus (2018) stated that job satisfaction does act as a fully mediating role in the relationship between organizational cultures and organizational commitment and suggesting that effective improvement in job satisfaction is a critical aspect of the organizational success. However, this study is directly in line with the result of Huang and Hsiao (2007) that substantiates this study as satisfaction is the precursor of commitment which may benefit both changing human behavior. Similar study further explained that people will be more committed to their work if they felt satisfied and appreciated.

In nut shell, various studies have been done in the areas of organizational culture and emphasized the significance establishing proper organizational culture to have a better future and performance. A study result of Odembo (2013) established the forward and backward linkage of employee job satisfaction and organizational culture. The study result of Habibi (2014) proved the effect of organizational culture on job satisfaction, employee commitment and retention. Studies by Acquah et al. (2020), Jigjiddorj et al. (2021) and Sarpong et al. (2021) revealed a positive significant relationship between organizational culture and employee commitment.These all previous studies substantiated the result of this study. Therefore, institutions should enhance the organization culture in the workplace to increase organizational culture's impact on employee job satisfaction and commitment.

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VIII. Acknowledgments

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Interrogating the Non-Anthropocentric Claims of African Environmental Ethics

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Abstract : Studies in environment ethics have redefined the significance of anthropocentric and non-anthropocentric dynamics in the modern conversations on ecology. Taking this further, the present discourse, reiterates the intriguing significance of the non-anthropocentric claims of African environmental ethics which draw their motivation from the holistic worldview of the African people. Unfortunately, this African environmental worldview negates the central claims of non-anthropocentric scholarship. Considering this problem, this paper challenges the dominant non-anthropocentric claims of African discourses on environmental ethics. Using the critical and exploratory approaches, the paper underscores that African environmental ethics remains steeped in anthropocentrism and continues to showcase speciesism. The work concludes that there is need for a paradigmatic shift from the flaws of anthropocentric and non-anthropocentric simplistic divides in environmental ethics, and proposes an ecological symmetry in human responsibilities towards the environment.

Key Words: Anthropocentricism, Non-Anthropocentricism, Speciesism, Environment, Ethics

1.0 Introduction

The paradigm shift in the understanding of human relations with the environment has seen a shift from an anthropocentric to non-anthropocentric disposition. This shift has become a rallying point in tracing the beginnings of the emerging discipline called environmental ethics. A combination of factors over time explains this development. Historically, scholars could point at the Great Smog of London in 1952 (Read and Parton 1049-1058) and the Japanese Minamata Disease of 1956 (Funabashi 7-25). The most defining point in this whole venture came with the seminal work of Rachel Carson entitled: *Silent Spring* in 1962 and later, Lynn White's *The Historical Roots of our Ecological Crisis* in 1967. Quite phenomenal following the above development was the First Earth Day in 1970, an event which propelled environmental concerns to the global stage. The common denominator in all these related phenomena in the history of environmental ethics is the call for a re-orientation of human relations with the non-human components of the environment. Generally, humans were held culpable for championing an exploitative disposition that saw every other component of the ecosystem as subject to satisfying their needs. The cumulative effect of this unwelcome relationship of exploitation has been a plethora of environmental crises which expose the ecosystem and all within it to danger.

In the light of the foregoing, global and local efforts in environmental ethics are geared towards transforming this exploitative relationship humans share with other components of the ecosystem to one that guarantees the common good of the entire ecosystem, not just for the present time, but also for the future. This current concern is often captured in the rhetoric of environmental sustainability which cautions human beings to cautiously tread their trade in their relations to the environment so as to meet the needs of the present and the future generations. Most scholars across disciplines within the globe have seen in this concern the need to promote a non-anthropocentric disposition. This concern has not gone unattended to within the African space, hence, the development of what is today considered as African non-anthropocentric environmental ethics. Within the purview of this discourse, efforts are aimed at a critical evaluation of the non-anthropocentric claims of African environmental ethics. In other words, the work seeks to decipher

whether African environmental ethics can actually make claims to providing the global community with the non-anthropocentric environmental ethics that it clamours.

2.0 African Non-Anthropocentric Environmental Ethics

Since the beginning of modern environmental ethics in the 1970s, philosophers across the globe have been pegged to a common goal of evolving a non-anthropocentric ethic that will effectively sustain the ecosystem. The common trend has been bringing up an ethic that broadens the scope of the moral community beyond the human scope that had trailed its definition for centuries. Quite prominent is the fact that moral considerability is a factor in determining this. Thus, this quest has seen levels of interpretation of the moral community that include sentientism, biocentrism and ecocentrism. In simple terms, sentientismrequires that moral considerability be extended to animals because they are subjects of a life and experience pain and suffering. This thinking was promoted by Peter Singer. Biocentrism calls for moral consideration to be conferred on all the living components of the ecosystem, that s, all life forms. For ecocentrism, moral consideration should cover everything, whether living or non-living. All efforts in environmental ethics revolved around these streams of thought in evolving a sustainable ethic for our environment. The paradigm shift in these thought patterns is that moral considerability transcends the human world, and this conception of the environment must colour every effort aimed at sustaining the environment for the present and the future generations.

Interestingly, African philosophers have not played the spectators in the grand aim of promoting non-anthropocentric ethics. In fact, the body language of most African philosophers who have contributed in building this emerging body of knowledge of knowledge portrays the fact that the African worldview has always been non-anthropocentric in its environmental concerns. This seems to heap the blame of the present ecological crises on the Western worldview which has promoted anthropocentric attitude responsible for the current ecological crises rocking the globe. Even though the current ecological crises are a global reality, most African scholars blame these crises in Africa on the influence of the Western culture on Africa traceable to the colonial past. In the light of this, African philosophers have evolved various perspectives on non-anthropocentric environmental ethics within the African worldview. This work may not be able to capture all of them, but efforts will be made to briefly unfold the prominent ones, namely, ethics of nature relatedness, eco-bio-communitarianism, ecology through *Ubuntu* and the *Ukama* theory.

The ethics of nature relatedness is the offspring of Segun Ogungbemi who understand global environmental crisis as the product of combined human and natural factors (Ifeakor and Oteh 73). For Ogumgbemi, environmental crises in Africa could be tied to three major factors, namely, ignorance and poverty, science and technology and political conflict including international pressures (330).In Ogumgbemi's novel ethics of nature relatedness, it is easy to underscore how much it shares with the traditional ethics of care which appears reformulated. Thus, "the ethics of nature relatedness can be succinctly stated as an ethic that leads human beingsto seek to co-exist peacefully with nature and treat it with some reasonable concern for its worth, survival and sustainability" (Ogungbemi 207). The ethics of nature relatedness has "three basic elements; reason, experience and the will" (Ifeakor and Oteh 75). Ogumbemi offers some practical suggestions towards the mitigation of the current environmental crisis in Africa which are three-fold (76). First, the generation, transmission and distribution of solar energy at a reasonable cost. Second, the problem of population will be attended to by nature when African population growth attains its zenith. Finally, there is need for political transformation to curb the level of abuses from industrial and agricultural wastes in both the urban commercial and industrial centres and the rural areas.

Eco-bio-communitarianism is another perspective on African environmental ethics promoted by Godfrey Tangwa. This is an African environmental ethic based on the metaphysical worldview of

pre-colonial traditional African societies (Ojomo 576). The African metaphysical outlook involves the "recognition and acceptance of inter-dependence and peaceful co-existence between earth, plants, animals and humans" (Tangwa 389). In other words, itemphasises the interdependence and peaceful co-existence in the world involving humans, plants, animals and the inanimate world (Ifeakor and Oteh 76).Tangwa emphasizes further that the traditional African metaphysical dichotomy between "plants animals and inanimate things, between the sacred and the profane, matter and spirit, the communal and the individual, is a flexible one" (Ramose 309) since it is in line with this metaphysical framework that one can consistently and coherently situate the people's belief in transmigration of the soul into animals, plants or into forces such as the wind (Ifeakor and Otteh 77). For Tangwa, such a metaphysical bearing has a lot of implications on how Africans treat and relate with nature. Leaning on his Cameroonian *Nso*culture, Tangwa underscores that his people's attitude towards the rest of nature is that of respectful co-existence, conciliation, and containment (390). Tangwa contends that the African culture is not opposed to technology, but rather calls for a cautionary use of technology influenced by the eco-bio-communitarian disposition which promotes the principle of "live and let live" (394). Such a humble disposition in the use of science and technology can foster the good of all humankind.

Mogobe B. Ramose is renowned for his *ecology through Ubuntu* contribution to African environmental ethics. *Ubunto/Botho,* derived from the proverbial expressions found in many languages African South of the Sahara, is not only a linguistic concept but a normative connotation embodying how we ought to relate to the other – what our moral obligation is towards the other (both human and non-human) (Le Grange 304). Ramose draws his philosophy from the *Sotho* proverb, *MothokemothokaBatho*which means "to be human is to affirm one's humanity reorganizing the humanity of others and on that basis establish human relations with them" (Ifeakor and Oteh 79). Thus, it is *Botho* (humanness or humanity) and a humane, respectful and polite attitude towards other human beings which constitute the proverbs core or central meaning (Behrens 70). It emphasises the fact that maintaining a complementary relationship with others is a *condition sine qua non* for achieving purpose in life. This lays claim to the communalistic nature of the African worldview. For Ramose, the concept of humanness suggests both a condition of being and the states of becoming, of openness or ceaseless unfolding; and stands opposed to any ism" including humanism for this tends to suggest a condition of finality, a closeness or a kind of absolute either incapable of or resistant to, any further movement (Oruka and Juma 117)."Humanness regards being, or the universe, as a complex wholeness involving the multi layered and incessant interaction of all entities" (Ifeakor and Oteh 80). It is within this context that Ramose extends the concept of human relations to relations with the physical or objective nature. This implies that the care for other human beings translates to the care for the physical nature since human beings are also an intrinsic part of the nature in a privileged capacity. The quest to maintain a balance in the relations between humans and the physical world results in harmony.For Ramose the easy life resulting from technology continuously reaffirms the need for *Ubuntu* because with it, there is guarantee for global peace which is threatened by ecological crises.

The dissatisfaction with the ecology through *Ubuntu* gave birth to the *Ukama*theory of African environmental ethics. The author of this perspective is Munyaradzi Felix Murove. *Ukama*is a term associated with the Shona people of Zimbabwe and is related to the African worldview of seeing all of reality as interconnected. According to Murove,the Shona *Ukama*means "being related or belonging to the same family" (316). Ikeke confirms this when he submits that "the Shona word, *ukama* implies close relationship and interdependence. This interdependence is not only that between one human and another human, it involves the reality that all things, including nature are closely related and depend on one another for existence" (202).Accordingly, humans exist in a community that includes ancestors, and the natural world of plants, animals, and other elements in the universe. Thus, in the *Ukama,* reality is envisioned in a unity of being that involves both the living and non-living. In this way, the *Ukama*is said to be related to totemism and ancestorship. Murove underscores that "... it is in *ukama* between the living and their ancestors, that immortality

of values is found" (317). Commenting on the role of the *Ukama,* Lyakurwa observes that it is through *Ukama*, the harmony between the past, present and future are actualized (63). Le Grange reasons along this line when he notes: "Ukama is advanced through totemic ancestorhood and is a connecting thread of the present, past and future and that Ukama does not only mean relatedness at the level of humans but also to the natural world" (333). It is clear that *Ukama*theory advances for the care of the environment because of the interdependent humans share with it.

There are other perspectives on African non-environmental ethics that will not be treated within the purview of this work. Suffice it to mention them in passing as follows: the parental ethics of Oruka and Jumia based on the two principles of parental debt (or bond) principle and individual luck principle; African relational environmentalism by Kelvin Behrens, obligatory anthropoholism by ChineduIfeakor, eco-anthopholism by Samuel Bassey etc. All these perspectives on African environmental ethics portray the fact that in the face of the current environmental crises, Africa can afford the word an ethic that is non-anthropocentric. What remains to be determined is how non-anthropocentric these perspectives are; and to this concern, this work now turns.

3.0 Critical Evaluation of Non-Anthropocentric Claims of African Environmental Ethics

The preceding discourse on the various perspectives on African environmental ethics make a claim to affording non-anthropocentric ethics. However, a critical look at these proposals seems to suggest that the claims are not so. Beginning with the claims of Ogungbemi, it has been observed that his ethics of nature relatedness "… is not [neither] a preservationist approach nor is it in way no anthropocentric" (Ifeakor and Oteh 77-78). This is because it emphasises the fact that human beings only treat nature with respect for the sake of current and future human wellbeing. It means that if the wellbeing of the current and the future human generations were not at stake, respect for nature would have been needless. This is opposed to what non-anthropocentric ethics stands for. Since non-anthropocentric ethics calls for respect for the intrinsic value of nature, weaving human respect for nature around the wellbeing of humankind reduces nature to instrumental value, that is, as means to satisfy human ends – anthropocentrism. In the same vein, ecology through *Ubuntu* is anthropocentric for expanding the concept of *Ubuntu* to include respect for the environment. The consequence of this expansion is seeing nature in terms of its usefulness to human beings. The theory of African relational environmentalism is not devoid of anthropocentric trappings because as Horthenskenotes, it is anthropocentric to tie moral status or considerability to relations with human beings in particular" (15). Components of nature should not conferred moral value only because they are related to human beings.

There is an underlying theme that permeates all the non-anthropocentric perspectives of African environmental ethics highlighted in the preceding section.Amidst their peculiarities, these perspectives emphasise the communitarian dimension of the African worldview. Tangwa, Ramose, Murove and others emphasise the role of African communitarian worldview in forging a non-anthropocentric ethic. Such an emphasis places all of them within the unitarian perspective of environmentalism which Marshall has strongly criticized under the charge of *ecological fascism*. Marshall uses the fascist term with a meaning that "… revolve around the tendency to devalue individuality in favour of totality while being intolerant of plurality, difference and dissension" (24). He continues that "by placing an overarching emphasis upon unity, environmental thinkers might open themselves up to the criticism of being branded promotional agents for some politically offensive idea that they would normally, themselves, protest against". These perspectives find in the fact of community an easy goal that explains the need for an all-encompassing concern for all components of the ecosystem. For such as unitarian perspective as Marshall has observed, there are inherent problems and dangers to the environment. This danger is that such a disposition will be "creating abstract wholes and functions while disregarding difference and abnormality, appealing to the primacy of the general over the uniqueness of the specific" (45). Although efforts have been made to underscore that African worldview promotes

individuality as can be seen in the efforts that give humans a special place, such efforts only end up promoting anthropocentrism that African environmental ethics exonerates itself from.

Most of these African perspectives on environmental ethics have not explained how their proposed perspectives are capable of salvaging the African ontology from collapse. Perspectives such as eco-bio-communitarianism, *Ubuntu, Ukama,* relational environmentalism and the like have been extolled for reflecting the African ontological worldview. However, it is not enough to tie the perspectives to reflect African ontology, but how to maintain this ontology is a problem that is yet to be solved. African ontology reflects a hierarchy of beings. This hierarchy is imbued with the reality of power levels and by implication value levels. Again, within this hierarchy, the human species is considered as the centre of African ontology, and it is for this reason that scholars such as Mbiti explicitly describe African ontology as anthropocentric. "African ontology is basically anthropocentric; man is at the very centre of existence; and African peoples see everything else in relation to this central position of man." (Mbiti 119).Okpe and Oti also of this view when he avers that the human being is at the center of African ontology (106).This concept of the special and privileged position of the human being in African ontology is echoed by various acclaimed African non-anthropocentric environmental ethics.

African non-anthropocentric environmental ethics is laden with speciesist trappings. Most African philosophers weave the non-anthropocentric conception of African environmental ethics around the fact that since humans are intrinsically part of nature, they are bound to care for all nature. This is already a bias to one's species, and this bias explains why humans should care for other aspects of nature. It implies that where humans are not intrinsically part of nature, they have no obligation to care for nature. This same point also weakens the totemic claims of African environmental ethics. Totems are so revered because human beings are believed to inhere in them. As it is evident within the totemic traditions, not all animals or objects have totemic values. In other words, there are selective animals or object that play totemic roles. To exonerate this worldview from anthropocentric accusations, there should not be selective totemic attachment to selected animals or beings. Indeed, where humans revere totemic elements, they do not so simply because they deserve to be cared and respected. The relationship with them also hinges on the fear of what consequences may result from doing otherwise because as Taringa has hinted, any disorder brought to the spiritual world has consequences (191-214). Reflecting on the anthropocentric inklings of the consequences of humans causing disorder in the spiritual realm, Nyang comments: "man … has to maintain correct relationship with the lesser entities within the spiritual kingdom. His day-to-day activities are not only designed to harmonise the relationship with the divinities and the departed ancestors, but they are also motivated by the fear that bad relations with these spiritual forces could certainly also endanger the life and certainty of his community" (29). In a nutshell, in addition to weaving every act of care and respect to nature around the human species, every totemic reverence is explained by consequences on human species.

4.0 Conclusion

In the foregoing discourse, efforts have been made to establish that there is an African perspective not just to environmental ethics, but also to non-anthropocentric environmental ethics. As the quest for non-anthropocentric ethics continues to burden the global community, the African perspective is worthwhile. However, this work has examined the non-anthropocentric claims of the various African perspectives on environmental ethics and made efforts to underscore their anthropocentric trappings. It seems to suggest that making a head way in environmental care requires a change of narrative in couching the concern. The dichotomy between anthropocentrism and non-anthropocentrism may make this project too difficult to achieve because it is difficult to imagine a workable environmental ethics without emphasising the central place of humans in the scheme of things. In addition, the anthropocentrism-non-anthropocentrism dichotomy will always find philosophers of opposing camps trying real hard to avoid slipping into the ideas of each other's

camp. Thus, it is pertinent to de-emphasise this dichotomy and build on the concept of environmental sustainability. The advantage of this perspectives promotes the pursuit of balance or some equilibrium in human relations with nature. It also allows for pursing an eclectic perspective in addressing the current environmental problems. This eclectic approach will build on the strengths of both anthropocentric and non-anthropocentric perspectives.It is the idea of this eclectic approach that scholars have attempted to merge the ideas of anthropocentrism and non-anthropocentrism in concepts such as "anthopoholism".

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Building Human-Environmental Friendly City Through Linking Ecological Research and Social Science

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Abstract : By combining the social and ecological sciences, this article aims to shed light on the problem of creating human-ecologically friendly cities. In order to make decisions based on the status of the ecological component, human action, and governmental intervention, it is necessary to have complete information about the interaction of the ecological, social, and governmental spheres. A piece of information that is only partially useful for making evidence-based decisions was frequently offered by the studies that were undertaken.The inclusion of physical science and social science can be useful to have a complete understanding because it is indicated that the physical dimension alone does not provide full comprehension to reach on tangible proof. The policy choice and subsequent action were unsuccessful as a result, and the issue continues to be a major one. To elaborate on some of these issues and lay the groundwork for further thought, see this paper. It is also suggested that, physical dimension alone is not provided full understanding to reach on concrete evidence, therefore, incorporating the physical science and social science can be helpful to have full understanding.

Key term: Ecological science, Social Science, Linking, complementary, decision making

Background

Urbanization is, worldwide, a key deriver of social, economic, and environmental change(Das & Das, 2019; Grimm et al., 2008; Hall et al., 2021; Services et al., 2021). However, understanding of its relationship, and effect on multidimensional benefits that people obtain from ecosystem remained limited (Lapointe et al., 2021). Many of the landscapes in most cities are well-kept, mowed, used for active recreation, and intersected with concrete roadways, but certain areas of unmanaged landscape remain unkempt, urban thickets clinging to life among the people (P. M. L. Anderson et al., 2013; Elmqvist & Mcdonald, 2013). Numerous study, showed that the green infrastructure spaces are on decline in several cities(Assaye et al., 2017; Azagew & Worku, 2020b; Grunewald et al., 2018; Gyasi & Awere, 2018; UNDP, 2012; Vasenev et al., 2020). Studies in European cities pointed out that 7.3 to 41% of green spaces have been changed into different land use (Fetene & Worku, 2013; Müller & Li, 2007; Musche et al., 2019; Vasenev et al., 2020). Likely, in USA, about 1.4 million hectors of green spaces have been converted to different land use (Hall et al., 2021). "Land-use change constitutes a major threat to ES supply" (Bitoun et al., 2021 p.7)

As several studies indicated the absence of clear define boundaries exposed the green areas for expansion of built(Azagew & Worku, 2020a; Das & Das, 2019; Fetene & Worku, 2013). Esmail & Geneletti (2020); Hall et al.(2021) also revealed a lack of political desire to enforce regulation (p.4 & p.8); population densities, poor administration of planning processes; a reluctance to make good planning decision are precipitating factors for depletion of urban green infrastructure. Furthermore, lack of deep understanding among the decision makers, and ignorance of the ecosystem issue, focusing on economic growth in expense of ecosystem was a measure factor for depletion of ecosystem services(Assaye et al., 2017; Wei & Ye, 2014). For instance; in China high rate of economic growth has put significant pressure on ecosystem(Hall et al., 2021; Wang et al., 2016; Wei & Ye, 2014). The study in china point out that the ecosystem service capacity to generate services have been deteriorated(du Toit et al., 2018). This was mainly, urbanization induced factors, focusing on economic growth in expense of ecosystem, and poor management strategies, and lack of integration in planning. These implies that the issue of the issue of

ecosystem was the neglected side of services from decision makers as well as all level of government(Mengist et al., 2020). Currently, the change of climate strained the global governments to gave attention to ecosystem services, and the problem become sound political agenda(du Toit et al., 2018; Hall et al., 2021; Kumssa, 2011). That is why, several countries including china, have been working on the mechanism of averting and reverting the ecosystem services(Dendoncker et al., 2013). It is necessary to get lesson from the challenge of understanding the roles human play in urban ecosystem(Assaye et al., 2017; Hall et al., 2021; Lapointe et al., 2021), and realizing joint growth through multidimensional intervention. Several literature remarked the reflection of gap on recognizing of the complexity nature of urbanization(Vasenev et al., 2020), and human natural system (Grimm et al., 2008; Mengist et al., 2020), in which people are dominant agents or anthropocentrism (Musche et al., 2019; Sharma & Mehta, 2016), that transform natural land escape into highly human dominated environments, changing ecosystem processes and dynamics that resulted in modification or creation of a new set of ecological conditions(M. Anderson, 2012; Brauman & Daily, 2008). Some countries in their history, For example, Khuer Rouge, who come to power 1975 in Cambodia, during the final days of the Vietnam War, applied the most extreme anti-urbanization policy in Asia . This policy forcefully evacuated the urban areas, therefore, broke down economy and social life. But, ended after the fall of Rouge(Kumssa, 2011). It was because the then regime saw cities as pools of corruption and decadence. (Kumssa, 2011) indicated the Chinese exercise of anti-urbanization policy for a long time. This policy was seems discouraging techniques of the rural urban migration by denaying the rural urban migrants urban household registration, and access to many basic urban services. But, the pressure of the need for economic growth and industrialization, forced china to change her view(page 62). Although, anti-urbanization policy had experienced, it was not work from the experiences of the two countries, and urbanization is continued to exist as merit and demerit for human being. The unsuccessfulness of the anti-urban policy is the indication for irreversibility of urbanization, and implication for planning to mitigate the adverse effect of urbanization.

As we have discussed above, unbalanced urban-ecological growth caused degradation of natural capital which is the source of ecosystem services. The depletion of ecosystem services affected urban quality life, in general dwellers well-being. Here, it is better to remained that the societal welfare is the end goal of public concern(Dendoncker et al., 2013; Hall et al., 2021; Lapointe et al., 2021). Therefore, the public or government understanding of the challenges to provide urban ecosystem services is essential part to move towards the human friendly urban life(Hall et al., 2021; Mengist et al., 2020; Services et al., 2021). In rapidly urbanizing cities, one of the ways stakeholders obtain scientific information about the circumstance of the urban ecosystem services is research. But, several papers indicated that despite the majority of the World's urban population is found in developing countries(du Toit et al., 2018), a very few research has been conducted regarding the constraints that determine the ecosystem services provision in rapidly urbanizing cities of developing countries(Y. Chen et al., 2014; Grunewald et al., 2018; Hall et al., 2021; Mengist et al., 2020; Musche et al., 2019). Those conducted few research did not address the issue from the point of interdisciplinary and holistic approach(Assaye et al., 2017; Grimm et al., 2008), which is a main barrier in providing holistic information on the problem.

So that, this attempted to address the theoretical, and compressive problem of getting information by applying holistic approach of study that would help to provide compressive understanding towards the human-ecological interaction through both the ecological and social dimensions.
Objective

General Objective

This paper's main goal is to highlight the importance of connecting social science and ecological research in order to build cities that are beneficial to both.

Specific Objectives

To highlight on the importance of linking social science and ecological research

To suggest the future direction for the better sustainable development achievement through complementary approach of ecological research and social research.

Methods and sources

The data hunger is observed in developing countries. The main reason might be due to poor recording, storing and managing nature of data. The method employed in this study is narrative highlight on the current literature gaps in providing complete information on the issue of the ecological capital and human interaction as well as the governance intervention. The source is secondary papers indicating about the existing challenges of providing complete information.

Discussion and result

There is still a lack of knowledge regarding the whole trade-off, interaction, and synergy of human-ecological harmony (Verma et al., 2020). The difficulty of closing such a gap using the current traditional uncoordinated approach of individual components by isolated traditional disciplines is the basis for its persistence (Dłużewska, 2016). Furthermore, Verma et al., (2020) Urbanization has a localized effect on ecosystems, but it also affects ecosystem services on a much larger scale. Research on how urbanization affects ecological processes has advanced remarkably(W. Chen et al., 2020; Verma et al., 2020). While research on how urbanization affects ecosystem functions has advanced significantly, little is still known about the connections and feedback between human actions and ecosystem dynamics in urbanizing areas. Despite the fact that urbanization is growing swiftly in developing countries, there is little research on how urbanization affects ecosystem services or how it interacts with them (du Toit et al., 2018). Ecosystem-based research is rare and only beginning in Africa (Amberber et al., 2020). There is limited understanding about the driving force of ecosystem services,(W. Chen et al., 2020).The governance of human activities and their effects on Ecosystem Services have received less attention in research. The relationship between the natural and social systems and how humans govern Ecosystem Services is poorly understood. The simple dissemination of scientific information regarding the state of Ecosystem Services will not be sufficient to stop the trend of ecosystems' declining conditions. To comprehend how humans regulate ecosystems, it will be required to have other types of knowledge, such as normative, traditional, and transformational knowledge (Primmer et al., 2015b).

The limited attention to policy implementation and governance in the ecosystem service context is surprising (Primmer et al., 2015a)Research showed that pure science on ecosystem emphasis on biodiversity conservation (Verma et al., 2020), which is not effective enough to change human behaviour. This reflected the need to assess how human activities, interaction and intervention affect ecosystem in order to achieve effective desired outcome, through analysing the policy implementation and analysing its practice empirically.

An integrated framework is required to assess the ecological implications of alternative urban development patterns and to develop policies to manage urban areas in the face of change. In particular, strategies for urban growth management will require such integrated knowledge to maintain ecological resilience by preventing development pressure on ecosystem services (Verma et al., 2020). Most of the research have applied the Shannon's Entropy model that uncontrolled expansion crossed the threshold of 0.5 entropy value (Anjum et al., 2021).

Researches on Ecosystem service governance modes is geographically diversified. decision-makers in well-studied areas can use a pool on studied arrangements, in other areas decision-makers may find limited literature to inform their decisions to maintain and strengthen ecosystem services (Primmer et al., 2015a). Numerous researchers call for the consideration of the role of governance as a driver in the dynamics of the ecosystem services. They also suggested the importance of brief identify and synthesize of governance dimensions for sustainable transitions of cities in which social-ecological interaction is prominent (Muñoz-Erickson et al., 2016)

Interdisciplinary, landscape planning, and science-policy integration were seen as the most promising approaches to enhance Cultural Ecosystem Service policy and management. The Study result also showed that experts believe the Cultural Ecosystem Services concept is still far from being implemented in agricultural landscape policies. Therefore, to maintain such systems, they proposed better inter- and trans-disciplinary research for Cultural Ecosystem Services-integrative policy and decision-making(Balázsi et al., 2021).

Changes in land use / cover refer to changes in land features such as vegetation, soil, and climate, whereas changes in land use refer to changes in how humans use or manage land. Land cover change is caused by natural processes, but land use change is human-induced(Verma et al., 2020). This change is responsible for many local and global effects, including biodiversity loss, habitat loss, and loss of ecosystem services(Yang et al., 2017).

Economists and policymakers have changed most of the world's land-use/land-cover in recent years(Wang et al., 2016). To date, from the researchers knowledge no national study has assessed the impact of LUCCS on ecosystem service values. Insufficient information resulted in a lack of emphasis on ecological services. So, for a long time, the issue of ecosystem services was ignored by all levels of government and the private sector. Unawareness of ecosystem services eroded the value of natural capital. Human actions, natural phenomena, and lack of strong systemic safeguard deteriorated potential sources of ecological services, posing challenges to human life (Bargigli et al., 2005). Human settlements have replaced agricultural and natural ecosystems as a major component of global change (Grimm et al., 2008). By 2030, nearly half of the world's population will be living in cities (UN, 2018). It presents new governance challenges to manage urban green space in the context of an ongoing social-ecological transition. .... gathering and managing land to preserve or boost the flow of ecosystem services related to green places (Green et al., 2016)

According to evidence from numerous articles, physical science focuses on the physical world or pure scientific viewpoints, whereas the main obstacles to the occurrence of various occurrences are connected to either direct or indirect human activity and governance problems(Balázsi et al., 2021; du Toit et al., 2018; McPhearson et al., 2015; Pan et al., 2021). More emphasis is placed on the physical evaluation of land scope change, with little to no attention paid to the social-ecological-governance aspect from the public policy, actors, and professional viewpoints.

Conclusion

The main importance of linking the ecological research and social science is to provide complete understanding among policy makers, decision makers, and the stake holders. To have complete information the linked framework of ecological-social-governance is essential. So, that I suggest the future research should address multi-dimensional aspect of the urban-ecological related studies.

In addition to the essentiality of the triangular linking of Ecological-social-governance, the current research should be transformed in inline with the sustainable development. It is because of the current global issue becomes more integrated and interconnected rather than separate treatment. So that, the future of the research world is integrated, rather than separated in orderto provide full understanding on a given issue from multiple-dimension.

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A Study on the Potentiality of Sustainable Ecotourism In Dawei and Myeik at Tanintharyi Region

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Abstract : Tanintharyi Region is existed with islands including the Mergui Archipelago, which is one of the country's most popular tourist destinations, comprising more than 800 attractive islands for the ecotourism. The study aims to examine whether sustainable development of Ecotourism at Tanintharyi region is possible or not. This study uses a descriptive method with the primary data and secondary data. It was conducted with three groups of survey questionnaires: one for local residents with 150 sample sizes, international and domestic tourist with 50 sample size each. The research is done on both quantitative and qualitative analysis. Dawei and Myeik was selected for case study. The findings illustrated that ecotourism in Dawei and Myeik has impacted local livelihoods and other environmental, economic, socio-cultural factors in both positive and negative ways. In this study, the positive effects were found to be more significant than the negative effects. Importantly, local residents in the study area expresses optimism about the future of ecotourism and have claimed that any negative consequences cannot discourage their desire for continuing ecotourism. Government should improve infrastructures more, provide social and environmental awareness trainingsand stakeholders and tourists should cooperate with authority and community and report on negative impacts for responsible practices.

Introduction

Tourism represents a major sector of the global economy and considered to be an effective driver of economic growth and development in destination areas. Tourism may be taken into account as the relationships and phenomena emerging from the voyages and temporary stays of people traveling mainly for leisure and recreational objectives. It is prone to continue developing in the future because more people seek opportunities for leisure and recreation away from their surroundings. Tourism provides economic and social benefits but it is also a threat to sustainable growth and development.

Myanmar is characterized by diverse ecosystems, rich biodiversity and a wealth of ethnic lifestyles and cultures. It is the responsibility of the citizens to hand-over these gifts from nature, and the invaluable heritage of the ancestors, to future generations.Protected areas are established to conserve these gifts, including snow-capped mountains, wetlands, distinct forest types, seascapes, coral reefs and their constituent biodiversity. They are also powerful economic drivers that contribute not only to ecosystems and biodiversity conservation, but also to the development of our local, sub-national and national economies. At the same time, protected areas are perfect destinations for ecotourism.

The rapid expansion of Myanmar's tourism sector presents special opportunities to promote ecotourism that focuses upon our protected areas with their rare wildlife, beautiful land and seascapes, and diverse ethnic lifestyles and cultures. As we progressively open these special areas for ecotourism activity it is most important to safeguard and protect their unique and valuable assets. As we do so, all of us must share responsibilities. We must work together to raise environmental and cultural awareness and respect, to minimize negative impacts, to deliver direct financial benefits for conservation and livelihood development, to empower local people, and to consistently strengthen and improve management systems that sustain these areas.

Growing extent tourism in particular due to the natural beauty of the archipelago and the

Maungmagan beach near Dawei especially, Mergui Archipelago comprises with over 800 beautiful islands. Due to its virtual isolation, the islands and surrounding seas are alive with an amazing diversity of flora & fauna and very beautiful underwater scenes and marine life. Salone tribes (Sea Gipsy), the inhabited of the islands are well-known for their skillful diving. Maungmagan beach, Dawei Peninsula (jungle trekking, snorkeling), Dawei, Myeik, Kawthaung (Starting point for Myanmar-based cruises to Myeik), Lampi island, 115 island (Snorkeling, mini hiking and jungle trekking) Myauk Ni island, Horse Shoes island, etc. Ecotourism to the area is having the potential to bring a wide range of benefits to local communities. Additional / alternative sources of income from guiding, homestays, and the sale of craft materials. Increased income in region from accommodation, food sales, etc. Multiplier effects through the purchase of local goods and services for tourists. The introduction of toilets and waste disposal for tourists would likely to lead to their adoption by local people with consequent improvements to local health. Increased attention by the government to the protection of natural resources on which local people depend for elements of their livelihood. Increased pride taken by local inhabitants in their culture and their surroundings. Therefore, this study emphasized the potentiality of sustainable ecotourism in the study area.

Objective of the Study

The objective of the study is to identify the current status of Ecotourism at Tanintharyi region, to find out the perceptions of local residents on impacts of Ecotourism and to find out the awareness of domestic tourists and international tourists on sustainability.

Method of Study

This study uses a descriptive method. The primary data and secondary data are used. The information, facts and figures of the secondary data are obtained from the relevant ministry and association such as the Ministry of Hotel and Tourism, publications, newspapers and internet websites. Primary data are collected from the result of interviews and survey questionnaire to domestic tourists, international tourists and local residents based on simple random sampling procedure.

Literature Review

Deriving from the trend of globalization and urbanization, tourism to the natural areas has become more popular during the recent years. To balance their busy city lives people crave for wildlife experiences in the natural environments and people living in these areas have acknowledged this need and turned their conventional source of livelihood such as fishing, farming and forestry into running tourism business (Buckley 2003).

Bromberek (2009) notices that ecotourism has become a fashionable trend, which emphasizes a direct contact with the nature protecting and conserving it. In recent years the term of ecotourism has become widely visible in the tourism industry. The trend of ecotourism derives from the trend of the ideology of responsible, sustainable and ecological consuming concerning any kind of activity including tourism. It has been argued whether these ecological and sustainable values are only temporary trends or stable evolution in the tourism. This is an issue where scholars have not reached consensus upon and only time will tell how the future will be. The concept of ecotourism is complex and frequently it is mixed with the concepts of nature-based, rural, adventure or other types of tourism. Though, many times ecotourism forms an amalgam with some of the mentioned types of tourism. Moreover, it is difficult to determine what lies in the essence of ecotourism: what kind of activities, people, management and environment are involved? (Weaver 2008).

United Nations World Tourism Organization (UNWTO 2002) defines ecotourism as nature-based forms of tourism in which the main motivation of the tourists is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas. Similarly, The International Ecotourism Society (TIES 2006) defines ecotourism as responsible travel to natural areas that protects the nature and creates welfare to local communities.

To make the difference more clear Martha Honey has listed six key principle characters of ecotourism:
1. Minimize impact
2. Build environmental and cultural awareness and respect
3. Provide positive experiences for both visitors and hosts
4. Provide direct financial benefits for conservation
5. Provide financial support and empowerment for local people
6. Raise sensitivity to host countries' political, environmental and social climate (Martha Honey).

The linkage between environment and development was globally recognized in 1980, when the International Union for the Conservation of Nature published the World Conservation Strategy and used the term "sustainable development" and promoted the concept (IUCN, 1980 as cited in Holmberg & Sandbrook, 1992).

Sustainable development represents a compromise, in that it suggests that the twin goals of environmental sustainability and human economic development are compatible, attainable, and mutually inseparable (Simon, 1989; Redclift, 1991). Overton (1999) claimed that sustainable development must deal with a long-term strategy rather than a short-term policy agenda. However, in order to be sustainable, our environmental, economic, and social systems need to show a high degree of stability and integrity over a very long period of time.

Overton (1999) pointed out that environmental sustainability is the process of ensuring the current course of interaction with the environment is pursued, with the notion of keeping the environment as pristine and natural as possible. Economic sustainability requires the achievement of poverty reduction, equity, and efficient use of resources (Elliott, 2006). Social sustainability proponents also believe that sustainable development is best understood in terms of people-oriented activities, and the sustainability of a human community (Allen & Thomas, 2000).

The three perspectives on sustainable development described above each have a unique focus in their approach, they also share a number of common characteristics and goals. Thus, overall, it can be said that sustainable development seeks to meet five broad requirements:

1. The integration of conservation and development
2. The satisfaction of basic human needs
3. The achievement of equity and social justice
4. The provision of social self-determination and cultural diversity
5. The maintenance of ecological integrity. (Jacobs & Munroe, 1987 as cited in Holmberg &Sandbrook, 1992)

The linkage between ecotourism and sustainable development has been explored by many academics recently. This is well represented by Wall (1997), who clearly indicated that ecotourism has the potential to contribute to sustainable development on the grounds that it is often viewed as a sustainable form of tourism. However, in order to contribute to sustainable development, ecotourism must be economically viable, ecologically sensitive, and culturally appropriate. In fact, these three factors are held to be the three primary prerequisites for achieving sustainable development (Wall, 1997).

Myanmar Ecotourism Policies, Plans and Strategies

Ministry of Hotel and Tourism of Myanmar set out 14 key objectives under six strategic programs. They are as follows;

Strategic Program 1: Strengthen Institutional Arrangements • develop an ecotourism planning and management framework • strengthen the legal and regulatory environment for ecotourism • develop an Ecotourism Partnerships Framework

Strategic Program 2: Strengthen Ecotourism Planning in and around Protected Areas • build human resource capacity in ecotourism planning and management • design ecotourism management plans for protected areas

Strategic Program 3: Engage Local Communities • raise community awareness of ecotourism and protected area issues and opportunities • promote business opportunities for protected area communities • build private sector knowledge of good practices in engaging protected area communities

Strategic Program 4: Invest in Infrastructure and Responsible Business Models • improve infrastructure in and around protected areas • promote innovative business models for protected areas • promote responsible practices in elephant tourism

Strategic Program 5: Strengthen Research and Monitoring Frameworks • deepen knowledge of the tourism and protected areas relationship

Strategic Program 6: Strengthen Marketing and Interpretation • raise national awareness of Myanmar ecotourism • develop and align a Myanmar Ecotourism Marketing Plan within the broader tourism marketing strategy

Findings and Discussion

Tourist flows in Dawei and Myeik is examined by two ways. One was conducting questionnaires to local people especially when would be the time for more tourists in Dawei and Myeik. Another is from secondary data analysis of Ministry of Hotel and Tourism, Tanintharyi Region. According to Ministry of Hotel and Tourism, Tanintharyi Region, the study areas have been integrated to be year round tourist season especially with many caravan tours that are coming into the region through border crossing cities from Thailand. However, it could not be year round tourist seasons according to local people responses tourism season is to be called summer period and the months with long school holidays.

Table 1. Monthly Tourists Arrivals with Caravan Tour through Border Cities 2016-2018

Month	2016		2017		2018		Total	
	Quantity (Unit)	%	Quantity (Unit)	%	Quantity (Unit)	%	Quantity (Unit)	%
January	-	-	-	-	-	-	-	-
February	2	1.47	12	2.64	27	8.94	41	4.60
March	24	17.65	66	14.54	21	6.95	111	12.44
April	-	-	49	10.79	28	9.27	77	8.63
May	-	-	26	5.73	-	-	26	2.91
June	-	-	61	13.44	11	3.64	72	8.07
July	14	10.29	42	9.25	-	-	56	6.28

August	-	-	34	7.49	61	20.20	95	10.65
September	-	-	18	3.96	80	26.49	98	10.99
October	-	-	87	19.16	39	12.91	126	14.13
November	-	-	11	2.42	-	-	11	1.23
December	96	70.59	48	10.57	35	11.59	179	20.07
Total	136	100%	454	100%	302	100%	892	100%

Source: Survey Data, 2019

Table 2. : International Tourist Arrivals to Dawei, Myeik and Kawthaung through Three Border Cities 2014-2018

District	Dawei		Myeik		Kawthaung		Total	
	Quantity (Unit)	%	Quantity (Unit)	%	Quantity (Unit)	%	Quantity (Unit)	%
2014	4224	15.7	9477	3.5	217058	80.8	268759	100
2015	46896	14.16	15085	4.55	269176	81.28	331157	100
2016	41203	12.16	9956	2.94	287779	84.90	338938	100
2017	8230	2.39	9822	2.86	325777	94.74	343829	100
2018	9302	2.59	7321	2.04	342109	95.37	358732	100
Total	147855	9	51661	3.15	1441899	87.84	1641415	100

Source: Survey Data, 2019

Table 3 : Respondents' Perception on Tourists Arrival and Tourist Seasons in Dawei and Myeik

Tourist Seasons	Respondents' Perception on Tourists Arrival			
	International Tourists (n=150)		Domestic Tourists(n=150)	
	Quantity (Unit)	%	Quantity (Unit)	%
June-August	20	13.3	12	8
September-November	35	23.3	29	19.3
December-February	38	25.3	34	22.7
March-May (Summer School-holidays)	36	24	57	38
Year Round	21	14	18	12

Source: Survey Data, 2019

Perceptions of The Respondents in Potentiality on Sustainable Ecotourism Development in The Survey Area

Concerning of potentiality in ecotourism, the considered socio-cultural, environmental and economic factors are analyzed as follow from local residents, international tourists and domestic tourists.

(A) Socio-cultural Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area

The questionnaire design was to measure the respondents' socio-cultural perception on the potentiality on ecotourism to be sustainable and developed in the survey area. The data shows that ecotourism builds up social solidarity as people worked together to develop in which the mean score is 3.55 and the standard deviation is 0.96. It shows that ecotourism activities and services can make community closer to work together and it helps the area to develop as a social improvement. The second highest is that ecotourism brings infrastructure improvement

for sustainable development in which the mean is 3.46 and the standard deviation is 1.04. The respondents pointed out that there will be more accessible roads and recreational buildings with the tourism improvement. The third highest is that ecotourism creates behavioral changes in society in which the mean is 3.34 and the standard deviation is 1.17. The respondents pointed out that there would be competition among locals and it would change the behavior of people as the result of the emergence of economic benefits to some local people. The respondents assumed that ecotourism will create education support, living standard condition improvement in which the mean is 3.30 and the standard deviation is 1.18. The mean of the factor that "ecotourism will create crime cases and child labor more" is 2.70 and its standard deviation is 1.32. It means that there would not be more crime cases and child labor issues in future.

Table 4 : **Socio-cultural Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area**

Dimension	Mean Score of The Respondents	Standard Deviation
Ecotourism builds up social solidarity as people worked together to develop	3.55	0.96
Ecotourism brings infrastructure improvement for sustainable development	3.46	1.04
Ecotourism creates behavioral changes in society	3.34	1.17
Ecotourism creates education support, living standard condition improvement	3.30	1.18
Ecotourism will create crime cases and child labor more	2.70	1.32

Source: Survey Data, 2019

(B) Environmental Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area

The questionnaire design was to measure the respondents' environmental perception on the potentiality on ecotourism to be sustainable and developed in the survey area. The data shows that ecotourism will encourage local to look after the forests, islands and beaches, in which the mean score is highest, 3.80 and the standard deviation is 1.15. It shows that there is potentiality of environmental sustainability that helps for ecotourism development. The second highest is that ecotourism will lead local people to more environmental awareness in which the mean is 3.47 and the standard deviation is 1.19. The third highest is measured that ecotourism will help for the improvement of household rubbish disposal in which the mean is 3.44 and the standard deviation is 1.31. It shows that it will help local residents for proper littering habit. The respondents pointed that there would be an increase quantity of plastic bottles at beaches and islands in which the mean is 3.43 and the standard deviation is 1.21 as they concern especially with domestic tourists. And the last point is that ecotourism will help to restrict of wood for local use in the survey area and a decrease in firewood collection in which the mean is 3.13 the lowest, and the standard deviation is 1.38 as they still concern that some local people will still in need of collecting wood for housing and cooking purpose.

Table 5 : **Environmental Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area**

Dimension	Mean Score of The Respondents	Standard Deviation
Ecotourism will restrict of wood for local use in Dawei/Myeik area and a decrease in firewood collection	3.13	1.38
Ecotourism will help for the improvement of household rubbish disposal	3.44	1.31

Ecotourism will encourage local to look after the forests, islands and beaches	3.80	1.15
An increase quantity of plastic bags and plastic drinking bottles at beaches and islands	3.43	1.21
More environmental awareness of local people	3.47	1.19

Source: Survey Data, 2019

(C) Economic Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area

The questionnaire design was to measure the respondents' economic perception on the potentiality on ecotourism to be sustainable and developed in the survey area. The data shows that ecotourism will sustainably create job opportunities for local in which the mean is highest 3.64 and the standard deviation is 1.04. It shows a good signal that it is economical potentiality to sustain ecotourism as job opportunities help the local residents. The second highest is that ecotourism will sustainably generate extra income for locals, in which the mean is 3.32 and the standard deviation is 1.18. The third highest is that the respondents concern with income from all tourist service jobs are sufficient in which the mean 3.19 and the standard deviation is 1.27. The two lowest are relatively pointed out that ecotourism will create equal and fair distribution of income and all villages can access ecotourism jobs. It shows the respondents' concern that not all villages can access ecotourism jobs and as a result, it will create low equal and fair distribution of income.

Table 6 : Economic Perception of The Respondents in Potentiality on Sustainable Ecotourism in The Survey Area

Dimension	Mean Score of The Respondents	Standard Deviation
Ecotourism will sustainably create job opportunities for locals	3.64	1.04
Ecotourism will sustainably generate extra income for locals	3.32	1.18
All villages can access ecotourism jobs	3.05	1.32
Income from all tourist service jobs are sufficient	3.19	1.27
Ecotourism will create equal and fair distribution of income	3.09	1.31

Source: Survey Data, 2019

Assessing tourists' flows play essential role to enhance further tourism development in Dawei and Myeik areas. Tourist flows for international tourists from border gateways were rising gradually year after year in Tanintharyi region under secondary data, primary data and field observation. In case of domestic tourists, although there is no secondary data, the number of domestic tourists were soaring up based on key informant interview and focus group discussion of local people. As a consequence, the findings for tourist flows of both international and domestic were increasing arrivals in Tanintharyi Region. Due to the secondary data, with the increasing tourist flows, there was an increasing number of rooms and hotels in the survey areas.

According to the survey interviews, many residents acknowledged that roads were improved and better than before. Yet, the residents claimed that there are still some problems concerning transportation in rural villages especially in rainy season since roads were not constructed to use cars. And the train transport was still needed to enhance for the convenience of the visitors.

Employment opportunities, income generation and their economic activities of local people were seen as an economic impact. Employment opportunities in survey area were the highest

position with almost all people can find a job easily in survey areas within their population although some are going Thailand for other well-paid jobs. So, the finding pointed out employment situation in survey area are going well and supporting local people through tourism development. Based on three groups of economic activities in survey area, hotels and guest houses group could run their tourism economic activities very well in compared with the rest two groups which were souvenir shops group and transportation services and local tour guides group. Although most of the local people economic activities rely on agriculture, mining and fisheries, these tourism economic activities are involved in the development. The income situation between the rest two groups were no have great disparity. Besides, based on interview and group discussion, the income generation became higher than previous three years. In employment case, the finding was quite obvious because tourism development created job opportunities for local people. Only very small amount of people changed their jobs in the tourist low season.

Education support, change of living standard, Myanmar traditional norms and behaviors are seen as positive social affect. The positive social affect was high therefore those positive social impacts could be maintained to be better situation. The negative social impact assessment measured with child rate, sex tourism, child labor criteria. The outcome of negative social impact turns into totally positive ones because the finding shows there was no negative social impact of ecotourism in survey area other than a very few number of conflicts between the visitors and the residents. Those negative matters minimized as much as the local people controlled to be a sustainable development with ecotourism.

Suggestions

To enhance Ecotourism development and its sustainability, the following suggestions are to be considered in the survey area.

From the government side, fully implementation of 14 key objectives under six strategic programs of Ecotourism strategy and leads to the Responsible Community Involvement in Tourism, adopting and strengthening better regulation for social and environmental issues as it relates to the Ecotourism sector, building the capacity of policy, regulatory and inspection authorities at regional level, increasing awareness of relevant regulatory and policy frameworks and raising transparency are required.

From the business owners and investors of the tourism side, supporting the principles of the government's implementation of the ecotourism policies, plans and strategies which relate to sustainable and responsible ecotourism, committing to applying international social, environmental and human rights standards and undertake due diligence in the business, practicing enhanced human rights due diligence on particular issues, ensuring the participation of communities in tourism development, taking collective action to address to environmental, social and human rights issues, strengthening the governance of the Myanmar Tourism Federation (MTF) and its member organization; are required.

From the tourists' side, respecting local Myanmar culture and traditions, the environment, and women's and children's rights, support the development of sustainable ecotourism in survey area are strongly encouraged by not buying and damaging forbidden nature items.

From the community side, conducting responsible activities for better environment, engaging actively in EIA (Environmental Impact Assessment) consultations related to tourism development projects and disclosure processes, reporting on negative impacts on ecotourism and highlight ways in which these could be mitigated in line with national law and international standards.

Acknowledgments

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Analysis of Bandish, Aalaps and Taans of Raga in Indian Classical Music Using N-grams

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Abstract : This work is an attempt to analyse three melodic components of *Raga* in the context of Indian Classical Music (ICM). These components are *Bandish*, *Aalap* and *Taan*. Every *Raga* in ICM has specific framework. The artist is supposed to abide strictly to the *Raga* framework while performing the *Raga*. We are trying to find out how well *Bandish*, *Aalap* and *Taan* represent the *Raga* framework. Considering the similarities between language and music, we have used one of the Natural Language Processing technique: n-grams for the analysis. We have considered *RagaYaman* in this study. Melodic patterns extracted from the *Bandish,Aalap* and *Taan* of the *Raga Yaman* have been used as input. These patterns are in the form of musical notations. The n-grams have been extracted from these patterns. By examining the note frequencies and the n-gram frequencies generated from the notations of *Bandishes*, *Aalaps* and *Taans* we could conclude that all three of these components are equally representative of the *Raga* framework.This study is helpful in developing a computational model of a *Raga* which may further have applications in automatic *Raga* recognition and automatic melody generation.

In the introductory part of the paper we have explained the concept of *Raga* in ICM and the components of *Raga* performance. Various attributes of a *Raga* and their meaning is also provided. The ICM notation style and symbols have been provided along with the notation style that is used in this paper. In the subsequent section the objective of the study has been stated. The 'Data' section provides information of *Raga Yaman* and information about the collected data. We have expressed our thoughts and reasoning about using the Natural Language Processing techniques like n-gram analysis for analysing music. The subsequent sections emphasise the observations, analysis and conclusion from the work.

Key Words: Indian Classical Music, *Raga*, *Bandish, Aalap, Taan, Swar, Vadi* note, *Samwadi* note, notation, n-grams, Natural Language Processing

1.0: Introduction

Indian Classical Music (ICM) is a very expressive form of music. It has a specific melodic and rhythmic structure. Melodic structure is known as *Raga* and rhythmic structure is known as *Tala*. During the Indian Classical music performance, a *Raga* is presented by the artist. Every artist improvises by using notes in the *Raga* and by keeping the framework of the *Raga* intact. *Bandish* is a composition in the *Raga*. It is a small song that provides the basic melody, around which an artist can improvise. *Aalaps and Taans* are the other melodic components using which *Bandish* is elaborated and explored within the framework of a *Raga*.An *Aalap* is performed in a slow tempo while a *Taan* has a faster tempo.

The improvisation during the performance is extempore. That is why no two performances of the same *Raga*, even two performances by the same artist, will be identical. Every *Raga* has a specific set of musical notes (*Swar*) which is represented by *Aaroh* and *Avaroh* of *Raga*. Along with *Aaroh*

and *Avaroh,* a*Raga* is characterized by several attributes. Table 1 contains the List of some of the attributes and their descriptions.

Table 1: List of attributes of the *Raga* and their meanings

Attribute	Meaning
Aaroh	A unique melodic phrase in which the notes in the *Raga* are arranged in ascending order.
Avaroh	A unique melodic phrase in which the notes in the *Raga* are arranged in descending order.
Pakad	A unique set of melodic phrases by which the *Raga* can be identified. (Catch phrase of the *Raga*) (Surendra Shetty, 2009),(H. G. Ranjani, 2011)
Vaadi note	The most important note in the *Raga*. It appears most frequently in the *Raga* rendition.
Samvaadi note	The second most important note in the *Raga*.
Anuvadi notes	The set of notes used in the *Raga* apart from *Vaadi* and *Samvaadi*.
Vivadi notes	The set of notes which should not be a part of the *Raga* rendition.
Varjya notes	Notes which are omitted form the *Raga*.
Raga-samay	A specific time that is considered as the most appropriate time to sing the Raga.
Bhava of the *Raga*	Every *Raga* is said to be capable of expressing a certain emotion and creating a certain mood.

The perceived music is documented by employing a *notation* that consists of symbols to represent notes and their variants, duration of each, and, durations of the absence of sound. Notations of the *aroha* that employ all 12 notes in ICM (specifically Hindustani Classical Music which is a north Indian Variety) are shown in Table 2 below.

Table 2: ICM style notations

Notation Style	Note symbol
ICM notation (in Roman script)	S r R g G M m P d D n N
ICM notation (a variant in *Devnagari*)	सारेरेग॒गममंपध॒धनी॒नी

(Note: The lowercase letters in Roman notation denote semitones, i.e., *komal* in the case of R, G, D, N and, sharp tone i.e. *teevra* in the case of M. Underlined characters in Devnagri notation represent *komal* in the case of R, G, D, N and a small vertical line above character denotes sharp tone i.e. *teevra* in the case of M)

In this study, in order to make it easier to process, we have used following notations:
- Shuddh (natural) notes are notated as S, R, G, M, P, D, N
- Komal (flat) notes are notated as r, g, d, n
- *Teevra* (sharp) note (*madhyam*) is notated as m
- (S, R, G, M, P, D, N) = notes in middle octave (*Madhya Saptak*)
- (_S, _R, _G, _M, _P, _D, _N) = notes in lower octave (*Mandra Saptak*)
- (S_, R_, G_, M_, P_, D_, N_) = notes in upper octave (*Taar Saptak*)

2.0: Objective

To analyse the note frequencies and n-gram frequencies generated from notations of *Bandishes*, *Aalaps* and *Taans* in *Raga Yaman* to examine which of these three are more representative of the *Raga* framework. The following section presents the details of data preparation and processing.

3.0 : Data

The input is a dataset of the notations of *Bandish, Aalap* and *Taan* in *Raga Yaman*. *Yaman* is a very melodious *Raga*. We found it easier to find compositions in *Yaman*. That is one of the main reasons why we chose *Yaman* for this study. Some of the *Bandishes, Aalaps* and *Taans* were obtained from a standard text book of an intermediate level Course in ICM (Deodhar, 2012). Notations of some of the *Bandishes* were generated manually. The notations which were available in the hardcopy format have been typed in manually. The size of the total data has been compiled in Table 3. The first element of the pair in a *Bandish* record is the number of lines and the second is the number of sets from where the data has been gathered.

Table 3: Size of *Bandish*, *Aalap* and *Taan* used for analysis

Raga	Feature		
	Bandish	no. of *Aalaps*	no. of *Taans*
Yaman	(103, 20)	41	34

The table 4 below contains values of attributes for*Raga Yaman*:(Deodhar, 2012)

Table 4: values of attributes for *RagaYaman*(Deodhar, 2012)

Attribute	Meaning
Aaroh	_ N R G m D N S _
Avaroh	S _ N D P m G R S
Pakad	_ N R G, R G, _ N R S, P m G R, _ N R S
Vaadi note	G
Samvaadi note	N
Anuvadi notes	S, R, m, P, D
Vivadi notes	R, g, M, d, n
Varjya notes	No *Varjya* note.
Raga-samay	Around 9:00 pm to 12:00 midnight
Bhava of the *Raga* (mood)	Serious

Figure 1 below provides an example of the *Bandish* and its notation in *Raga Yaman*(Sadhana, 2011).

Figure 1: Bandish and its notation in Raga Yaman(Sadhana, 2011)

Bandish in Raag Yaman, Teentaal, Drut Laya
Agra gharana composition

eri aali piya bin, sakhi
kal na parat mohe, ghari pal chhin din

jab se piya pardes gavan kino
ratiyan kaTat hain tare gin-gin

Beat No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Bol	dha	dhin	dhin	dha	dha	dhin	dhin	dha	dha	tin	tin	ta	ta	dhin	dhin	dha
Lyric									e	~	ri	~	~	aa	~	li
Notation									N	~	P	~	~	R	~	S
Lyric	pi	yaa	bi	na	~	~,	sa	khi|	e-e	e-e	~	ri	~	aa	~	li
Notation	G	R	G	G	~	~,	G	M|	MN	DN	~	P	~	R	~	S
Lyric	pi	yaa	bi	na	~	~,	sa	khi|	e-e	e-e	ri	~	~	aa	~	li
Notation	G	R	G	G	~	~,	G	M|	MN	DN	P	~	~	R	~	S
Lyric	pi	yaa	bi	na	~	~,	sa	khi|	ka	la	na	pa	ra	ta	mo	he
Notation	G	R	G	G	~	~,	G	G|	G	M	G	P	M	D	P	P
Lyric	gha	ri	pa	la	chhi	na	di	na|	e	~	ri	~	~	aa	~	li
Notation	N	N	P	P	R	R	S	S|	N	~	P	~	~	R	~	S
Lyric	pi	yaa	bi	na	a	~|										
Notation	G	R	M	M	G	~|										
Lyric									ja	ba	se	pi	yaa	~	pa	ra
Notation									P	P	S'	S'	S'	~	S'	S'
Lyric	de~e	e~e	sa	ga	va	na	ki	no|	ra	ti	yaa	ka	Ta-a	ta	he	~
Notation	NR'	S'S'	N	D	N	D	P	P|	P	G'	R'	S'	ND	N	P	~
Lyric	taa	~	re	~	gi	na	gi	na								
Notation	N	~	P	~	R	R	S	S|								

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4.0: NLP technique for analysis

Music isconsidered as a way to communicate as music conveys a specific emotion. This capacity of music can be considered analogous to the languages. The notes in ICM are similar to alphabets and musical phrases are similar to words, rendition of a *Raga* is similar to a write-up. These similarities in language and music motivated us to analyse components of *Raga* using natural language processing techniques. *Raga* in ICM is explored and elaborated through the phrases designed using combinations of notes in a specific

sequence. Not all such combinations are valid combinations in a specific *Raga*. *Bandish*, *Aalaps* and *Taans* being a composition in a *Raga*, should follow the *Raga* framework.

N-gram analysis has been successfully employed to capture syntactic information in diverse scripts (N. Yadav, 2010), (S. Drew, 2022), (W. Cavnar, 1994). A similar approach has been proposed here. The frequencies of notes, bigrams (patterns of two successive notes) and trigrams (patterns of three successive notes) are extracted from the notations of *Bandishes*, *Aalaps* and *Taans*. A note-frequency matrix has been constructed in which the (i, j)-th element denotes the frequency of the i-th note in the j-th component. Figure 2 is a snapshot of a note frequency matrix. *Bandish* wise note frequencies are also generated. Figure 3 below is a snapshot of *Bandish* wise note frequencies (total 20 *Bandishes*). Another matrix similar to the term-document matrix (W. Cavnar, 1994)has been constructed in which the dimensions are ngrams and components (*Bandishes*, *Aalaps* and *Taans*). The (i, j)-th element of this matrix denotes the frequency of the i-th gram in the j-th component. Figure 4 is a snapshot of the first few cells of the ngram-component (*Bandish*, *Aalap* and *Taan*) matrix.

Note Frequencies			
Notes	Bandishes	Aalaps	Taans
S	237	105	108
R	274	143	112
G	289	111	132
m	200	90	121
P	235	89	65
D	204	112	93
N	256	152	115

Figure 2: note frequency matrix

1	2	3	4	5	6	7
Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies
P : 12	N : 13	G : 13	P : 11	N : 9	P : 12	S : 15
m : 10	R : 9	P : 6	N : 15	D : 8	G : 22	G : 10
N : 17	G : 13	R : 12	D : 13	P : 10	R : 27	P : 27
D : 12	S : 5	S : 13	R : 14	m : 11	S : 18	D : 8
G : 13	D : 10	N : 10	G : 16	G : 12	N : 22	R : 10
R : 21	P : 5	D : 6	m : 12	R : 9	D : 13	N : 8
S : 7	m : 10	m : 3	S : 12	S : 7	m : 17	m : 3

8	9	10	11	12	13	14
Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies
N : 14	N : 22	N : 9	P : 17	N : 15	G : 12	N : 15
D : 8	R : 22	S : 15	D : 10	R : 17	R : 10	D : 17
P : 7	G : 24	P : 12	N : 12	G : 16	N : 13	P : 13
m : 12	P : 22	G : 16	m : 6	P : 11	S : 12	m : 20
G : 19	m : 13	R : 9	R : 11	S : 19	D : 9	G : 20
R : 22	D : 20	D : 6	G : 10	D : 11	m : 10	R : 16
S : 16	S : 17	m : 5	S : 9	m : 9	P : 8	S : 8

15	16	17	18	19	20
Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies	Note Frequencies
G : 12	N : 12	N : 7	G : 12	S : 10	N : 15
R : 10	D : 8	D : 8	R : 10	D : 4	D : 17
m : 8	P : 13	P : 17	N : 13	N : 10	P : 12
P : 7	m : 10	R : 7	S : 12	P : 5	m : 19
D : 7	G : 11	S : 12	D : 9	m : 11	G : 21
S : 7	R : 13	G : 6	m : 10	G : 11	R : 15
N : 6	S : 15	m : 1	P : 8	R : 10	S : 8

Figure 3: Bandish wise note frequencies (total 20 Bandishes)

Bi grams	Bandish	Aalap	Taan		Tri grams	Bandish	Aalap	Taan
G R	105	54	59		N D P	73	23	36
N D	102	29	38		P m G	57	16	55
R G	93	53	36		m G R	50	15	52
D P	91	38	46		D P m	44	20	45
m G	87	26	63		G R G	41	13	19
P m	78	38	57		G R S	38	28	33
G m	76	29	41		R G m	36	16	25
P P	67	18	0		R G R	33	27	6
S _ N	62	29	35		R S S	32	4	21
D N	61	35	41		S _ N D	32	14	28
R S	58	44	38		D P P	31	8	0
S _ S _	58	12	4		D N D	25	8	6
_ N R	45	36	12		S _ S _ N	25	11	4
m D	45	28	38		S _ S _ S _	25	1	0
R _ S _	41	17	23		_ N R G	24	21	8
S S	36	5	21		m G m	24	3	6
N R _	35	18	14		G m P	23	11	11
G G	34	10	3		m D N	23	20	34
m P	34	16	13		G m D	21	10	23
G _ R _	26	9	13		N D N	21	4	1
G P	25	5	0		R _ S _ N	21	9	19
S _ N	24	31	7		R _ N R	20	10	3
P D	23	16	4		N R _ S _	19	11	6
P G	21	0	3		G m G	18	7	7
R _ N	21	14	4		S _ N R _	18	11	5
D m	19	2	6		P P m	17	10	0
N S _	19	17	19		R G G	16	7	1
P R	17	6	0		G _ R _ S _	15	5	13
N N	16	4	7		P P P	15	2	0

Figure 4: The ngram-component (Bandish, Aalap and Taan) matrix

5.0 Observations and Analysis

The note frequency matrix indicates that the most frequently occurring note in *Bandish*and *Taan* datasets is G, which is a *Vadi* noteof *Yaman.*Howener, the most frequently occurring note in *Aalap* dataset is N, which is a *Samvadi* noteof *Yaman.* N is the third most frequently occurring note in *Bandish* and *Taan* datasets. Considering the note frequency criteria the observations imply that *Bandish* and *Taan* are more representative components of *Raga* framework.

Bandish wise note frequencies indicate that in 10 out of 20 *Bandishes*,*Vadi* note (G) is the most frequently occurring note and in 2 of the *Bandishes*, *Samvadi* note (N) is the most frequently occurring note. In remaining 8 *Bandishes*the *Vadi* noteor *Samvadi*note is the second most frequently occurring note. This implies that 50% of the *Bandishes* follow the distribution of notes as per the *Raga* framework. However, in remaining 50% *Bandishes* as well the note distribution follows the *Raga* framework with very small difference which, as per the trained musician, could be considered acceptable.

The ngram-component (*Bandish*, *Aalap* and *Taan*) matrix indicates that the distribution of the most frequently occurring bi-grams and tri-grams is somewhat similar in all three components i.e. *Bandish*, *Aalap* and *Taan*. Considering the distribution of bi-grams and tri-grams in *Bandish*, *Aalap* and *Taan* observations imply that all three components are equally representative of *Raga* framework.

6.0 Conclusion

The objective of this work was to analyse three important components of *Raga* rendition i.e. *Bandish*, *Aalap* and *Taan*. We could successfully do it for *Raga Yaman*. However, the number of *Ragas* inICM goes to few hundred. We are aware that such a small-scale experimentis insufficient to be able to generalize the results for all those Ragas. Rather, even a single *Raga*like *Yaman*, even by following the *Raga* framework strictly, can be presented in many forms by different artists as per their creativity. That is why more data is required for more and in-depth analysis which can increase the confidence in the results. However, success of this experiment brings out a possibility of NLP for modelling a *Raga*. We showed that the data about *Bandish*, *Aalap*and *Taan* are sufficient to model a *Raga* of ICM.

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Effective Use of Human Asset in Higher Education By Using ICT

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Abstract : Many Higher Education Institutions [HEI] in Maharashtra are following traditional methods to serve their stakeholders. Which is causing unnecessary financial burden as well as affecting quality of services and leads to improper human asset management. To enhance the quality of education , the academic as well as administrative services should be reconstructed and enhanced by the effective use of Information and Communication Technology [ICT]. The reengineering of business processes by using ICT are useful in enhancing the services. To fulfill the increasing demands of all stakeholders, it has become unavoidable to optimize the use of ICT techniques. The ICT based application is implemented to deliver photocopy of answer books of students and to resolve the issues regarding verification of marks as well as revaluations of answer books. The marginal cost saved in the revised process at the same time the quality of service offered by University is also better. The manpower issues like shortage of skilled workers, human errors, malpractices are resolved. Thus ICT enabled application helps in human asset management.

Keywords : ICT, Human Asset, Higher Education, Paperless, Grievance Handling

1.0 Introduction :

The term ICT is globally used for Information and Communication Technology. Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services (shakunta,2012). Nowadays, Information and communication Technology has become an integral part in Higher Education Institutes [HEI]. Considering the competitions amongst the HEI's the Human Assets management has become very essential. In India particularly in state Universities Human asset management has become unavoidable and become mandatory due to shortage of skilled man power. The shortage of skilled manpower adversely affects quality of services in higher educational institutes which results in poor academic performance. To overcome this shortage , ICT can play a vital role in effective Human asset management. Many of the business processes in HEI like evaluation , assessment of students can be reconstructed without tempering its original outcome by through use of ICT.

With the convergence of technologies, it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. The comprehensive choice of ICT for holistic development of education can be built only on a sound policy. The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving quality of education (Ministry of HRD [GOI], 2012).

2.0 Statement of the Problems:

The Higher Education Institutes in India are facing the problem of skilled and techno savvy man power. The market and organizational needs have changed drastically. Intense competition in education and other service industries has created complexities. The Non agricultural state

Universities are also sailing the same boat. Shivaji University is one of the reputed state universities offering traditional as well as professional education programs in the field of Arts, Commerce , sciences , Engineering , Technology , Pharmacy and Management. The vast use of electronics gazette by university's main stakeholder ie. student,parents tend universities to offer many services digitally instead of traditional methods.

This study is intent to answer following research questions:

1. How is ICT useful in Human Asset Management?.
2. How ICT can be implemented in various business processes in HEI?.
3. What are the possible areas in HEI's to use ICT effectively. ?
4. What are the Challenges in Human asset management and limitations of ICT in HEI?

3.0 Objectives of the Paper:

1. To study the benefits of ICT applications in HEI.
2. To examine human asset management by using ICT.
3. To study the benefits of ICT application
4. To study the challenges in ICT implementation in HEI

4.0 Research Methodology

Procedure of Data collection:

The data was collected through the following procedure.

Primary Data:

The primary data will be collected through field survey and through the use of Focused Group interview, discussion and observation techniques. The researcher has interacted with the Head of sections, Administrative staff , students , Directors Board of Examination and Evaluation, Information Technology coordinator and software experts in Shivaji University , Kolhapur. Also the data was collected through personal interviews.

Secondary Data:

Secondary data was collected from the database, books, university references and publications, journals, articles, magazines, handbooks, newspapers, primary reports of examination departments and institutions, using reference books available in Balasaheb Khardekar Library, Shivaji University Kolhapur. The researcher also visited the Information Technology cell, Examination department for the purpose of collecting references, similarly, use of the internet and website related to ICT , Higher education development. The Photocopy system reports was considered for the research purpose

Approach of study :

At the onset, the researcher followed an approach that was systematic and collaborative in nature to achieve greater impact and obtain results given time. In this study, the approach consisted of distinct phases yet tightly integrated for achieving the targeted outcomes. The key phases of the study included:

Phase 1 - Study of previous process conducted : In this phase, the researcher has studied the traditional method of inviting applications from students to demand photocopy , revaluation and verification of answer books.

Phase 2 - Study of needs and problems of stakeholders : In this phase, researcher has studied the problems reported by the stakeholders and the need of reengineering of business process

Phase 3 - Study of newly designed and implemented system and collection of data : The researcher has studied the newly implemented business process to call applications for photocopy , revaluation and verification of answer books. The actual working of ICT based application process. And also collected the statistical information about the traditional as well as modified ICT based application.

Phase 4 - Study of effectiveness, benefits , drawbacks of system : The researcher has studied the benefits , effectiveness and limitations of newly implemented software application.

Phase 5 - Analysis and conclusion : The researcher has analyzed the collected data, calculated the outcome and conclusion of revision.

5.0 Scope of the Study:

Geographical Scope :- This study was conducted in Shivaji University , Kolhapur of Maharashtra state

Topical scope : - With reference to topical scope concern , this study was focused on ICT implementation of various business processes like Photocopy , Verification, Revaluation, Re Verification etc at the examination department of Shivaji University.

Time scope :- The estimated time for this study was considered from 2014 to 2019.

Analytical Scope : - The collected data has been analyzed with the help of statistical tools and computer softwares like SPSS, MS EXCEL, online randomizer for the fulfillment of objectives set out

Functional Scope : - The functional scope was confined to offering a set of meaningful suggestions aimed to implement ICT in the higher education institutes to reduce manpower, to promote paperless concept and to make effective human asset management.

6.0 Limitations :

The first limitation of this study is that every university has different business processes. The processes modified with use of ICT may different. The suggested case may not be applicable to every university.

The second limitation of this study is that ICT application can't be the solution to all the processes in the University. ICT can aid in curbing many irregularities and can overcome major repeated work. However, inculcation of strong ethical and moral values in Human beings are more important

7.0 Secondary Literature Resources:

Snehi, N. (2009). ICT in Indian Universities and Colleges: Opportunities and Challenges. *Management & Change*, *13*(2). https://doi.org/10.1242/jeb.089763 studied the ICT implications and concluded that ICTs in the higher education has profound implications for the whole education process ranging from investment to use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy and quality. In this regard the paper addresses the

opportunities and challenges posed by integration of ICTs in various aspects of higher education in the present scenario. The paper argues for addressing the issues through formulation of policies and strategies to accrue following potential future developments in ICTs and to integrate them in education sector to transform higher education.

A Report on Reforms In Examination system in Universities of Maharashtra through ICT in 2012 under the chairmanship of Dr. Rajesh Agarwal samiti concluded that Information and communication Technology (ICT) should be effectively used for management of examinations in Universities to usher in greater efficiency, transparency and reliability.

Sukanta Sarkar (2012). The Role of Information and Communication Technology (ICT) in Higher Education for the 21st Century explains that Applications of ICTs are particularly powerful and uncontroversial in higher education's research function. Enhancing and upgrading the quality of education and instruction is a vital concern, predominantly at the time of the spreading out and development of education. ICTs can improve the quality of education in a number of ways . The researcher suggests that ICT in higher education is not a technique for educational development but also a way of socio-economic development of the nation.

A National Policy on Information and Communication Technology (ICT) In School Education (Ministry of HRD [GOI], 2012) earmarked the thrust areas in Indian Schools for the use of Information and communication technology . The policy declares ICT for skill development, ICT for children for special needs.

8.0   Results and Discussion :

In Shivaji University, Kolhapur various traditional and professional courses are conducted. The examination section of this university conducts various processes regarding photocopy, evaluation, moderation, verification of student answer books. Traditionally this process was very lengthy as well as expensive in terms of human asset and financial burden on the stakeholders of the university. In this process students have to apply manually on a printed application and have to pay the requisite fee to get a photocopy of the answer book. The CAP section after getting the requisite application raises demand to the godown section. The godown section searches the requisite answer book and forwarded it to the xerox section to produce a photocopy. After photocopy the inward section of University posts printed material at student address manually mentioning the communication address of the student. After getting a photocopy, students again have to apply for verification, re verification, revaluation etc processes as per their need. Then for the same process the student has to submit a manual application form along with requisite fees.

In this manual process students have to visit   2 to 3   times. The human resources are widely used in the repeated and prototype work. Hence University was eagerly searching for the way of effective human Asset Management.

This business process is revised with the help of ICT. ICT enabled application is developed and utilized to dispatch photocopy to the students Bye scanning and converting paper copy into soft copy. With the help of this application the present status of application is readily made available ktu login and the stage wise development is communicated to the student via SMS.   In the revised business process, students need not come personally to the university. The grievances are automatically handled through software. The Figure 1 Shows the mechanism of ICT enabled computer application to handle the student grievances.
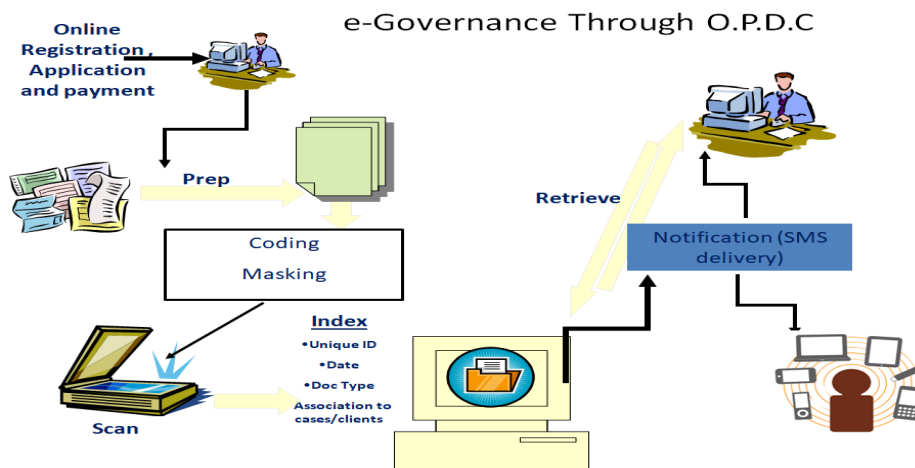
Fig 1 . Online Photocopy Dispatch System
(ICT enabled Application Developed at Shivaji University
Courtesy : Shivaji University, IT Cell)

The following table 1 shows the details of photocopy applications received in Examination department from 2014 to 2019 (Two events in each year)

Year	Number of Photocopy Application		
	Engg. Faculty	**Other Faculties**	**Total applications**
Mar,2014	14523	2419	16942
Oct, 2014	13880	2260	16140
Mar,2015	15473	4162	19635
Oct, 2015	15331	2235	17566
Mar,2016	15525	3553	19078
Oct, 2016	15585	2672	18257
Mar,2017	15089	3851	18940
Oct, 2017	12906	3095	16001
Mar,2018	12197	4456	16653
Oct, 2018	9552	3054	12606
Mar,2019	7685	4292	11977
Oct, 2019	5841	3614	9455
Average Applications / Event			16104.17

Table 1.0 - Photocopy application details (Source : Photocopy summary report , Shivaji University)
The average applications per event are 16104 number of applications

To process above applications received at least 1 month (30 days) are required to the examination department. Following table 2 shows the minimum expenses incurred for the processing of a single application.

Table 2 - Expenses / saving in ICT based application method

Manual / Traditional application		ICT Application	
* expenses for	Amount (Rs)	$ expenses for	Amount (Rs)
Avg postage / application @ 40 Rs	644166.67	ICT Application development charges	40000
Std traveling avg @100 Rs per application	1610416.67		0
xerox/ exp @Rs 18 / application	289875	Scanning @15.6 / application	251225
Total Exp	2544458.33		291225
Expenses (per application)	**158**		**18.08**
saving per application	**Rs 139.92**		

$ As per contract rates * Average

The total expense for the average number of applications 16104 is Rs 2544458 by manual / traditional method while Rs 291225 by ICT application. The per application expenses are Rs 158.00 for manual method and Rs 18.08 by ICT enabled application. The xerox rate / scanning rates are taken from the agreement of the vendor with the university.

The following table 3. shows the human resources saved by using ICT based applications. In the manual method every process required human resources. While in ICT based procedure, many stages are carried by the system itself.

Table 3. Saving of Man hours

Manual / Traditional application		ICT Application	
Nature of work	Man Hrs		Man Hrs
Collection of Application 1 person * 8 HRs * 30 days	240.00		Nil
Searching of ANS books 8 persons * 8 hrs * 30 days	1920.00		1920
Xeroxing / Dispatch 40 persons * 8 * 30 days	9600.00	Scanning / 10 persons 8 hrs 30 days	2400
Total man hours ⇒	11760.00		4320.00
Man Hours saved per event ⇒	**7440.00**		

Here for calculation purposes, photocopy work is considered duration of one month i.e 30 days and 8 Man per day .

9.0 Findings:

In the detail study of photocopy process at examination section following findings are observed

A. Manual / Traditional process

- Required plenty of manpower to process the applications and handell the grievances of students. Difficulty to handle manpower issues.
- The time consumption is very high to complete the given task
- The human errors are occurred the causes the academic loss of students
- Unnecessary wastage of papers

B. ICT based process

- Saves time , Money and manpower
- Environmental friendly
- Accuracy in work , Human errors are avoided
- Efficient grievances handling mechanism results in satisfaction of stakeholders.

During the study it is also observed that reengineering of various business processes are more essential. But needs to have approval from various statutory authorities / bodies. Various Rules / provisions in the acts need to be modified according to the new ICT processes. Which takes a lot of time as well as tedious processes. This is one of major challenges in the HEI, especially in the Government undertaking HEI.

10.0 Conclusions :

This paper proves that the ICT based software application is very much useful and plays a vital role in human asset management. The impacts of ICT based application are Increased Efficiency , Maintained Confidentiality, Brought Cost Effectiveness, Nullified Subjectivity, Implemented Digital Initiatives , Reduced Timeframe of Result Declaration , Addressed Shortcomings of Human Resources and Enhanced Accuracy.

The Employees are major stakeholders in every organization. It is critical to administer the various mechanisms in the scheduled time limit. Hence technology based changes in the business processes are useful. The use of ICT in all possible student related activities will be helpful in manpower management in a cost effective manner. The other benefits of ICT applications like transferency , subjectivity , accuracy , confidentiality in examination work are also important factors in human assets management.

11.0 Acknowledgement :

11.0 Glossary :

Application - Software module / program specially prepared to carry out a particular task.
CAP section - Central Assessment Planning Section of University examination department.
Event - The semester in the academic year.
Grievances - problems / queries raised by stakeholders.
HEI - Higher Educational Institution
ICT - Information and Communication Technology
Photocopy - xerox copy of written answer books.
photocopy applications - Application / requests by students to obtain a photocopy of their answer.
Revaluation - Re-assessment of checked answer books on demand.
Verification - Re-totalling of marks obtained by the students

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Book reference

Cummins, Thomas G. & Huse, Edger E. (1998) Organizational Development and Change. West Publishing Company, St. Paul, New York.

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