**Overview**

**Development of Centralized Children’s Data Network System to improve the well-being of children and influence policy decisions in Tanzania**

**Introduction**

Children are one of the most vulnerable groups in almost any population because of their physical and emotional dependence on adults and social status. Their vulnerability is greater in developing countries because of the higher incidence of poverty and fewer social protection mechanisms in place compared to developed countries. In most developing countries, children are not the explicit recipients of the unprecedented growth in social protection efforts but do benefit from its expansion. Despite the increase in evidence, young children in the developing world still bear the greatest burden of poverty, disease, violence, and risk factors (UNICEF, 2012).

A case in point in developed countries, violence against children continues to be a serious and prevalent issue. In Sierra Leone is a post-conflict country where levels of violence towards women and children, including sexual violence, have continued to be high since the end of the war in 2002. When considering the need for child protection mechanisms to be implemented in Sierra Leone, we should consider the full extent of violence perpetrated against children globally, and how the global statistics are reflected in the reality of children’s lived experiences in the country. On other retina of eye, in United States, there are 443,000 children in the [foster care system](https://www.childrensrights.org/newsroom/fact-sheets/foster-care/) at any given time. Around [1,700 children die](https://www.childwelfare.gov/pubPDFs/fatality.pdf) each year due to abuse and neglect. Reporting varies among state welfare agencies and hospitals likely leading to the underreporting of death among children from abuse. Caseloads of individual social workers range from 24–31 families, translating to hundreds of caseloads overseen by supervisors (<https://mc.ai/artificial-intelligence-child-welfare-and-predictive-risk-modeling/>).

Despite the significant of national data surveys conducted in Africa on violence against children in many countries across the continent, we know little about children in alternative care. There is scarcely any data on the reasons and length of children’s placement, about the facilities and providers of care services, or about those being reintegrated with their families or leaving care. We lack information on the mechanisms set up to ensure oversight and independent monitoring of children’s conditions and wellbeing, or on how well the quality standards to secure children’s care and protection are being enforced. More robust legal frameworks on child protection and child care reform are being developed, or further strengthened to align them with international standards, but these efforts are insufficient when effective implementation and monitoring mechanisms and long-term predictable funding are lacking.

In 2010 Constitution of Kenya (Article 53) recognizes the need for all children to be protected from abuse, neglect, harmful cultural practices, all forms of violence, inhumane treatment and punishment, and hazardous or exploitative labour. Of concern is that, approximately 3.6 million Kenyan children are orphans or otherwise classified as vulnerable. Of these, 646,887 children are double orphans (that is, they have lost both parents to AIDS, or one parent to AIDS and another to a non-AIDS related cause).

Thus, all children in Kenya are potentially at risk of violence, exploitation and abuse; however, some groups are more vulnerable than others due to their gender, social status or geographical location. For which reason, children without parental care lack the protective environment and supervision that adult care normally provides. Children in large families may also lack parental attention and can become victims of neglect. Although girls and boys both are subjected to rights violations due to socio-cultural factors, cultural practices and economic constraints, girls are particularly vulnerable to violence, sexual abuse and harmful practices. The situation of children is often worsened by the multiple deprivations that exist within certain population groups and communities, although data and studies on these issues are scarce.

**Problem Statement**

Recently, the utilization and effectiveness of predictive analytics in the child welfare field has garnered attention. Risk and safety assessment tools have been utilized to aid in the decision-making process. Actuary risk assessment tools and structured decision-making models have been implemented in several child welfare agencies across Europe, U.S.A and Asia. Predictive risk modelling has recently been incorporated into child welfare practice to support these risk assessment tools, which support clinical expertise.

However, before gaining momentum, predictive analytics was used in the early 2000s to predict risk of child maltreatment using artificial neural networks. These neural networks were arguably more effective than standard multivariate techniques. Moving on from these early prediction models, researchers worked to train models to predict the likelihood of children reaching the threshold of harm, which reliably predicted future risk of maltreatment. Predictive risk modelling is still a relatively new practice in the child welfare system, with several efforts to test the efficacy of such a model within child welfare practice.

Case of Tanzania, in 2009 the survey “Violence Against Children in Tanzania” revealed the extent to which children are sexually assaulted, raped, physically attacked, and emotionally abused. Close to three quarters of 13 to17-year-olds report having been slapped, punched, beaten or threatened with a weapon by a relative, authority figure or intimate partner. The practice of physical violence is deeply rooted in cultural beliefs and norms, and further reinforced by legal frameworks that legitimize physical discipline of children at home and in schools. Furthermore, a quarter of children have been called bad names, made to feel unwanted or threatened with abandonment, all of which constitute emotional abuse. Currently there is no centralized children data network system in United Republic of Tanzania (URT). The government of URT has establish a regulatory framework and comprehensive child protection system that has been expanded to 51 local government authorities with 24 support from UNICEF. Service providers have been trained to deliver integrated and multi-sectoral services, combining social welfare, justice, health, education and community development. (UNICEF, 2020).

In Tanzania, still abuse is rarely reported as the perpetrators are usually known to the abused child. The case of not reporting the violence, families sort things at home (URT, 2014). Children also do not know where to go for care, treatment and support. Apart from responding to these practices and behavioural harmful to children, communities can’t prevent these practices. Very few children have birth certificates, making it difficult to access social services and legal protection. (Difficult for government to make decisions).

These information paints a vivid and heart-breaking picture of child welfare systems in the URT and global at all. But instead of reactive measures, forcibly removing children from their homes, causing Post Traumatic Stress Disorder (PTSD) and a slew of other issues, why not focus on prediction and prevention? By moving beyond superficial qualitative assessments of overburdened social workers to algorithms designed to flag high-risk homes, the irreversible damage to both the bodies and minds of children can be prevented at a higher rate with lower cost to the community. CC-DNS will help to link government sectors and service providers to ensure better and foster communication.

The decision making process in child welfare systems is challenging and complex. Because prediction need sufficient data (Big data), big-data analytics helps rained model to harness data and use it to identify new opportunities, predict future. In dealing with these challenges a Centralized web-mobile solution has been proposed, namely; Centralized Children’s Data Network System (CC-DNS). The mission of the proposed software is to link records across all facets of a child’s life whether it is health, education, or Registration Insolvency and Trusteeship Agency (RITA) data, in order to improve the well-being of children and influence policy decisions in Tanzania.

**Significance of the study**

The designed software solution (CC-DNS) will enhance the ability to examine many data points to establish a relationship not previously specified as an outcome of interest. A limitation of actuary risk assessment tools which rely on known and established relationships with a specified outcome. In addition, CC-DNS will examine existing data on the target population, a limitation for actuary risk assessment tools as well, given that actuary risk assessment tools are rarely validated with the population of interest. Data availability and quality are also important considerations, as the statistical power of predictive risk models improve with large quantities of quality data—i.e. few missing data, few data errors, and appropriately specified data fields. Thus, the output from this study will be used as input for the rest of research that will intent on prediction or assessment of risk for the improvement of children’s well-being and policy decision in Tanzania.

**Objectives of the Research**

**General Objective**

The main objective of this research is to create a software tool that will be used as Centralized Children’s Data Network System (CC-DNS) in Tanzania, Kilimanjaro region as a case study.

**Specific Objectives**

Specific objectives of this research are:

1. To identify and establish a collection of requirements for the design of centralized children’s data network system in Tanzania.
2. To design centralized children’s data network system.
3. To implement, test and validate the designed system.

**Anticipated outcomes**

The proposed CC-DNS will bring stronger linkage between sectors and service providers as required to ensure that case management, including referral, of vulnerable children and survivors of violence is better coordinated and provides children with a holistic package of services.

CC-DNS will also create a conducive environment for collecting data about children since it will have a centralized database that will accept data through mobile application and web application.

The CC-DNS at the stage of pre-schooler i.e. the start age (0) to the age of 5, will help to solve the challenge of birth registration by increasing the number of birth registration. Health and social welfare data of the child will be collected through mobile application that will send data to the centralised database system.

The school age, at the age of 6 to 13 years more data of the children will be captured this will include now justice and education records. The justice records will help the justice system to treat childrine as victims of parental neglect, poverty and violence rather than criminals. These records will also help to separate childrens from confined in prisons with adults, and therefore also reduce in large extend their vulnerability to further violence and abuse.

Adolescent age which is the age of 14 to the age of 18 ….Having all theses records at this stage will help to reduce/remove early marriage which actually expose young girls to the risk of violence.

Therfore, CC-DNS will improve preventive and response services; addressing harmful social norms at family and community level; and improving the capacity of the national and civil registration and vital statistics systems.

Child safeguarding and protection

222AGE[0]

AGE[5]

7AGE[0]

323AGE[0]

AGE[6]

School-Aged

AGE[13]

AGE[14]

55AGE[0]

Justice

Social Welfare

Health Records

1 AGE[0]

Pre-schooler

Social Welfare

Mobile application

Justice

CENTRALISED DATABASE

Health Records

423AGE[0]



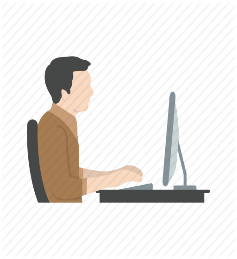
Domestic Status

INTERNET



Education Records

Social Welfare

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623AGE[0]

Health Records

Adolescent

Domestic Status

Education Records

Web application

**Figure 1:** Framework Centralized Children’s Data Network

**References**

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United Republic of Tanzania (2014). National Plan of Action for Child Participation 2014-2019, Ministry of Community Development, Gender and Children