The Need for Integrated Statistical Management Policy

(Progressive Step towards Digital Nepal)

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Abstract

Statistical management policy and system plays significant role in development of any nation as it guides the planner to analyze the gaps, design programs and allocate budget in efficient manner. Globally, design and usage of statistical management system varies relying on country specific ability and resources availability. Government of Nepal has been managing database in individual as well as thematic manner. Policy wise, thematic database is in operation based on Statistics Act 1958 and individual database is in operation based on Birth, Death and Other Personal Related Events Registration Act 1976. Though civil registration related policies have been either updated or newly formed, sectoral statistic management related policy has not been updated since its first promulgation period (1958). With no policy supporting the consolidated statistical management system, government as well as non-government agencies has been investing millions of dollars annually to collect, compile and analyze individual related data and fulfill their respective objectives. It has forced the government services and performance to be paper-based, time-consuming and tedious thus creating dis-trust among citizen each passing day. Though, formulation of legal instrument promoted digital movement and mandated shift towards e-government modality, the process has been low. Theoretically, Technology Acceptance Model (TAM) state the need of having advanced and efficient technology to be in place in current setting to improve governance, efficiency, accountability, transparency and trust. Also, the same theory state the requirement of strong willingness and motivation from the users (government, non-government and citizen) to adopt the technology based policy and system. As the integrated statistical management policy emphasizes on technology-based system or digital system, the perspectives of Technology Acceptance Model also termed as Information System Theory aid in understanding the context, conceptualizing and addressing the needs with an establishment and implementation of digital system or technology based system. This policy paper applied the Technology Acceptance Model (TAP) to examine the underlying opportunities and challenges associated with an integrated statistical management policy. With existing gaps in existing policy, system and practice alongside an overview of opportunities and challenges, this paper recommends the need of stand-alone integrated statistical management policy to consolidate sectoral as well as civil related information through single system based on recommended policy.

Keywords: *Government, Citizen, Service Delivery, Integrated Statistical Management, Registration, Information*

Introduction

Statistical management is one of the core aspects of development for any country. Strong statistical management practices provide an opportunity for planner to analyze theme-wise data and plan accordingly (Alghamdi et al., 2011; Hilbert, 2016). Usually, country practices two types of statistical or database management. One is more focus towards individual data such as citizenship, passport, license, birth registration, etc. Meanwhile, another type is more focused towards collecting household or institutional data to carry out theme-wise analysis such as education status, health status, agriculture status, etc. Globally, the practice of collecting and managing above mentioned data are in varying stage (Asian Development Bank [ADB], 2016). Numerous factors such as availability of technical ability, infrastructure, political dynamics, national requirement, etc., plays significant role in determination and installation of statistical management system. Some country has integrated statistical management system while some does have individual component-based system (ADB, 2016; Aritonang, 2017; Khan, 2018; Mohammed et al., 2016; Piotrowicz, 2015; Soja & Cunha, 2016; Szabó & Chiriac, 2016). With technological advancement, Government of Nepal also has its own statistical management system. However, they are more of a component-based system and is scattered in current practice (Yadav & Shakya, 2016).

Based on Statistics Act 1958, Central Bureau of Statistics (CBS) has been updating sectoral database and carrying out census since 1911. From first five-year plan (1956-61) itself, government has prioritized towards strengthening the national database and statistical system. Meanwhile, citizen (individual) related database has been updated since the promulgation of Civil Registration Act 1976 (Central Bureau of Statistics [CBS], 2017). From legal instrument perspective, guideline as per United Nations Statistical Commission has been adopted to manage and update national database. To manage the database in an effective manner, Government of Nepal promulgated diverse legal instruments namely Birth, Death and other Vital Events Registration Act 1976, Statistics Regulation 1984, Local Self Governance Act 1999, Nepal Rastra Bank Act 2002, e-Governance Master Plan (eGMP) 2007, Information Technology (IT) Policy 2010, Voter List Collection Act and Regulation 2010, Information and Communication Technology (ICT) Policy 2015, eGMP-2 2015, Local Government Operation Act (LGOA) 2017 and Digital Nepal Framework 2019 (AbouZahr et al., 2015; Acharya, n.d.; CBS, 2017; Phuyal, 2020).

Article 51 from Constitution of Nepal 2015 mandated the need of developing integrated national identity management system, updating citizen related information and linking with government provisioned services and facilities (Secretariat, 2015). With Federal structure in place, LGOA 2017 mandated the need of updating statistics or database under the responsibility of local level (Silwal, n.d.; Subedi, 2020). As of 2020, diverse government offices collect, compile and store citizen related information for birth, death, citizenship, migration, education, passport, driving license, health insurance, bank account and social security services. Private institution such as bank and insurance companies detail out information

of their customer. In annual manner, Government and NGOs invest millions of dollars on data collection to identify unemployed youth, houses without basic infrastructure facilities such as toilet, drinking water, electricity, etc., accessibility to basic services (health institution, market, road, school, etc.) and production and sales of agri-products (Giri & Shakya, 2019). Overall government, non-government and private agencies spend resources to store and analyze data (individual, family and institution) for their respective purposes.

Table 1 Summary of Areas where data is collected and managed.

Government Institution (Individual)	**Government Institution (Household Level and Institutional Level)**	**Private**
Citizenship, Passport, Birth Registration, Death Registration, Migration, Health Insurance, Social Security/Protection, Income Tax, License, Telecommunication, Bank	Census, Agriculture Survey, Economic Survey, Labor Status, Migration Status, Health Information Management System, Aid Information Management System, Education Information Management System, Electricity, Drinking Water Supply, Telecommunication	Bank, Cooperative, Telecommunication, Insurance, Health Care Institutions, Online Applications, Academic Institution, Survey by I/NGOs

Gap in Existing Statistical Management Practices

Annually, millions of dollars are invested to collect, store and update database by government, non-government and private agencies. However, there has not been any integrated or consolidated database management approach been launched until the launching of nagarik application (beta version) (MyRepublica, 2021; Subedi 2020). The lack of integrated system has caused effect at varied level to both government and non-government agencies. Concerned agencies need to keep collecting data in required period, regardless of their prior existence or storage by one or other agencies. This has resulted the case of duplication and waste of resources among agencies while individuals started complaining in recent period and increased their dis-trust towards data collection process (Pradhan & Shakya, 2018; Shrestha, 2019; Verhulst & Young, 2017).

Shared challenges faced by government as well as non-government agencies is about being unable to identify the individuals or families in need during crisis scenario (World Bank, 2020). It was recently evident during the COVID-19 period where data was the core component to reduce impact of COVID-19 on livelihood of families especially those depending on daily wage-based income, sales of agriculture products and families with

inconsistent and unstable income sources (The Himalayan Times [THT], 2020). Developed countries utilized their strength of national database by identifying the needy individuals, planned and supported at varied level based on their vulnerability (Mbunge et al., 2020). Likewise, countries adopted the citizen-based tracking system to track individuals to control wide-spread of COVID-19 (Aslam & Hussain, 2020; Marbouh et al., 2020). Meanwhile, developing countries like Nepal struggled to track the individuals which further caused wide-spread of COVID-19 at nationwide level (Bhatt et al., 2020; Poudel & Subedi, 2020).

Due to lack of efficient system, government authorities were unable to track and prioritize the needs in prompt manner (Poudel & Subedi, 2020). Alternatively, paper based, and door-door based data collection approach was adopted by government as well as non-government agencies to identify the effect level caused by COVID-19 causing delay in identification, tracking and responding the needs (Gautam, 2020). Such manual identification and tracking system not only delayed the response program but also increase the potentiality of non-vulnerable making an entry of their name into the list of impacted and vulnerable families Before COVID-19 period as well, there were many occasions where data was the key requirement based on which Government could have planned and responded but did not do so. Some of the noticeable events includes identification of earthquake affected families, flood affected families, identification of person with disabilities, tracking of individual receiving grants, scholarships, and subsidies, tracking on income generated through informal sector, tracking of individual falling under social protection services (Gaire et al., 2015; He, 2019; Sharma et al., 2019).

To resolve the issues of identification, tracking and responding the needs of individuals, countries across the world already started moving towards promulgation of policies to support and set up the individual registration system which creates unique ID or identifier and is linked with diverse areas of government and private agencies statistically (Phuyal, 2020). Regardless of variety in name and objectives, such systems are commonly understood as digital ID or e-ID systems. The process of issuing such policies has been increased in recent years as the countries required to provide legal identity for all by 2030 aligning with Sustainable Development Goal 16.9 (Brewer et al., 2015; Gupta & Vegelin, 2016). Barring some challenges, the scenario of verification-based statistical management has worked for countries with such set-up to identify, track and respond the needs. Overall, the system backed up with efficient policy helped to enhance citizen's trust, increase economic opportunities, strengthened governance system, respond needs, reduce administrative costs and enhanced inclusiveness in planning and programming.

However, in case of Nepal, whenever any crisis scenario occurs, government invests heavily just for identification of individuals in manual manner and/or families to respond the needs. Overall, there has been a disconnect between data availability, decision-making process, and government/non-government responses towards supporting needy individuals and families. The recurring issue could be solved by promulgation of policy to support integrated statistical

management system which shall bring together all registration system and government services under single platform, link them with planning, budgeting and programming. Though the need of integrated statistical management system has been provisioned in multiple legal instruments, they are placed as one among many prioritized component focusing more on adoption of ICT to enhance e-governance system in Nepal. From policy perspective, an effective implementation of integrated statistical management system requires stand-alone policy which Government of Nepal is yet to formally discuss and promulgate. Understanding the significance of integrated statistical management system to operationalize the concept of Digital Nepal and requirement of Statistical Act to be mandated as it has not been updated since 2015, this paper focuses on the recommendation of Integrated Statistical Management Policy to be promulgated by Government of Nepal in near future.

Objective

This policy paper is developed with an objective of following:

i. Analyze the gap in existing legal instruments related with statistical management practices.

ii. Dissect the opportunities and challenges associated with integrated statistical management practices or system.

iii. Recommend the areas to incorporate or emphasize during formulation of integrated statistical management policy.

Methodologies and Theoretical Connection

Qualitative approach in the form of desk review has been adopted to develop the policy paper. Intensive review of published literature works on national and global practices related with statistical management was done. It incorporated several key components in the form of civil registration system, sectoral statistical management system, citizen identification and tracking system. Furthermore, to understand the underlying opportunities and challenges associated with integrated statistical management system, paper focusing on the critical aspects of such system on country basis ranging from developed to developing countries were reviewed.

Conceptually, integrated statistical management system requires legal instrument in the form of policy and guideline before it gets started in practical level. To ensure an integrated statistical management policy get effectively implemented, it requires strong and efficient technological arrangement from government institution for set-up and operation. Meanwhile, it also requires willingness among citizen to use the established system. Among theories, information system theory or Technology Acceptance Model (TAM) propounded by Davis (1989) is the one that incorporate both aspects i.e., set-up of efficient information system and motivation to use them. As argued by Marangunic & Granic (2015), the use of technology

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helped enhancing individual lives, thus the acceptance towards use of ICT is high for many more years to come in any sector.

Legal Instruments

Each theme or areas need to have certain legal instruments in the form of act, policies, guidelines and strategies to have an effective management system in place. Nepal have over 60 years of history in managing statistics which was started through establishment of Central Bureau of Statistics (CBS) under Statistics Act 1958 (Phuyal, 2020). CBS carried out its first agriculture statistics (1961) and manufacturing establishment (1965) during within its first five-year period of establishment. During the same period, Village Panchayat Act 1961 allowed government authorities to collect birth and death related statistics of Nepali citizen. Officially, Civil Registration System started 1977 after promulgation of birth, death and other personal related events registration Act 1976 with coverage of 10 out of 77 (*then 75)* districts at initial stages which was made nationwide registration system back in 1990 (Gautam, 2016). Historically, Government of Nepal has been recording individual related data in manual and stand-alone manner. To upgrade the statistical scenario of country, CBS developed National Statistical Plan 2000 which could not fully achieve the intended objectives and targets.

Figure 1 Online entry of civil related information, Source: donidcr.gov.np

Government of Nepal launched National ID project in 2008 with an objective of issuing national identification number and integrate with all government agencies to deliver their respective services (Adhikari, 2011). After the decade of its inception, national ID bill was approved in 2019. At implementation level, the progress has been slow with less than a million individuals being provided with unique ID and no alignment with government agencies till 2020. The need of having integrated identity management information system has been echoed through Constitution of Nepal 2015 under article 15 (Secretariat, 2015). Constitution of Nepal mandated the need of integrated system with

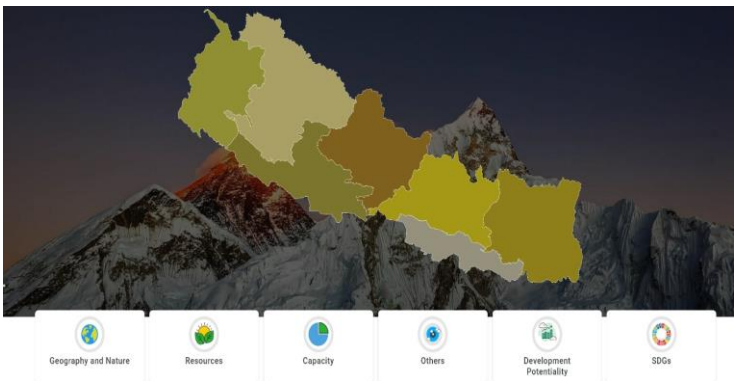

Figure 2 Online based platform for database management system, Source: nationaldata.gov.np

linkage to government services and facilities. With federal system in place, Local Government Operation Act (LGOA) 2017 permitted government authorities to collect civil related information alongside sectoral data at local, provincial and federal level (Aryal, n.d.). Social Security Management Related Act 2018 mandated the need of registration of individuals, who fit into the criteria to receive social security support/allowances. Act further includes, individual falling under multiple criteria or receiving benefits and services under multiple criteria will receive services under single criteria only. To identify and track individuals receiving single or multiple benefits, government authorities are required to have an efficient civil registration and database management system. The need of providing identity card to individuals eligible to receive government services has been mandated under Social Security Management Related Act 2018.

National Strategy for Development of Statistical System (2018/19-2022/23) envisioned the use of updated technology to improve the qualitative aspects of data collection practices in Nepal (National Planning Commission [NPC], 2018). Strategy strategized of formulating legal instruments to support government institutions at different level in having system which are either centralized or linked with each other to act as the platform for further planning and budgeting. From technological advancement perspective, 2019 Digital Nepal Framework paved the pathway for government authorities to shift towards adoption of digital technologies to deliver their respective services as the framework encompasses 80 digital initiatives from eight sectors (Giri, 2018). As the framework is fresh concept, it's fruitfulness and productivity are yet to be seen.

For the first time in entire history of national statistics and civil registration process, National Identity Card and Civil Registration Bill or National ID and Registration Act 2019 mandated the need of ensuring each citizen get National ID alongside an establishment of integrated national ID management information system (The Himalayan Times (THT), 2019). This act not only mandated the need of issuing National ID but also mandated the need of aligning civil registration system with government services, national development plan and security system. Though Act has mandated the need of integrated database with multiple objectives, it has excluded the role of CBS or National Planning Commission (NPC) which are among the key government authority responsible for development related database. Exclusion of CBS or NPC from responsibility made the Act weaker as all other sectoral ministries aligned themselves with CBS or NPC in terms of statistical management and evidence-based planning. With an objective of updating Statistics and Civil Registration related legal instruments, National Statistics Bill was taken to parliament in 2020 in which, formal decision is yet to be taken.

As of 2020, Ministry of Federal Affairs and General Administration (MoFAGA) holds central authority to manage the citizen related statistics meanwhile, Central Bureau of Statistics (CBS) in coordination with in-line ministries collect, interpret, analyze data, and publish sectoral reports in sectoral in the form of Population censuses, Food and Livestock Survey, Nepal Living Standard Survey, Nepal Labor Force Survey, Censuses of Manufacturing Establishment,

Demographic Health Survey, Economic Survey to name the few (Dennison & Rana, 2017; Phuyal, 2020). As the statistics and registration system falls under separate government authorities and none of the legal instruments stating the requirement of linking those two systems, the investment on statistical management system is not being able to achieve intended targets and milestones.

Having said so, the need of setting up integrated statistical management system linking civil registration system and sectoral statistical system is the need of modern world where the planning and implementing the government-based programs and services takes place through use of single system. As the establishment of such system requires enormous commitment and investment on technology, knowledge, and infrastructures, it can only be eased through formulation of appropriate legal instruments in the form of policy. Understanding the urgency, series of advocacy and discussions has been held in recent years to advocate for strong policies to facilitate establishment of robust and integrated statistical management system (Gregson & Hansen, 2019). However, no policies have been promulgated that interlink civil registration system with sectoral database.

Concept of Integrated Statistical Management System

In one way or other form, almost every country has policy and system in place which collects information about their citizen ranging from demographic to economic status, health status, etc. Government of Nepal also have practice of collecting detailed information of citizen either through census or during issuance of vital certificates such as birth certificate, death certificate, marriage certificate, etc. As the data are collected individually by different ministries and non-government institutions, concerns related with data accuracy, usage and privacy is in growing pattern. In current scenario, citizen need to provide complete information about their individual or family status every single time they fill-up form for something such as bank account, insurance account, employment, etc. In such case, voices relating to elimination of duplication related issues is also in increasing trend. As the technology has advanced in quicker manner, countries have already initiated adopting integrated policy which possess multiple benefits to both institutions and individuals.

In such system, authorized government institution by legal instrument (policy) collect minimum information and issue national ID (Gelb & Diofasi, 2016). Some of the key information collected and compiled to issue national ID are as their identity, civil status, economic status, etc. Some country has been using single ID to connect with all other registration process whereas some have been using multiple ID depending on purposes (Cofta, 2008). Once the national ID get issued for each individual, the same ID number gets used for all other purposes such as registration at health service, academic institution service, financial transactions, government services, transportation services, personal cards such as license, passports, etc.(Alghamdi et al., 2011).In an integrated statistical management system, different ministries responsible to analyze existing information and plan the development programs

coordinate with National ID provider and integrate their systems and services based on the same. Relying on the available database, sectoral institutions allocate budget and plan programs that could benefit mostly the unreached or excluded groups.

Countries adopting Integrated Statistical Management Policy

Globally, countries have been adopting various forms of citizen registration system alongside sectoral statistical management system with an issuance of unique identifier cards depending on their local needs, priorities, and capacities (Gelb & Diofasi, 2016). Harvitz (2016) noted, eighteen percent of developing countries have system for single purpose meanwhile, 55 percentage of countries have used for specific function and services ranging from cash transfers to health. As the adoption of integrated statistical management system requires enormous efforts from legal, institutional, and technological perspective, the scenario is diverse. Countries such as Pakistan, Peru and India have centralized system emphasizing on registration and identification services, while countries such as Mexico, Nigeria and Tanzania have multiple systems using in parallel manner (Gregson & Hansen, 2019; The World Bank Group [TWBG], 2017).

Malaysia adopted system entitled MyKad which is used for identification, verification purpose as well as for accessing government services and day-day transportation services (Salman, 2010). Indonesia has electronic identity card termed as e-KTP which allows the government for effective implementation of their services, carrying out census, control security threats as well as use in issuing driving licenses, insurance policies, taxpayer certification and other identity related documents (Priyantu, 2012). Singapore adopted centralized identification system through which their citizen does not need to register or provide their information during accessing services at government or private institutions. In other words, it has helped in eliminating duplication in information collection system (Asian Development Bank [ADB], 2016). India's Aadhaar card system which is also one of the largest digital card systems eased the process of accessing government services and subsidies (Barde, 2018). Through the national ID system, citizen of Pakistan can access wider range of government and non-government services such as registration at academic institution, health institution, banking services, telecommunication services, transportation services, financial and land transactions, etc. (Ullah et al., 2015). Citizen from Belgium practices e-ID card which allows them to access public services, link with tax declaration, register at public libraries and community services (Arora, 2008). Biometric identification alongside smart cards is in use in case of South Africa through which government authorities provides social protection support to their citizens (Breckenridge, 2005) .Nigeria used integrated personnel system to eliminate the fraud cases associated with employment (fake workers) (Geteloma et al., 2019). Thailand government approved the Digital ID bill to link users (citizen) from multiple institution (Greenleaf & Suriyawongkul, 2018). Philippines is in planning stage for adopting digital ID through which government can prioritize the minorities during planning and citizen can access

to government services as well as link with economic sector (job) and financial sector (registration at banks) (The World Bank Group, 2017).

Opportunities of Integrated Statistical Management Policy and System

As Government of Nepal is managing individual and sectoral database in separate manner by separate line ministries without alignment, it does hold significant opportunities as explained below.

Harbitz, M. (2016). Enabling Digital Development: Digital Identity. *World development report*, 194-197. http://pubdocs.worldbank.org/en/822821519686607466/9781464806711-WDR2016-Spot4-Rev-Oct2017.pdf

Shifting from Paper-Based System to Digital System: In recent time, government institutions have started documenting individual and family related information in digital manner. Series of capacity building sessions has been held from federal level to local level after an introduction of national ID card system. However, the progress is limited. As the national ID number is not linked with any other service providers, barring few, majority of the institutions has not followed the same trend of digitalizing the information (Adhikari, 2009). But if the policy mandated national ID number to be linked with other services as well, the process of collecting and compiling data in paper-based system can be completely upgraded into digital system. As the ID number contains series of crucial background information, government as well as private institutions with authority to access details of national ID need to mandatorily adopt digital registration system (Dass & Bajaj, 2008; Mitra, 2019).

Evidence Based Programming: As of now, government institutions are developing plans and programs adopting consultative approach from community level to local level and federal level with participation of key stakeholders and communities. However, none of the programs are developed based on statistical evidence but are based on observations and verbal analysis. With integrated statistical management policy in place, each local government need to develop the guideline to have integrated statistical management system which can further provide clear idea regarding the gaps from statistical presentation of digital information (Hilbert, 2016). Evidence based programming helps to identify real need of communities and individuals and implement them in effective manner as well (Atick, 2016; Harvitz, 2016).

Design Inclusive Programming: As integrated statistical management system incorporates detailed information regarding the areas and individuals accessing to government and non-government services alongside their frequency and intensity, government can plan accordingly to prioritize more among the individuals and communities which are usually excluded from receiving government services (Atick, 2016; Hilbert 2016; ADB 2016). Either it be development-based programs or response packages, integrated statistical management system based on integrated statistical management policy can help in tracking the excluded groups and incorporate them in forthcoming plans and program (Brewer et al., 2015; Mitra, 2019).

Effective Public Service Delivery: In an annual manner, government from federal to local level has been planning and implementing dedicated programs to excluded, marginalized and vulnerable groups (Giri& Shakya, 2019). However, the targeted programs are not that much successful in the sense, targeted groups have not received the programs which are actually designed for them. Barring the social protection related activities, there has been voices of dissatisfaction towards targeted programs. Even the government body are not able to either defend or justify the success of targeted program due to lack of evidence. With integrated statistical management system in place, the probability of reaching out the targeted groups to provide dedicated services increases (ADB, 2016; Harvitz, 2016)). The case of wrong person receiving the government services in the name of targeted groups gets reduced or completely eliminated as the digital system can easily track the beneficiaries received from such targeted programs (Oracle, 2008).

Ease Transfer of Government provisioned support and services: It has been evident, the social protection related programs has been effective once the system was made digital and linked with financial institutions (Giri & Shakya, 2019). At one hand, right person received the services. Whereas at other side, the whole transfer of services was smooth and timely (Mitra, 2019). Citizen eligible for receiving the services can easily access the services as per their will from allocated banks. With right tracking and monitoring system in place, implementation of other dedicated programs such as subsidies, grants, scholarships, cash transfer, etc. can get accomplished in timely and efficient manner further increasing transparency and trust among citizen (Harvitz, 2016).

Efficient Tracking or Monitoring Mechanism: With integrated system in place, government authorities can not only implement targeted and inclusive programs in timely and efficient manner but also can generate evidences to claim the effectiveness of program (Hilbert, 2016). With system in place, government can have idea on individual receiving the benefits. Either it be during response activities or regular subsidies, grant and scholarship related activities, government authorities gets an opportunity to track the potential beneficiaries and ensure right beneficiary got the support further strengthening the tracking and monitoring mechanism of government.

Reduces administration cost: In current scenario, citizen need to fill-up the same information in every single form either it be government or private. With integrated statistical management policy being implemented and integrated statistical management system in place, citizen can only provide ID number instead of complete information to data collecting agency. Based on the provided number, institutions can check and verify whether the provided number is of right person or not (Atick, 2016). While doing so, time and resource of both citizen as well as institution get reduced in significant manner further increasing efficiency of service delivery. It can also be linked with the case of information getting duplicated each time during registration form fill-up. As the ID number is shared among responsible agencies, there lies the potentiality of eliminating the issues of duplication.

Relay Accurate and Real-Time Information: With the display of sectoral information and citizen registration related information through respective websites, it has been evident the users can easily get an information in real-time manner (Hilbert, 2016). However, the progress of information fill-up in both sites are not satisfactory as it is not mandatory for individuals as well as for institutions. Integrated statistical management system being mandated by integrated statistical management policy, each updated information get compiled and displays real-time information through graphical presentation as well as numerical presentation. Recently, information regarding the COVID cases was displayed in real time by ministry of health and population with use of different visualization techniques. It was beneficial for all concerned stakeholders to analyze the status and plan accordingly.

Link with Sustainable Development Goals: With integrated statistical management policy and system in place, government institution can track and monitor the progress on indicators such as income level (from formal and informal employment opportunities), vulnerability status, accessibility to basic facilities (water, latrine, internet, health), education status, registration card, financial institution, social protection, etc. (Harvitz, 2016). As these statuses are linked with indicators incorporated in Sustainable Development Goals 2015-2030, their measurement and progress tracking becomes efficient and timely with integrated statistical management system in place.

Challenges associated with Integrated Statistical Management Policy and System

Integrated statistical management policy and system does have its own share of challenges as well. Literatures have highlighted the case stories of countries which have adopted similar system. Combinedly, such challenges are explained below:

Lack of supportive legal instruments: In order to have smooth implementation of integrated statistical management system, it needs to have efficient legal instruments in place. Though many countries have adopted similar system, still they are struggling with legal instruments such as acts, guidelines and strategy (Alghamdi et al., 2011; Yadav et al., 2020). Legal instrument makes the system mandatory where each institution needs to provide their supportive role in making the system operational (United Nations [UN], 2016). However, with lack of legal instruments, government as well as non-government institution do not take the integrated system as their responsibility. With lack of support from agencies, success of such system becomes questionable. Similarly, if the legal instruments gets well executed, responsible government agencies are liable to allocate resources and prioritize the system to become functional (Harvitz, 2016). Without guidelines and plans, government institution as well as private agencies may not get an idea on how well they can contribute or what roles they can play.

Data Security: With technological advancement and the practice of depositing confidential information in digital form, the concerns of data security has been increased in recent times (Giri & Shakya, 2019). From small to large scale organizations even at developed countries, data theft and attack from malwares (virus) has been the major issues to dealt with (Cofta, 2008; Oracle,

2008; Yadav et al., 2020). For the same, some organizations from developed countries have already practiced hiring and mobilizing ethical hackers. However, in Nepali context, ethical hacking is still considered as an illegal act. Technologically, Nepal has not advanced like that in developed countries. Declaration of IT policy 2000 paved the way for government institutions to adopt IT at their respective institutions. With Digital Nepal Framework in place, government is hopeful of making progressive step towards digitalization (Frost and Sullivan, 2018). Meanwhile, the cases of hacking and data theft has been heard in recent times. In such case scenario, the concerns of data security remains key challenges for the country as a whole in implementing integrated policy and system (Brewer et al., 2015).

Distrust towards government institution: If citizen don't get complete information about the system and their potential use, the case of distrust towards government may arise. In many cases, it has been heard (though not proven), citizen's information has been used for international spy and political cases during election (Cheeseman et al., 2018). Citizen from developing countries can perceive in a manner, if there lies the misuse of citizen's information in developed countries than, what could be the scenario at developing country like Nepal which can further cause the case of distrust among citizen towards government institution.

Data Confidentiality, Permissibility and Transparency: Human right principles mandated the need of citizen related data to kept confidential. Barring few countries, majority of countries have adopted the system where civil related data are kept confidential from government institution (ADB 2016& United Nations (UN) 2016). Integrated statistical management system requires linkage and sharing of data between agencies. The system can not implement on full fledge without sharing or exchange of data and information between agencies. With availability of data, government as well as private agencies may opt to use them for their own purposes. In such case, questions and debate may arise on who get the permission and accessibility to data (Brewer et al., 2015). Whether it be only ID or some key information associated with ID number, such queries can pose the threat towards implementation of integrated statistical management system.

Low Level of Coordination among agencies: Implement ability of integrated statistical management system requires strong coordination among government institutions, non-government/private institutions and from citizen. In current scenario, integrated approach in any program is found to be at low priority among institutions (Gautam 2016; Phuyal 2020). Though legal instruments incorporated about the requirement of integration between government and private agencies, it has not been replicated into practice barring few occasions (Adhikari, 2009). As each institution have their own sectoral priorities, plans and programs, integration between agencies in current scenario seems to be of daunting task. However, with stricter legal instruments and proper coordination channel between agencies, their possibility of coordination can not be neglected.

Lack of Resources (human, financial and technological): In recent time, Government institutions (Civil Registration Office and CBS) has adopted digital system to register and update the databases of individual and sectoral in the form of national ID system and national database respectively. Theoretically, local government is responsible to regularly update information at registration system and sectoral ministries are responsible to regularly update information at sectoral database. However, the practice level is not encouraging till date (Phuyal, 2020). One of the major constraint in not having progress is about lack of resources either it be human, financial or technological. In technological aspect, Nepal is still at early stage comparing to other countries. Though there are some legal instruments to support technological advancement, they are relatively new and yet to be go for full fledge implementation stage. From financial resource allocation perspective as well, the situation is not encouraging. It is not still come into the prioritized area of government body either at federal level or at local level (Gautam, 2016). If integrated statistical management system is to be established, the same case of resource constraint can play crucial role in determining the success of system in long-term (Harvitz, 2016). With IT Policy 2000 only, government institutions started adopting technologies at wider level. Thus, the presence of trained human resources on advanced technology as government staff is not adequate to operationalize complex system (Adhikari, 2009; Yadav et al., 2020).

Awareness Level among citizen: If any system is to be successfully implemented, awareness level among users remains the key aspects. In case of integrated statistical management system, government representatives and citizen are the users of those system. Thus, their awareness level have significant role in making the system successful. However, it has been observed, whenever new legal instruments and system are in place, users take some time to get habitual with the system. It more depend on what level of awareness raising activities and promotion of newly adopted legal instruments and system has been done. Though two separate systems such as National ID and National sectoral database is in place, people are not that much aware about their establishment and their significance in day-day life which is also one of the underlying cause of those system not being successful as it should have been.

Digital Literacy: Integrated statistical management system is more about digital system than manual paper based system. In order to make sure, citizen get used to the system and use the ID in their day-day lives, digital literacy becomes the key aspects. Nepal is among the country where formal literacy is still not at satisfactory level. In such case, making citizen aware and habitual with digital literacy is something challenging task for government institutions (Adhikari, 2009). Due to lack of digital literacy, there lies the possibility of individuals from remote areas get excluded from registration process which can further exclude them from receiving government related services and benefits (Brewer et al., 2015; Mitra, 2019).

Conclusion

From policy perspective, Government of Nepal have promulgated wider range of legal instruments to strengthen the civil registration, sectoral statistical management and adoption

of digital medium to store and manage the database. Individually, all of those respective legal instruments have their own underlying strength and gaps depending on the existing context. Barring Statistics Act 1958, other legal instruments has been either updated/revised or new supporting legal instrument has been formulated. In case of Statistical management, Government of Nepal has been following the same mandate as that of Statistics Act 1958 which has not been revised or updated thus making policy weaker in current setting. Countries committing to achieve the indicators as that of Sustainable Development Goal 2015-2030 need to have complete registration of their citizen by 2030. Understanding the global need, both developed and developing countries in their varying capacity or ability already initiated having digital mechanism to register and link with government services and facilities. From Policy perpective, Government of Nepal also already set the foundation to adopt digital technology to register individuals and link with sectoral based government services with an inclusion of integrated system in Constitution of Nepal 2015 itself. However, the progress is not satisfactory citing multiple reasons in the form of political, legal, administrative and technological aspect. Historically, it has been evident, government emphasizes and prioritizes stand-alone policies and plans. In current setting, sectoral and civil registration system are operationalized under their respective policies and by different government agencies which is also one of the noticeable gap in implementing the integrated statistical management system. Analyzing the scope of integrated statistical management system and past trend of priorities set by Government of Nepal, this policy paper strongly recommend for the formulation of new and stand-alone policy in the form of Integrated Statistical Management Policy.

From citizen to policy makers to institutions (government and non government), integrated statistical management system based on integrated statistical management policy provides diverse benefits to all.

Policy Makers and Planners: Effective implementation of any policy requires effective strategy, periodic plan and guidelines in place. In line with the same, policy makers can shift their focus towards developing required legal instruments to support integrated statistical management policy. Furthermore, as local government are mandated to manage statistical under their administrative boundaries, policy makers from federal level to local level can prioritize towards developing and implementing appropriate supportive legal instruments at all level. Planners can refer the integrated statistical management policy during development of short term as well as long term development plans and strategies and allocate financial, technological and human resources respectively.

Government Agencies: As one of the objectives of integrated statistical management policy is to bring together government services and facilities under single platform, their adoptability towards Information, Communication and Technology (ICT) increases further enhancing the e-governance status of country. Government agencies can adopt policy to shift from paper-based system to digital system and upgrade their overall performance in transparent, accountable and efficient manner.

Non-Government and Private Agencies: Non-government agencies shall use the policy to align their respective programs and plans for strengthening federal to local level statistical management system. From recent practices, government alone will not be able to effectively place the system at all level, it requires supporting role. Non-government agencies can effectively play their role in fulfilling the gap and enhancing the governance of government and strengthening service delivery practices at wider level.

Citizen: For an effective implementation of any policies, the role of citizen is utmost and significant. Citizen can use the integrated statistical management policy to enhance their knowledge on policy itself alongside government services and facilities, strengthen their ability to advocate at different level for strengthening government system and making them accountable and overall access government services and facilities in efficient manner.

With intensive review of literatures related with statistical management policy, system and practices across the globe, following areas are recommended to be incorporated while formulating an integrated statistical management policy.

- Clear linkage between vision, mission, objectives, strategies and anticipated results once the policy is promulgated and made public.
- Strong presentation on how integrated statistical management policy support national and international commitments.
- Highlight the role of concerned stakeholders (clarity about roles and responsibilities) from policy formulation to implementation and monitoring of policy and system.
- Clarity on the mechanism on how policy shall be implemented, who shall be the responsible government authorities to oversee policy and system and how the data shall be used and integrated in existing government mechanism.
- Incorporate strategies alongside the timeline to have supportive legal instrument in place (guideline, action plan, strategy and directives).
- Clear strategies addressing the concerns about existing statistical management practices adopted by different government agencies separately under different policies. How the policy support or complements existing legal instruments and systems should be presented in brief to eliminate the probable case of policy level confusion and chaos.
- Recognize the need of short-term and long-term investment to increase competency of human resources at all level of government (federal, provincial and local).
- Incorporate the strategies to strengthen existing infrastructures related with Information, Communication and Technologies (ICT) which shall includes (not limiting to) establishment of system, data warehouse, server, physical infrastructures.

- Strategies to ensure privacy and make system secure and confidential to increase trust among citizen
- Strategies to carry out nationwide campaigns and programs to enhance digital literacy of citizen. Increase awareness level among citizen regarding the need of enrollment so that all individual regardless of their age and gender get enrolled into the system. Meanwhile, legal instruments shall be made flexible learning from the case of individuals excluded from receiving citizenship.
- Strategies to design and implement monitoring and evaluation (M&E) of the policy, who shall be the responsible agency to oversee M and E aspect, how to perform, measurable and reliable standards/benchmarks for periodic monitoring and tracking.
- Design the monitoring and evaluation system through which the planning and implement ability of the system can be periodically monitored or tracked.

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