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Unveiling the Nexus of Family Composition and Individual Identification: A Comparative Analysis of Family Composition Registration Systems

Abstract: *This paper reviews the impact of individual identification through family composition on societal and governance outcomes. Drawing on comprehensive literature and integrating insights from family systems theory, social identity theory, and social systems theory, the research provides a comparative analysis of prominent and historically important Family Composition Registration Systems (FCRSs) across eight countries. The study highlights the features of Pakistan's National Database and Registration Authority (NADRA)'s pioneering FCRS, including facilitating inheritance and succession, supporting social welfare programs, aiding disaster management, and strengthening law enforcement. Adopting a multilevel approach, the research situates FCRSs within broader societal frameworks, emphasizing both benefits and challenges. This paper contributes analytically to academic discourse, family history research, and policy discussions, offering recommendations to enhance citizen registration within family units. The findings have implications for social welfare, child protection, human rights, and crisis management, while informing the development of more inclusive FCRS and effective identity management systems worldwide.*

Keywords: FCRS, social welfare; human rights; identification; family composition

Introduction

In contemporary societies, a robust identification system serves as a key player, facilitating citizen registration and streamlining access to essential services. The evolution of identification technologies has significantly impacted societal structures, ensuring security and enhancing the efficiency of public service delivery.¹ Establishing identity through registration is recognized as a fundamental human right given by the United Nations. Unfortunately, this essential service remains inaccessible in numerous impoverished nations worldwide.² A critical challenge faced by identity registration authorities is ensuring accurate verification of individuals, particularly when correlating identity claims with family documents. Establishing a reliable system for validating a person's identity through family composition is therefore crucial.

The composition of families stands out as a critical factor influencing individuals' access to welfare programs.³ This research underlines the necessity of accounting for family dynamics in the formulation and execution of social policies and programs. Despite increasing attention to family history and systems, there is still a lack of comprehensive research examining Family Composition Registration Systems (FCRSs), their role in individual identification, and their impact on societal programs. As a key determinant of their effectiveness, this becomes more important to conduct a comparative analysis of FCRSs across the world because demand and transparent utility in these processes are on a continuous rise with the bureaucratic reform of public services, particularly in population civil registration.⁴

In the context of identity and individual empowerment, the roles of the state, the government, and society are interconnected. Authorities, on behalf of the state, issue legal identities, which enable the government to provide services such as health, justice, utilities, and social protection programs for underprivileged segments. Society, made up of diverse individuals, uses these services, reflecting the concept of empowerment through identity.

Research on family composition has elucidated that married families often experience greater economic prosperity compared to divorced individuals, who may face heightened vulnerability to poverty.⁵ The impact of family dynamics on individual health is multifaceted, influenced by factors such as the interplay between family financial stressors, emotional dynamics, available resources, and the quality of interpersonal relationships within the family unit.⁶ However, studies focusing on identification through familial relationships and its effects on social programs remain limited.

This paper primarily seeks to examine how individual identification through family relations influences societal programs. For this purpose, we conduct a comprehensive review and comparative analysis of prominent FCRSs across the world. Studying various dividends of FCRS of Pakistan's National Database and Registration Authority (NADRA), this paper also aims to infer the impact of a robust FCRS on governance, individual empowerment, law enforcement, and societal well-being. To guide this study, the following research questions are posed:

1. How does identification through family composition enhance the delivery and effectiveness of social services and welfare programs across countries?
2. What societal and national benefits arise from robust FCRSs, and how do they vary across different national contexts?
3. What are the key best practices and challenges in implementing FCRSs, including technological, ethical, and inclusivity considerations, and how can these insights inform governance and citizen empowerment?

By answering these questions, this paper contributes valuable insights to the theoretical nexus and ongoing discourse on the efficacy and implications of family composition registration systems in diverse socio-cultural contexts.

Literature Review

A Glance at History – From Babylon to Biometrics

Identification practices have a rich history spanning millennia,⁷ with the earliest recorded instance of a government documenting personal details of its populace dating back to 3800 BC, within the Babylonian Empire.⁸ Population registration systems introduced in Chinese dynasties have been present in Japan since the early fifth century. The origins of this system trace back to the initial population census in Japan, referred to as *kōgo no nenjaku* and *kōin no nenjaku*. This census was established within the framework of the *ritsuryō* system of governance.⁹

In Indian history, Sher Shah Suri (1540–1545) introduced administrative reforms such as *Patta* and *Qabuliyat* for land revenue and governance.¹⁰ In that era, *Shajra e Nasab*, a genealogical table of family tree, was also introduced for land ownership and descendants' details.

The evolution of family-based registration systems became more structured and institutionalized in the late nineteenth and early twentieth centuries, particularly in Europe and

East Asia. For example, the German system of civil registration (*Personenstandsregister*) formalized the recording of births, marriages, and deaths at the municipal level, creating a standardized mechanism for documenting familial relationships and legal identity.¹¹ In 1829, the concept of identification cards gained traction globally. Netherlands established a decentralized Personal Number (PN) system in the mid-19th century.¹²

During World War I, the UK introduced the National Registration Act of 1915, requiring individuals aged 15 to 65 to register. This was led by Bernard Mallet, Registrar General of England and Wales, to aid conscription efforts and support administrative efficiency.¹³ Concurrently, the United States initiated the issuance of Social Security number cards, with the first batch distributed in 1936. Subsequently, numerous other countries adopted similar practices, leading to widespread adoption of ID cards globally.⁸

Similarly, the Chinese *hukou* system, which was consolidated in the mid-twentieth century, institutionalized household registration as a means of controlling population movement, allocating resources, and maintaining social order.¹⁴ These systems demonstrate how family composition records evolved beyond simple enumeration toward instruments of governance, linking individuals to households and embedding identity within administrative and territorial frameworks.

In the contemporary era, digital transformation has significantly reshaped family composition registration systems, enabling centralized databases and biometric identification. Pakistan's national identity registration began in phases, with early institutional arrangements predating the 1973 office. NADRA's formation in 2000 marked a digital shift to collect registration data and issue Computerized National Identity Cards (CNICs) under NIC Rules 2002. Realizing the challenges of textual data de-duplication, NADRA adopted digital multi-biometric technologies in 2005. The use of fingerprints and photographs increased accuracy and security, reducing duplicate identities and identity theft. Pakistan's identity services went online in 2015 via the Pak Identity portal, processing over 5 million applications online from 192 countries. Pakistan became one of the first countries to issue identity documents completely online with a mobile registration application launched in 2022, featuring contactless biometric capture using mobile cameras. The reliability of NADRA's identification system is underpinned by up-to-date family composition records.

Family Composition Registration System

Identification systems play a crucial role in modern societies, facilitating various processes, including citizen registration and access to services. The study of Lawton et al. highlights ethical concerns about DNA testing disrupting family composition and identity, with effects varying across misattributed parentage groups.¹⁵ Millard emphasized the significance of robust identification systems in ensuring security and efficient public service delivery.¹⁶ He explored the evolution of identification technologies and their impact on societal structures. In the field of registration and identification, the family registration system is recognized as an efficient way of demarcating sovereign boundaries and demographically defining the population.¹⁷

The relationship of one individual with another individual is a part of the process of family formation.¹⁸ Relationships in such a process are interconnected and exchange responsibilities and resources, and may change due to events like marriage, remarriage, divorce, fatherhood, motherhood, and co-residence, etc. The family formation process is linked with the family structure, which is mainly divided into biological and non-biological relationships. The relationship of mother and father with their children is termed as a biological relationship, whereas husband and wife represent a non-biological relationship. The role of a father is very important in a biological relationship.¹⁹ The formation of such relationships among family members living together in the same household and identified as a single unit that may consist of a single-parent household to a multi-generational family is known as family structure.²⁰ The family composition or structure has a crucial role in the management of household well-being. For instance, the family composition associated with divorce is indirectly linked with psychosocial stress, as it increases the emotional suffering in individuals²¹ with an ultimate impact on society.

Similarly, a single parent, particularly due to divorce, increases the behavioural and emotional problems in children.²² Studies on family composition have revealed that married families are more likely to prosper economically than divorced individuals, who are vulnerable to poverty.²³ Individuals may experience positive or negative effects on their health based on different factors, like “the relative balance of family financial and emotional stressors to family resources and the quality of the relationships” due to family size, marriage, and co-residence.²⁴ Therefore, it is important to know the family composition system of a country for a better understanding of existing flaws that may have antagonistic effects on the well-being of society.

The registration of the composition of families may also have a direct influence on social welfare outcomes. Johnson and Pencavel investigated the correlation between family

structure and access to welfare programs.²⁵ Their research highlighted the importance of considering family dynamics in the design and implementation of social policies. Public trust in citizen registration systems is crucial for their effectiveness. Subekti and Pribadi explored the factors influencing public trust in national registration systems, emphasizing the need for transparency and accountability in such processes.²⁶ Extant studies provide insights into how family-based identification contributes to accuracy, inclusivity, and social welfare outcomes.²⁷ However, the intersection of identification and family structures is nuanced.

Navigating the intricate relationship between identification processes and family structures, Kim delves into how family-based identification contributes to the accuracy and inclusivity of citizen registration and migration.²⁸ His findings illuminate the complexities inherent in intertwining these variables. Extending this exploration, Adam and Fazekas conducted a study synthesizing existing literature to identify patterns and gaps in understanding how emerging technologies are helping to win the fight against corruption in developing countries.²⁹

Theoretical Framework

Legal identity, facilitated by family registration, empowers individuals by providing access to fundamental services. Studies reveal a positive correlation between robust registration systems and expanded citizen rights, offering opportunities for education and healthcare.³⁰ Family composition data emerges as a critical tool for law enforcement agencies. Well-designed registration systems contribute to criminal investigations, identity verification, and overall law enforcement efficiency.³¹ In governance, family registration systems play a pivotal role in resource distribution and social welfare planning. Comprehensive databases contribute to streamlined electoral processes and enhance the efficiency of governance indicators. These systems also inform demographic policies, contributing to social cohesion and sustainable development.

This research adopts a multifaceted theoretical approach integrating social identity theory, family systems theory, and social systems theory. Social identity theory guides how identification within family structures affects inclusion and access to welfare,³² while family systems theory provides the feasibility of interconnection between family roles and their impact on interactions with registration processes.³³ This also needs to understand social systems wherein various social subsystems can be interconnected, including family systems and institutional systems, such as identity registration in terms of social responsibility.³⁴

Social systems theory highlights how families act as primary social systems, transmitting cultural values, while identity registration institutions facilitate governance and social organization.³⁵ Recognizing family structures and registration systems as components of broader social systems clarifies how corporate social responsibility can align with societal stability, equity, and development.³⁶

Family systems theory emphasizes relationships and communicative behaviour as fundamental attributes of a system.³⁷ Family composition registration also has privacy concerns. Klareld finds that revealing a family secret can both disrupt and reinforce traditional notions of kinship and family.³⁸ Social identity theory examines the role of self-conception and social beliefs in group processes and intergroup relations.³⁹

Building upon this integration, institutional theory offers an additional lens to understand how family composition registration systems gain legitimacy and persistence within governance structures. Formal systems become embedded through regulatory frameworks, normative expectations, and cultural-cognitive beliefs.⁴⁰ In this context, family registration systems are not merely administrative tools but socially constructed institutions that reflect shared understandings of kinship, legitimacy, and citizenship. This perspective helps explain why systems like NADRA's relational identity model are particularly effective in collectivist societies, where familial ties are deeply institutionalized and socially validated.

Furthermore, the concept of state capacity is crucial in explaining variations in the effectiveness of family composition registration systems. Strong administrative capacity enables governments to maintain accurate, comprehensive, and accessible population databases, which in turn enhance service delivery and public trust.⁴¹ Empirical studies indicate that countries with robust civil registration and vital statistics (CRVS) systems experience improved governance outcomes, including better targeting of social protection programs and more inclusive policy design.⁴² Within this framework, family-based registration systems function as foundational infrastructure that supports state-citizen interaction, reinforcing accountability and facilitating evidence-based policymaking.

Finally, the interplay between privacy, surveillance, and social trust introduces a critical dimension to the theoretical framework. While family composition registration enhances governance efficiency and security, it also raises concerns about data protection and individual autonomy. Drawing on surveillance studies in societies, it can be argued that modern identity systems operate within a "surveillance society," where personal and familial data are

continuously monitored and analysed.⁴³ However, public acceptance of such systems often depends on perceived benefits, institutional trust, and legal safeguards. Integrating this argument into the framework highlights the need to balance administrative efficiency with ethical considerations, ensuring that family registration systems promote inclusion and welfare without compromising fundamental rights.

The literature review and theoretical framework provide the foundation for understanding identification, family composition, identification, social welfare, and citizen registration.⁴⁴ Applying this framework helps explain NADRA's "identity by relation" approach, particularly in collectivist contexts where family structures guide social coordination.

Prominent FCRSs Across the World

Any FCRS plays a crucial role in modern governance for recording and managing demographic data related to families and individuals. However, the utility, reliability, and dividends of a particular FCRS depend on the system's structure, framework, and the context in which it was designed and updated. We have studied FCRSs of eight countries, including China's Household Registration System (Hukou), Japan's Koseki, Korea's Resident Registration System (Jumin Deungbon), the UK's General Register Office (GRO), Sweden's Population Register (Folkbokföring), Germany's Standesamtsregister, the UAE's Khulasat al Qaid Family Book (Al Kitab Al Usri), and NADRA's FRC.

Cross-country comparisons considered centralization, computerization, system age, family tree types, organization, biometrics, automatic child registration, trans inclusiveness, and gender inclusiveness, presenting best practices and insights for FCRS improvements. The selection of these eight countries is based on their historical uniqueness, prominence, technological sophistication, regional diversity, and policy influence, aiming to provide a representative overview of FCRSs globally.

In China, the booklet or document issued to Chinese nationals as evidence of their families is known as the "Hukou" (户口), which is managed by the Public Security Bureau and backed by a formal family composition registration system. The Hukou system serves as an official record of a person's household registration and family members.⁴⁵ It contains information about the head of the household, spouse, children, and sometimes other relatives who are registered under the same household. The Hukou system plays a crucial role in various

aspects of life in China, including access to social services, education, healthcare, and employment opportunities.⁴⁶ China's Hukou system registers family details, influencing governance policies and access to social services.

Modern Japan established three kinds of national identification (ID) systems over its population: Koseki, Alien Registration, and Juki-net. Japan's family register is known as Koseki, an official document that verifies the identity and familial connections of Japanese citizens according to family law. From the Meiji period to the early postwar period, koseki registration not only impacted Japanese society but also neighboring societies of Taiwan, the Korean peninsula, and parts of China.⁴⁷ The system was initiated as a result of the Family Registry Law of 1872. It maintains records of parents, children, and spouses of an individual and is now mostly digitized. The updates to an individual's koseki are based on the process of voluntary disclosure through reporting of births, deaths and civil unions to the local municipal authorities. The koseki family registers are inclusive of transgender individuals; however change of gender must be accompanied by input from two psychiatrists. Non-Japanese spouses of Japanese citizens can also be added to a koseki as non-regular members. In the contemporary koseki system, women can appear as heads of their respective families.

The South Korean civil registration system is composed of two systems: the Family Relations Registration System (FRR) and the Resident Registration (RR) System operated by the Ministry of Interior & Safety. The FRR, a system relevant to this research, is managed by the Supreme Court as a computerized and centralized office. The information to the FRR is provided by the local authorities and governments through individual disclosure of births, deaths and civil unions. Typically, parents are required to report child births within 30 days of the event. As per the current system, a registration record is maintained for each individual which details such as information about the parents, spouse, and children of the said individual. The system is gender inclusive and gender neutral, where a child can take the name of the mother, and is also extra-marital birth inclusive. The FRR is linked with the RR such that any changes to the FRR, such as birth/death, result in a corresponding change in the RR as well. The RR is biometric-enabled and allows capturing of fingerprints and photographs for Korean residents. Unmarried Korean adults can change their gender with parental consent. Foreign spouses can be added to the FRR through a certificate of family relationship.

In Sweden, the family registers are maintained by the Swedish Tax Agency (Skatteverket) and the system is known as Folkbokföring. The system is computerized and

linked across municipalities. It also acts as a mechanism for resident registration by adding citizenship information to the register. The family registers had been maintained by the local churches since the 17th century. Biometric registration is not a requirement for registration in the Folkbokföring. Children are automatically added into the family register at the time of birth and assigned a personal identification number. This family register contains information about partners, spouses, and children. The system is gender inclusive and even two women in a relationship can be added as parents/guardians to a child. If the parents are unmarried, then the mother is considered as the parent/guardian by default. Folkbokföring allows for the inclusion of foreign spouses. The information in a population register is considered public information and is open to the general public. A child born to a Swedish mother is entitled to Swedish citizenship, whereas a child born to a Swedish father is entitled to Swedish citizenship if he/she is born in Sweden.

The German civil registration office is called the Standesamt. The Standesamtsregister is computerized but decentralized and information for its residents is maintained by each municipality (Familienbuch). In many ways, the system is similar to that of Sweden, such as individuals, their spouses, and children are registered together as long as they reside in the same locality/municipality. Children are automatically registered at birth, and a birth certificate is necessary to access services such as healthcare as well as parental and child allowances. System is gender and trans inclusive as individuals can change their gender without the need for any medical evidence. Foreign spouses can also be added to the population register. Biometric registration is not universal and is typically required when a citizen applies for a passport or an identity document.

The General Register Office (GRO) of the United Kingdom manages birth, marriage, and death records, providing a foundation for FCRS.⁴⁸ GRO is centralized and computerized, where the family includes children, adopted children, spouses, and civil partners. Children are automatically registered at birth. The GRO is gender and trans inclusive. UAE's family book - Khulasat-Al-Qaid system is managed by the Federal Authority for Identity, Citizenship, Customs & Port Security. The system is centralized and computerized. The system is biometric-enabled and defines a family as a family head, spouses, and children. The head of the family is typically a male and can have multiple female spouses. The system registers children at birth; however, it is not trans-inclusive.

With a population of over 250 million, Pakistan is the fifth most populous country. NADRA has established a multi-biometric database encompassing individuals and their familial networks.⁴⁹ This repository, including alpha, beta, and gamma family trees, is one of the largest civil data repositories globally. NADRA's identification system delivers dividends across technological, legal, and trust frameworks, impacting legal documentation, social welfare, and crisis management. It safeguards marginalized groups and transgender individuals by validating familial relationships and supports immigration processes, humanitarian crises, health programs, and organ transplantation under Human Organ and Transplant Authority (HOTA).

NADRA's FCRS provides Family Registration Certificates (FRCs)—Alpha, Beta, and Gamma—to connect family members across 209 million identities in 54 million families. Stringent verification processes ensure accuracy for late entries, sibling registrations, and family updates. NADRA's system underpins poverty-targeted programs like BISP and Ehsaas, succession certificates, health cards, and law enforcement databases.

NADRA's role in the protection of human rights, especially for marginalized segments of society, is noteworthy. The database aids in recognizing and safeguarding the rights of minorities and transgender individuals. By providing official documentation that validates their identities and familial relationships, NADRA contributes to the empowerment and inclusion of these often-neglected segments. ID World ranked NADRA as one of the globe's top 50 suppliers of e-passport technology.⁵⁰

Beyond national borders, NADRA's database serves the needs of immigrants. The provision of accurate and authenticated documentation streamlines immigration processes, facilitating legal entry and residence in foreign countries. Moreover, in times of crisis, such as air crashes or other emergencies, family composition records play a crucial role in identifying affected individuals and victims to contact their families, thereby aiding crisis management efforts. The system also contributes to the provision of legal support to the applicants in immigration cases.

The family composition records maintained by NADRA extend beyond their legal implications, significantly influencing social welfare initiatives. The identification of individuals through familial relationships serves as a linchpin for the disbursement of welfare funds, exemplified by programs like the Benazir Income Support Program (BISP) and Ehsas.

The utilization of NADRA's database enables targeted and efficient allocation of resources, ensuring that welfare reaches deserving families in a timely and effective manner.

Figure 1 shows the standard method of identifying a person with an individual-centric approach of individual identity through family. NADRA's innovative 'identity by relation' approach represents a transition from conventional individual-centric identity models to moderate demographic and biometric data. This holistic approach significantly enhances the reliability and robustness of its identity management system.

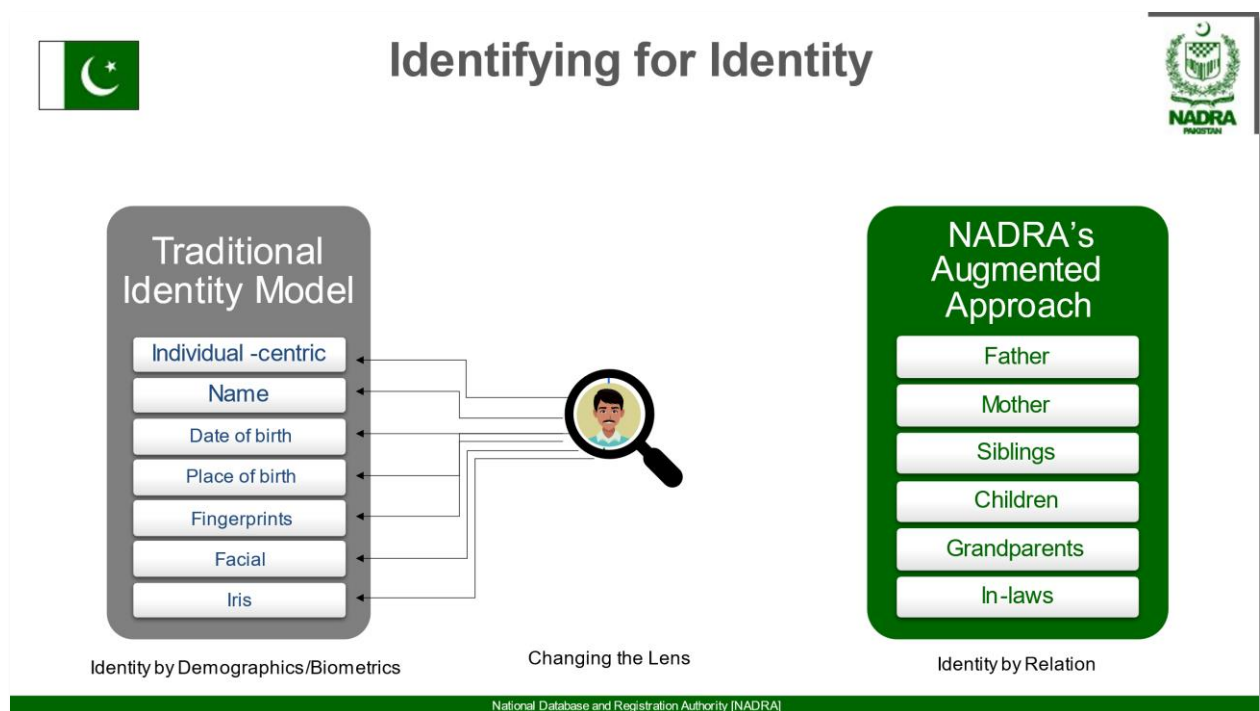


Figure 1 – Individual Identity Through Family
Source: Authors (2025)

The efficacy of the NADRA's 'identity by relation' methodology was vividly demonstrated during pivotal humanitarian crises, including the 2005 earthquake, 2009 internal displacement events, and the 2010 floods. Utilizing a comprehensive database linking individuals to their familial networks, Pakistan ensured a streamlined and transparent process for distributing essential relief aid. This systematic approach guaranteed that each affected family received the requisite assistance promptly and efficiently. Such successful applications accentuate the social practical utility of NADRA's FCRS, particularly in the context of disaster management and equitable resource allocation during critical humanitarian interventions.

While India, the USA, and a few African countries have notable systems, their detailed examination is beyond the current scope; their omission is due to space constraints and the focus on systems with well-documented family composition registration practices. Individuals' registration and family registration are different yet interrelated terminologies. Many people in India believe that Aadhaar enrollment is mandatory and equates to securing proof of citizenship.⁵¹ Therefore, it has become unavoidable in India. However, the government of India is often criticized for its inefficiency in targeting potentially eligible families in anti-poverty programs because there is no single definition or identification of a family in India.⁵²

Similarly, the Social Security Administration (SSA) of the United States maintains individual and spouse records for social security purposes, contributing to governance and individual entitlements. Social Security incorporates dependent spouse and survivor benefits. For a worker with a nonworking spouse, social security benefits are based solely on the worker's earnings record. For a worker whose spouse is entitled to benefits independently, the spouse's benefits are based partially or fully on the spouse's record.⁵³ Therefore, for comparative theoretical application and practical analysis, eight countries' registration systems were selected. and the literature, reports, and official websites are reviewed. NADRA's FCRS is explored in detail for examining its dividends and societal applications.

Comparative Analysis

The comparative impact of FCRSs on social welfare and public services varies across countries. This comparative analysis focuses on key aspects such as system structure, system age, functionality, data management, privacy considerations, and the impact on social welfare and public services.

China's Hukou supports targeted welfare programs and efficient service delivery, but historically restricts internal mobility. Japan's Koseki, Korea's Resident Registration System (Jumin Deungbon), and the UK's GRO leverage FCRS for social security, healthcare, and legal documentation, though Koseki historically excluded some marginalized groups. Sweden's Folkbokföring and Germany's Standesamtsregister emphasize data protection and individual rights. The UAE system prioritizes centralized access but maintains patriarchal structures, which may limit inclusion.

China's Hukou captures detailed demographic information and links to government services. Japan's Koseki emphasizes family registration with municipalities, supporting

taxation and healthcare. Korea's RR integrates family data with social security and public services, allowing some gender flexibility.

The UK's GRO facilitates vital events registration and legal processes like succession, while Sweden's Folkbokföring emphasizes individual autonomy and privacy. Germany's Einwohnermeldeamt maintains demographic records for legal and administrative purposes. UAE's Khulasat al Qaid enables access to services but enforces male-headed family norms.

Pakistan's NADRA FCRS is centralized, biometric-enabled, and relationship-focused, supporting social welfare programs, national security, and electoral processes. Privacy concerns are addressed through legal frameworks, but challenges remain regarding undocumented populations and balancing surveillance risks.

Table 1 provides an objective comparison of the FCRSs across multiple dimensions. Key takeaways from the table include differences in centralization, biometrics, gender inclusivity, and primary social applications of each system.

Table 1: Comparative analysis of the FCRS employed by eight countries

Parameter	China ^{25,26}	Japan	Korea	Sweden	Germany	UK ²⁹	UAE ^{21, 22}	Pakistan ³⁰
System/Authority	Hukou	Koseki	FRR	Folkbokföring	Standesamt	GRO	Khulasat al Qaid ²¹	FRC/NADRA
Centralization	No	No ^{1,2}	Yes ⁷	Yes ¹³	No ¹⁷	Yes	Yes ²²	Yes
Computerization	Yes	Yes ^{1,2,3}	Yes ⁷	Yes ¹³	Yes ¹⁷	Yes	Yes	Yes
Founded Since	1958	1872 ³	January 1, 2008	17 th Century ¹³	October 1, 1874	1837	2004	March 10, 2000
Registered Immediate Relatives	Spouse, Children ²⁸	Parents, Spouse, Children	Spouse, Children	Spouse, Children	Spouse, Children	Spouse, Partners, Children	Spouses, Children	Parents, Siblings, Spouse, Children
Multi-Departmental	Yes	No	Yes ^{7,8}	No	Yes ¹⁷	Yes	No	No
Biometrics	No	No	Yes ¹⁰	No	No	No	Yes	Yes
Automatic Child Registration	Yes	No	No	Yes ¹³	Yes	Yes	Yes ²⁴	No
Trans Inclusive	No ²⁷	Limited ^{**}	Limited ^{11, ***}	Yes	Yes	Yes	No ²³	Yes
Gender Inclusive *	No	Limited	Yes	Yes ^{14,15}	Yes	Yes	Limited ^{****}	Yes
Main Dividends: Associated Social and National Programs	Social Security	Proof of Kinship ties	Basic Livelihood Security Programme	Health care system	Pensions, Health	Levelling up	Health Facilities	Multiple
<i>Code Description:</i>								
* Gender inclusive means that women have the option to be heads of families as well as have the option to keep their surnames.								
** Psychiatrist input is required. Married individuals cannot change their gender [4].								
*** The system is gender inclusive and gender neutral where a child can take the name of the mother [9]. Korea adults who are not married and with parental consent can change their gender [11].								
**** Typically, only men can be heads of families, men can have multiple female spouses.								
<i>URLs of Sources (Retrieved on April 29, 2024, unless specified otherwise)</i>								
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Identification through family composition enables governments to accurately determine eligibility for social welfare programs, health services, disaster relief, and targeted financial assistance. Systems like NADRA's FCRS in Pakistan link family relationships with programs such as BISP/Ehsas, health cards, and pension allocations, ensuring aid reaches the intended beneficiaries. Similarly, China's Hukou and Korea's Resident Registration System integrate family data with social programs, highlighting that family-based identification improves service delivery efficiency and resource allocation.

Key comparative insights

- NADRA's FRC is unique in its biometric depth, comprehensive coverage, and relationship-based identity verification.
- Sweden emphasizes transparency, gender inclusivity, and public accessibility of data.
- UAE prioritizes traditional family structures, often male-headed, with limited inclusivity.
- China balances service delivery with restrictive controls affecting mobility and equality.
- Trade-offs exist between efficiency, privacy, and inclusivity across all systems.

The comparative analysis highlights diverse approaches to family composition registration systems across countries, reflecting variations in system structure, functionality,

data management, privacy considerations, and the impact on social welfare and public services. Understanding these differences and best practices can inform policy decisions and improvements in FCRS implementation, ensuring efficient data management, protection of individual rights, and enhanced service delivery for citizens globally.

Dividends of NADRA's FCRS to Society

NADRA's FCRS serves as a non-intrusive backend component focused on relationship management, seamlessly connecting 209 million identities across 54 million families. Its FCRS has significantly contributed to the accuracy and reliability of Pakistan's Poverty Scorecard by identifying poor families rather than just individuals. This data has been instrumental in designing family-based social protection programs, including conditional and unconditional child wellness and education grants. Moreover, FRCs have become essential tools in e-governance and immigration processes, with foreign missions in Pakistan requesting these documents to establish family connections for visa processing. Furthermore, Pakistan's judicial system also began relying on FRCs, showcasing the trust and credibility NADRA's system has garnered from both the government and the people, despite not being admissible as evidence in a court of law.

NADRA's FCRS has been identified with ten current (Figure 2) and four future potential perspectives regarding its utilization in social and national causes:

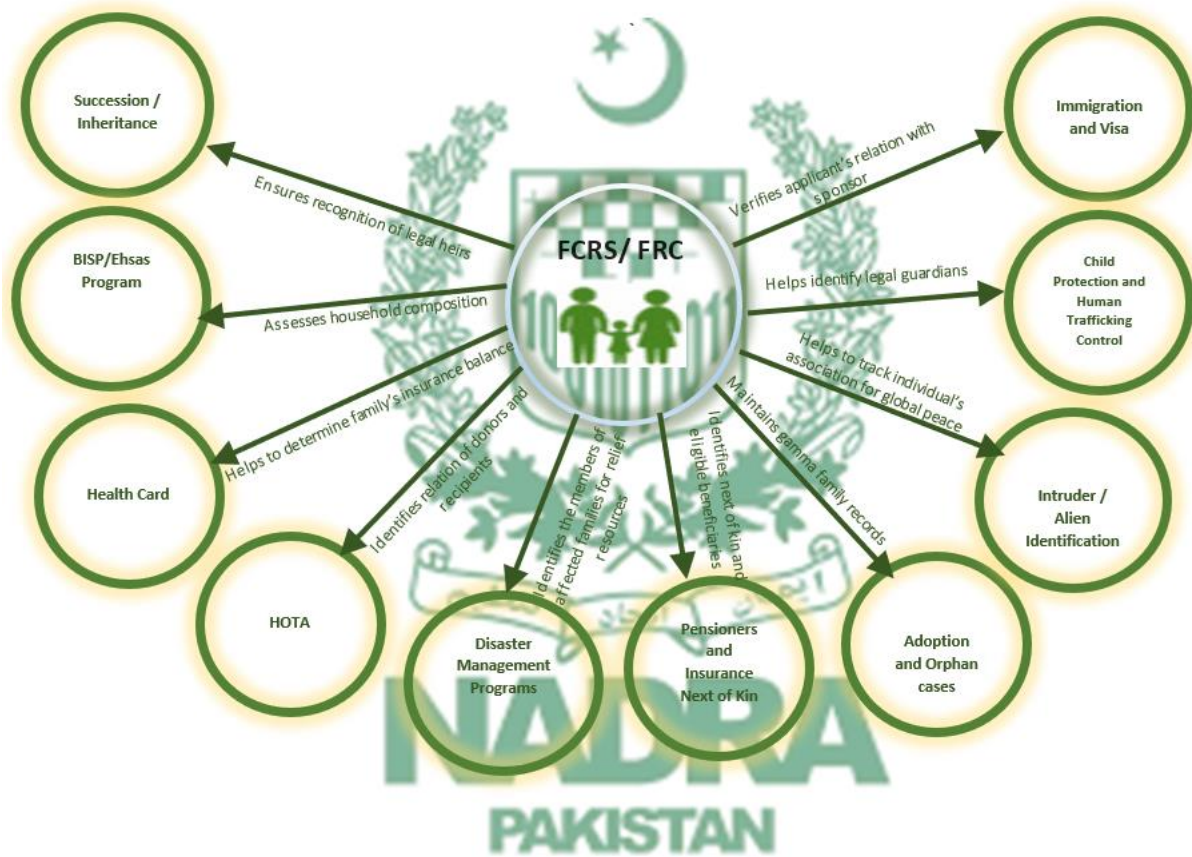


Figure 2: Dividends of NADRA's FCRS
Source: Authors (2025)

Current Utilities

1. Succession / Inheritance – FCRS provides reliable legal documentation for heirs and beneficiaries. (Some claims, e.g., cost reduction, are based on NADRA internal reports.)
2. BISP/Ehsas Program – Enables targeted welfare distribution using family composition data.
3. Family Health Insurance/Health Card Program – Facilitates enrollment, coverage verification, and family-level benefit management.
4. HOTA – Supports ethical organ donation and transplantation decisions.
5. Intruder / Alien Identification and Criminal Tracking by LEAs – Strengthens national security and law enforcement efficiency.
6. Pensioners and Insurance (Next of Kin) – Ensures accurate payout to rightful heirs and beneficiaries.

7. Adoption and Orphan Cases through Gamma FRCs – Supports legal recognition and child protection measures.
8. Disaster Management Programs – Enhances targeting of financial aid during natural disasters.
9. Travelling – Child Protection and Human Trafficking Control – Strengthens border security and prevents trafficking.
10. Immigration and Visa Purposes – Verifies familial relationships for international mobility.

Potential Avenues

1. Identification of non-national relatives.
2. Verification of relatives within the same organization.
3. Future family income-based taxation using dependent and earner ratios.
4. Research and statistical analysis on families and social policy design.

Discussion

Accurate demographic data is fundamental for both societal contexts and government decision-making. Advancements in identification technologies have profoundly influenced societal frameworks, bolstered security measures, and optimized public service delivery.⁵⁴ Similarly, well-established FCRS provide comprehensive family information, aiding resource allocation, policy formulation, and efficient governance. These systems contribute to transparency by ensuring government initiatives align with actual population demographics.⁵⁵

This research highlights the pivotal role a nationwide registration authority, such as NADRA, can play in shaping identity management and its far-reaching implications on national and social frameworks. It contributes to knowledge by evaluating the role of FCRS in society, assessing its impact on social welfare, and providing a comparative global analysis. In Pakistan, NADRA has significantly transformed the landscape of identity management through the establishment and maintenance of a multi-biometric database encompassing individuals and their familial networks.⁵⁶

Registration establishes legal identities, empowering individuals by recognizing them in civic, legal, and electoral processes.⁵⁷ This recognition strengthens societal participation and fosters inclusion. The comparative analysis of well-established FCRS across eight countries enables benchmarking and adoption of best practices. Countries can learn from each other's

successes, fostering international collaboration in areas such as migration management, public health, and coordinated responses to global challenges.

Exploration of FCRSs shows that these systems enhance the delivery and effectiveness of social services by identifying individuals within their household context, allowing governments to better assess needs based on factors like dependents, age structure, and vulnerability. This enables more accurate targeting of benefits, efficient allocation of resources, and integrated service delivery across sectors such as health, education, and financial assistance. By linking family members in a single registry, these systems also improve monitoring, reduce duplication and fraud, and support consistent implementation of welfare programs across regions, ultimately making social protection more responsive and impactful.

NADRA's FCRS demonstrates high integration with government services and social welfare programs, contributing significantly to citizen empowerment and governance efficiency. The database's multi-biometric approach and comprehensive family tree structures distinguish it from many global counterparts. Compared to systems in China, Japan, Korea, Europe, UAE, and the UK, NADRA shows comparable effectiveness in succession facilitation, social welfare targeting, and crisis management support. Potential areas for improvement include improving the user experience for citizens.

Theoretical Contribution

This study contributes to theory by integrating insights from family systems theory, social identity theory, and social system theory. By examining how individual identification within family structures influences societal programs, the research enhances understanding of the interplay between identification processes, family compositions, and social welfare outcomes. The study also illustrates how governance systems can operationalize identity for social and economic policy design, bridging theoretical insights with practical governance mechanisms.

It also contributes to the family registration's societal framework by collecting and summarizing the history of family registration and the theoretical importance of identification through family.

Furthermore, the study advances theoretical discourse by conceptualizing FCRSs as institutional mechanisms that formalize the linkage between micro-level identity constructs and macro-level governance outcomes. It positions family-based identification as a mediating structure through which social policies are interpreted, targeted, and experienced, thereby

extending existing theories on state–citizen interaction and welfare distribution. By framing FCRSs within a systems-oriented and relational perspective, the study contributes to theory by explaining how structured identity data shapes social stratification, access to resources, and the reproduction of social order across different institutional settings.

Additionally, this study contributes to theory by incorporating a dynamic and context-sensitive perspective on FCRSs, emphasizing their evolution across socio-political and technological environments. Drawing on insights from institutional and development literature, it highlights how FCRSs are not static administrative tools, but adaptive systems shaped by governance priorities, cultural norms, and technological advancements.⁵⁸ This perspective advances theoretical understanding by positioning FCRSs as both products and drivers of institutional change, capable of reinforcing state capacity while simultaneously reshaping citizen–state relationships. In doing so, the study extends existing frameworks by demonstrating how digitalization, data integration, and relational identity models influence inclusivity, accountability, and policy responsiveness, particularly in developing and collectivist contexts where family structures remain central to social organization.⁴³

Practical Implications

The findings have several implications for policymakers, government agencies, and organizations involved in identity management:

- Robust FCRS enhances service delivery, targeted resource allocation, and inclusive governance.
- Leveraging FCRS data can improve evidence-based policymaking in social welfare, disaster management, and public health.
- Transparent registration processes foster citizen trust, while emphasizing accountability and data protection.

Effective FCRS implementation requires attention to ethical, political, and human rights dimensions, particularly regarding marginalized populations and potential misuse of sensitive data.

Governments can design targeted welfare programs, education initiatives, and healthcare services based on thorough family and demographic information. These systems also enhance law enforcement capabilities, aiding crime prevention, investigations, and national security.

Limitations

Best practices include multi-biometric verification, automated child registration, centralized databases, and gender- and trans-inclusive policies, as demonstrated by NADRA, Sweden, and Korea. Challenges involve ensuring data privacy, ethical handling of sensitive information, balancing efficiency with individual rights, and mitigating exclusion of marginalized groups. Addressing these challenges informs governance by promoting inclusive, accountable, and citizen-centric registration processes, strengthening social welfare programs, and enhancing public trust in state institutions.

While the study provides valuable insights, several limitations exist:

1. Reliance on publicly available data and official websites may not capture all academic insights.
2. Focus on selected countries limits generalizability to broader global contexts.
3. Political and ethical considerations, such as citizen trust, surveillance risks, and potential misuse of identity data, are not fully addressed in the comparative analysis.

Directions for Future Research

Future research can explore:

- User experiences and perceptions of FCRS through surveys and qualitative studies.
- Longitudinal impact of FCRS on social and economic outcomes.
- Comparative studies including additional countries and regions to identify best practices and challenges.

While promising for identity and family verification, future research may rigorously address ethical frameworks, data security, privacy safeguards, and potential misuse in sensitive applications such as forensic or health data. This reframing ensures ethical deliberation is central to technological advancement. FCRS based on other physiological and behavioural biometrics can also be studied in the future.

Conclusion

This study demonstrates how a centralized, relationship-based FCRS like NADRA can integrate demographic, biometric, and relational data to improve governance, social welfare delivery, and citizen empowerment, while highlighting trade-offs between efficiency, privacy, and inclusivity. This paper contributes to the academic discourse on FCRS by providing a comprehensive analysis of family composition registration systems of eight countries. The theoretical framework, practical implications, and research directions offer valuable insights for policymakers, practitioners, and researchers seeking to optimize FCRS effectiveness, promote citizen empowerment, and foster inclusive governance frameworks. By

acknowledging limitations and embracing ethical, technical, and research-oriented future directions, stakeholders can advance FCRS toward more efficient, transparent, and citizen-centric models, balancing innovation with societal responsibility.

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