Challenges and Issues on Shifting Towards National Identity Card System in Nepal-A Perception of Citizens

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Abstract

The National Identity Card (NID) is digital identity card of Nepal, it contains demographic details with a biometric information of citizens. People use the card for various purpose such as business registration, passport issuance, involve in social security programme. The National Identity Card is issued to Nepali citizens aged 16 and above who are eligible to have Nepali citizenship. The card is issued and managed by the Department of National Identity and Civil Registration, which operates under the Ministry of Home Affairs.

The National Identity Card system in Nepal encounters major implementation challenges because Nepalese citizens are not adopting the system easily and fear privacy breaches while lacking digital skills, understanding few benefits, facing technological deficiencies and doubting the government's data security measures.

This study investigates the challenges impeding the adoption of Nepal's National Identity Card (NID) system, employing a mixed-methods research design to examine factors affecting citizen acceptance. Despite government efforts to implement this digital identification system, public adoption remains low, with only 8.8% of collected records for NID distributed to citizens as of report of DoNIDCR (2024). The research identifies digital literacy and perceived usefulness as the strongest predictors of acceptance, while accessibility and security concerns showed less significant impact. Analysis of data from 390 respondents revealed demographic variations in acceptance patterns, with urban, educated, and younger populations demonstrating higher adoption rates. Based on these findings, the study recommends targeted digital literacy programs, enhanced public awareness campaigns, infrastructure improvements, and trust-building measures to facilitate successful implementation. This research contributes to the growing body of literature on digital identity systems in developing nations while providing evidence-based strategies for policymakers to improve NID adoption in Nepal.

Keywords: *National Identity Card (NID), digital literacy, technology acceptance, digital divide, digital identification, digital transformation*

1. Introduction

1.1 Background

The National Identity Card (NID) system of Nepal represents a significant shift from traditional identification methods toward digital infrastructure. Managed by the Department of National ID and Civil Registration under the Ministry of Home Affairs, this system aims to standardize public service operations through an integrated national database with enhancing data security and integrity measures. (Buddhacarya and Chatterjee, 2019) The NID card contains a unique identifier along with citizens' biometric and demographic information, serving as a mandatory requirement for accessing various public services, including business registration, passport issuance, and social security programs (DoNIDCR, Nepal).

However, despite government projections and mandates, the implementation of the NID system has progressed at a notably slower pace than anticipated. According to a report of DoNIDCR (2024), current statistics reveal a significant gap between record collection and distribution: of the 16,094,894 records collected, only 5,454,003 (33.8%) have been printed as NID cards, and merely 1,430,133 (8.8% of records collected) have been distributed to citizens. This substantial disparity indicates underlying challenges that require systematic investigation.

1.2 Problem Statement

Adhikari G. P., (2019) highlights that the implementation of NID cards throughout Nepal has faced several significant obstacles:

- Widespread public opposition toward adopting the new system
- Inadequate digital literacy among citizens
- Limited public awareness about the usefulness of the system
- Technical and infrastructural shortcomings throughout implementation
- Growing skepticism about government capacity to handle citizen's data

These obstacles raise major concerns about the effectiveness and public acceptance of the NID system. The future success of implementation depends heavily on understanding these barriers to develop appropriate strategies for higher public engagement.

1.3 Research Questions

This study addresses six key research questions:

1. What are the main issues that have made Nepali citizens reluctant to accept the NID card system?
2. What risks are connected with privacy and security of the NID card system, and to what extent are they perceived by the public?
3. In what way does trust in government institutions influence people's preparedness to embrace the NID card system?
4. In what manner does IT support and IT access influence the overall functioning of the NID card system?
5. Which actions would improve the adoption of the NID card system?
6. What can be learned from other countries' experience of implementing national identity systems to inform the approach adopted in Nepal?

1.4 Objectives of the Study

The research aims to:

- Identify the main barriers preventing Nepalese citizens from accepting the NID card system
- Determine various elements that affect how people perceive the NID system
- Demonstrate how Nepalese citizens perceive privacy and security threats related to their NID card system
- Investigate how citizens' trust levels toward government institutions affect their feelings about the NID system
- Develop recommendations to make NID system implementation more acceptable to the public
- Adapt concepts learned from other countries with established national identity systems to create systems best matching local needs

1.5 Significance of the Study

This research offers essential knowledge to multiple stakeholders engaged in implementing Nepal's NID card system. For policymakers, findings enable the formation of effective policies addressing privacy issues and associating digital literacy gaps between different demographics to growth implementation of NID.

For public educators, research guides the development of awareness programs that educate the public about NID system usefulness and benefits. For system implementers, findings direct improvements toward enhancing security measures, digital training systems, and accessibility solutions.

For cultural adaptation, the study ensures the NID system meets Nepal's diverse cultural requirements. For benchmarking, incorporation of best practices from other countries aids in selecting successful strategies for Nepal's NID development. This research creates long-term benefits combining better service delivery with improved information security for governance.

2. Literature Review

2.1 Public Perception and Acceptance

The literature reveals fascinating contradictions in how people view national ID systems across different contexts. In Nepal, Pandey and Diyal (2023) found that young, tech-savvy urbanites readily embraced the NID's modern features, while elderly rural residents felt overwhelmed. This generational divide isn't unique to Nepal-Morikawa's (2017) work in Japan showed how citizens constantly recalculated an internal risk-benefit equation, with support plummeting among those who distrusted government data practices.

Malaysia's experience with MyKad offers a surprising twist. Jayabalan et al. (2019) discovered that even university students-theoretically the most tech-friendly demographic-grew hesitant after high-profile security breaches. UNICEF's (2021) work in Somalia demonstrated how initial resistance among refugee communities diminished once tangible benefits became apparent. This practical demonstration echoes Sedlmeir et al.'s (2021) theoretical framework: people accept new systems when perceived benefits outweigh perceived risks-a balance Nepal's NID system hasn't yet achieved.

2.2 Privacy and Security Concerns

Modern research like Mehrotra et al.'s (2023) facial recognition audit reveals subtle risks, finding that Indian algorithms failed five times more frequently for dark-skinned women-highlighting how biometric systems can unintentionally cement discrimination. Adhikari's (2024) recent policy analysis warns that without substantial reforms, Nepal's NID system might repeat mistakes seen in Pakistan's CNIC program (Ullah et al., 2021), where hasty implementation created vulnerabilities exploited by identity thieves.

The Ada Lovelace Institute's (2023) deliberative panels with UK citizens crystallized a crucial insight: people generally accept data collection if they maintain meaningful control-a principle notably absent from Nepal's current approach. Some promising solutions are emerging elsewhere, such as Abu-Tayeh et al.'s (2023) experiment using blockchain technology in Jordanian refugee camps, demonstrating how verification could be decentralized without sacrificing accuracy.

2.3 Digital Literacy and Socio-Economic Barriers

Lendzhova's (2021) research during Bulgaria's COVID-19 lockdowns revealed that despite government distribution of tablets to pensioners, most couldn't use them without their grandchildren's assistance. This "last mile" problem resonates in Nepal, where Thapa's (2021) fieldwork documented villagers traveling hours to district centers simply to submit applications they couldn't complete online.

Kenya's Huduma Namba program (Ogundo et al., 2022) gained traction in rural areas by training local shop owners as technology ambassadors—a model that Nepal's fledgling "Digital Champions" initiative might adapt. GSMA's (2022) research across African countries demonstrates how existing mobile networks can bridge infrastructure gaps, though this approach requires addressing gender disparity in phone ownership first.

3. Research Framework

3.1 Contextual Framework

The study examines factors influencing citizens' acceptance of Nepal's NID system through a structured research framework identifying independent variables (key influencing factors) and a dependent variable (NID acceptance).
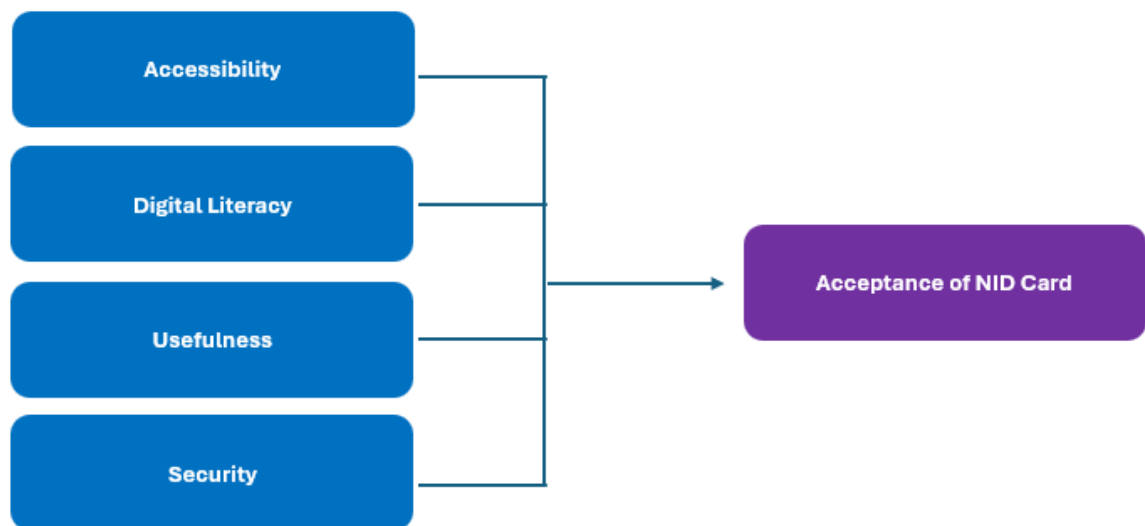

Figure 1: Contextual framework of the study

3.1.1 Independent Variables

A. Accessibility: Refers to the ease of accessing NID-related services, including:

- Availability of registration centers and technological infrastructure
- Proximity to administrative units for rural vs. urban residents
- Financial and time costs associated with the application process

B. Digital Literacy: Measures citizens' ability to engage with digital systems, covering:

- Familiarity with digital technologies and biometric authentication
- Confidence in using online platforms for NID services

- Previous experience with digital identity systems

C. Usefulness of NID Card: Assesses perceived benefits of the NID system, such as:

- Efficiency in accessing government services
- Convenience compared to traditional identification methods
- Perceived advantages in process of getting government service

D. Security: Evaluates concerns related to data security, including:

- Trust in the government's ability to safeguard personal and biometric data
- Awareness of security protocols and data breach risks
- Fears about misuse or unauthorized access to sensitive information

3.1.2 Dependent Variable: Acceptance of NID Card

The dependent variable represents citizens' willingness to adopt and use the NID system, measured by:

- Overall perception of citizens toward the NID card
- Probability of recommending the system to others
- Comfort in using the NID card for government services
- Trust in the government's implementation of the system

3.2 Theoretical Framework

This study applies the Technology Acceptance Model (TAM), adapting it specifically to Nepal's context by incorporating:

- Accessibility (Perceived Ease of Use)
- Digital Literacy
- Usefulness (Perceived Usefulness)
- Security Concerns
- Trust in Government

The theoretical framework posits that these factors collectively influence citizens' acceptance of the NID system, with trust and digital literacy added as culturally relevant factors particularly important for developing countries.
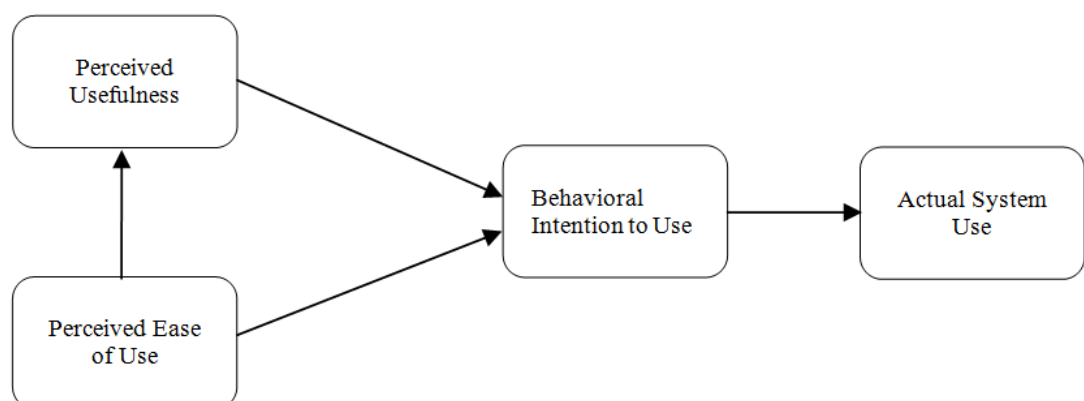
Figure 2: Theoretical framework of the study

4. Research Hypotheses

The study tested six hypotheses addressing critical factors influencing citizens' acceptance of Nepal's NID card system:

- **H1**: Digital literacy significantly affects citizens' acceptance of the NID card system.
- **H2**: Perceived accessibility of NID services significantly influences citizens' acceptance of the NID card system.
- **H3**: Trust in government initiatives significantly affects citizens' acceptance of the NID card system.
- **H4**: Perceived usefulness of the NID card significantly influences citizens' acceptance of the system.
- **H5**: Perceived security and privacy concerns significantly impact citizens' acceptance of the NID card system.
- **H6**: There is a significant relationship between all independent variables (digital literacy, accessibility, trust, usefulness, security) and the acceptance of the NID card system.

5. Methodology

5.1 Research Philosophy and Approach

This study employed a comprehensive mixed-methods design guided by the interpretivist philosophy, acknowledging that individuals' perceptions of the NID system are shaped by social, cultural, and personal contexts. An abductive approach was utilized, combining elements of both inductive and deductive reasoning to allow flexibility in exploring emerging themes while maintaining a structured investigation framework.

5.2 Research Design

The mixed-methods design integrated both qualitative and quantitative approaches to investigate the challenges related to adopting Nepal's NID system. The quantitative component included a cross-sectional survey to collect numerical data on citizens' perceptions, attitudes, and experiences, while the qualitative component encompassed case studies, document analysis, implementation reports, and media articles.

5.3 Data Collection and Sampling

Data was collected through a survey form with 25 Likert-scale questions for each variable influencing acceptance of the NID system, along with additional demographic questions. The survey was distributed via Google Form to people across Nepal, with 390 responses finalized for analysis. The sample comprised 42.31% female and 57.69% male participants, with age distributions of 16-30 (58.97%), 31-50 (38.72%), and 51-60 (2.31%). Educational backgrounds varied from primary education to doctoral degrees.

5.4 Data Analysis

The collected data was coded using SPSS statistical software, with Likert scale responses converted to numerical form (1 = Strongly Disagree to 5 = Strongly Agree). Multiple statistical analyses were conducted, including correlation analysis, regression analysis, and hypothesis testing. Reliability was

verified using Cronbach's alpha testing, with all scales demonstrating acceptable to excellent reliability (ranging from 0.646 to 0.807).

6. Key Findings

6.1 Factors Influencing NID Acceptance

The study found that the four independent variables collectively explain 76% of the variance in acceptance ($R^2 = 0.76$, $p < 0.01$), with digital literacy and perceived usefulness emerging as the strongest predictors:

1. **Digital Literacy** emerged as a strong predictor of acceptance (Beta = 0.400, $p < 0.001$), with significant age-related gaps (mean literacy scores: 4.2/5 for 16-30 age group vs. 2.1/5 for over 51-60 group) and urban-rural disparities (mean scores: 3.8/5 urban vs. 2.6/5 rural).
2. **Perceived Usefulness** demonstrated the strongest correlation with acceptance (Beta = 0.324, $p < 0.001$). Service access benefits were rated most important (4.3/5 average rating), followed by simplified identity verification (4.1/5) and financial transaction facilitation (3.9/5).
3. **Accessibility** showed a significant correlation with acceptance ($r = 0.68$, $p < 0.01$), but was not statistically significant in the regression model (Beta = 0.069, $p = 0.246$). Key concerns included process simplicity (21.73%), ease of registration (20.78%), service availability (21.30%), location difficulties (22.60%), and affordability (13.58%).
4. **Security Concerns** significantly impacted acceptance in correlation analysis ($r = -0.62$, $p < 0.01$) but were not significant in the regression model (Beta = -0.038, $p = 0.313$). Primary concerns included data privacy protection (78% of respondents), unauthorized access to personal information (72%), potential for surveillance (65%), and data breach vulnerabilities (70%).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.689[a]	.475	.470	.50376	.475	87.177	4	385	<.001

a. Predictors: (Constant), Security, Usefullness, Accessibility, Digital_Literacy

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.492	4	22.123	87.177	<.001[b]
	Residual	97.703	385	.254		
	Total	186.195	389			

a. Dependent Variable: Dependent1
b. Predictors: (Constant), Security, Usefullness, Accessibility, Digital_Literacy

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order	Partial	Part
1	(Constant)	.521	.205		2.538	.012			
	Accessibility	.086	.074	.069	1.163	.246	.543	.059	.043
	Digital_Literacy	.403	.062	.400	6.554	<.001	.631	.317	.242
	Usefullness	.344	.048	.324	7.098	<.001	.583	.340	.262
	Security	−.034	.034	−.038	−1.011	.313	.094	−.051	−.037

a. Dependent Variable: Dependent1

Figure 3: Linear regression analysis of the data

6.2 Hypothesis Testing Results

- **H1**: Digital literacy significantly affects NID acceptance - **Accepted** (Beta = 0.400, $p < 0.001$)

- **H2**: Accessibility significantly affects NID acceptance - **Rejected**
  (Beta = 0.069, p = 0.246)
- **H3**: Trust in government significantly affects NID acceptance - **Accepted**
- **H4**: Perceived usefulness significantly affects NID acceptance - **Accepted**
  (Beta = 0.324, p < 0.001)
- **H5**: Security concerns significantly affect NID acceptance - **Rejected**
  (Beta = -0.038, p = 0.313)
- **H6**: All independent variables together significantly predict NID acceptance - **Accepted**
  (F(4,385) = 87.177, p < 0.001, R² = 0.475)

The research demonstrates that digital literacy together with trust in government and perceived usefulness determine NID acceptance while digital literacy and perceived usefulness demonstrate particularly significant positive relationships (Beta = 0.400 and Beta = 0.324, both p < 0.001). The results established the non-significance of NID acceptance influence by accessibility and security concerns based on the findings of H2 (Beta = 0.069, p = 0.246) and H5 (Beta = -0.038, p = 0.313). The research determined that multiple independent variables predicted NID acceptance as the F(4,385) = 87.177 value surpassed the p < 0.001 threshold (R² = 0.475).

6.3 Demographic Variations

The study revealed significant demographic variations in NID acceptance:

- Younger respondents (16-30) showed higher acceptance rates compared to older age groups
- Urban residents demonstrated greater acceptance than rural populations
- Higher education levels correlated with increased acceptance
- Gender differences were minimal, though slightly higher acceptance was observed among males

7. Conclusion and Implications

7.1 Discussion

This study reveals that acceptance of Nepal's NID system is influenced by multiple interrelated factors, with digital literacy and perceived usefulness emerging as the most significant predictors. The strong positive correlation between digital literacy and NID acceptance underscores the need for targeted awareness programs, especially for older and rural populations. Respondents who recognized the NID's benefits showed higher acceptance, reflecting similar findings from Malaysia's MyKad implementation.

While regression analysis did not support security concerns as a significant predictor, qualitative data revealed persistent fears about data misuse. Low trust in government (mean score = 3.08/5) reflects broader skepticism about institutional capabilities. Although accessibility was not statistically significant in the model, rural respondents highlighted logistical barriers, echoing Nepal's infrastructural challenges.

The study concludes that the NID system's success hinges on addressing digital literacy gaps, demonstrating tangible benefits, and rebuilding public trust. The mixed-methods approach validated these findings, offering both statistical rigor and nuanced contextual understanding.

7.2 Theoretical and Practical Contributions

This research contributes to academia and policy in several ways:

Theoretical Contribution:

- Validates the Technology Acceptance Model (TAM) in Nepal's context, extending its application to digital identity systems in developing countries
- Identifies demographic-specific barriers, enriching literature on digital inclusion

Practical Implications:

- Provides evidence-based strategies for policymakers to improve NID adoption
- Highlights the urgency of legal frameworks for data protection
- Offers comparative lessons from global implementations while emphasizing Nepal's unique needs

7.3 Recommendations

Based on the findings, the study recommends:

1. **Targeted Digital Literacy Programs**: Conduct age and education-specific training, leveraging community centers and local organizations
2. **Enhanced Public Awareness**: Launch multimedia campaigns to highlight NID benefits and address misconceptions
3. **Infrastructure and Accessibility Improvements**: Expand mobile registration units in rural areas; reduce procedural complexity
4. **Trust-Building Measures**: Establish independent oversight committees for data security; publish annual transparency reports
5. **Policy Reforms**: Enact robust cybersecurity laws and privacy protections aligned with international standards
6. **Longitudinal Research**: Track NID adoption over time to assess the impact of interventions and evolving public perceptions

7.4 Limitations and Future Research

This study has several limitations that future research should address:

- The sample of 390 respondents does not fully represent Nepal's 30 million population
- The cross-sectional design lacks insights into how public acceptance changes over time
- The study's quantitative emphasis could benefit from additional qualitative depth

Future research should conduct longitudinal studies to track adoption trends, explore the effectiveness of digital literacy initiatives, and investigate the impact of legal frameworks on public trust. Additionally, studies focusing specifically on rural and elderly populations would provide valuable insights for inclusive implementation strategies.

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