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## **Transforming Nepal's political system: party positions and public opinion (2004-2012)**

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### **Citation**

Sen, P. K. (2025, April 24). *Transforming Nepal's political system: party positions and public opinion (2004-2012)*. Retrieved from <https://hdl.handle.net/1887/4212957>

Version: Publisher's Version

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**Note:** To cite this publication please use the final published version (if applicable).

## Public Opinion on the Four Reforms: Underlying Relationships

### 9.1 Underlying Relationships between Opinions on the Four Reforms

Each of the four preceding chapters focused on public opinion with regard to one of the four reforms of Nepal's political system: from monarchy to republic, from a Hindu state to a secular state, from a mono-lingual to a multi-lingual state, and from a unitary state to a federal state. The analyses showed some significant differences between public opinion on these four questions, for example when it comes to the evolution of public opinion over time: a more or less linear increase in support for republicanism, hardly any change in the support for a Hindu state over a secular state, a curvilinear pattern of growing support for multilingualism followed by a decline, and a growing awareness of the issue of federalism. The pattern of support across various groups in society also differed from one reform to another.

The four reforms together are combined in a single new constitution, but the question arises to what extent that transformation also elicited a single pattern of public opinion, or whether the patterns of public opinion for each of the reforms are so different that they cannot be combined. In this chapter, the underlying or latent relationships between the opinions on the four reforms are analysed through principal components analysis (PCA), which is an appropriate technique for such a purpose (O'Muircheartaigh and Francis 1981: 107; Field 2009: 628). PCA reduces the number of variables to a smaller number of underlying factors, or dimensions (Leeuw 2006: 108). If most respondents who favour republicanism also prefer the other three reforms, we deal with only one underlying factor structuring public opinion. However, if respondents who support one reform are not more likely to also support any other reform, we cannot reduce our four variables to a smaller number of factors. In between these extremes are situations in which the opinions on the four reforms cluster into more than one factor, for example if support for federalism and multilingualism tend to go together, but not with a preference for republicanism and for multilingualism.

For each of the individual reforms, I could analyse public opinion at several points in time in the preceding chapters - from five surveys on the question of multilingualism to nine surveys on the question of republicanism - but unfortunately these points in time hardly coincide. Two surveys (one conducted in September 2006 and another in January 2008) are the only ones in which

questions related to *all* reforms (republicanism, secularism, multilingualism and federalism) were put to respondents in the same survey. Therefore, the underlying relationships are analysed using data from these two surveys.

In Chapters 5, 6 and 7, it became clear that most respondents were able to indicate whether they favoured reform or the status quo. The proportions who could not do so ranged from 6 percent on multilingualism and 10 percent on secularism to 13 percent on republicanism in January 2008 and 20 percent in September 2006. However, the most striking finding in Chapter 8 was the high proportion who did not give an opinion (i.e., had not heard about the issue, did not understand it, or did not know what to think of it) on the question of federalism, especially in the early years: 75 percent in September 2006 and 66 percent in January 2008. This considerably lowers the number of respondents who presented an opinion on all four reforms. There is no ready solution to this problem, and below I offer three different ways to deal with it.

## 9.2 Models

### 9.2.1 Model-1: Excluding Respondents without an Opinion on One or More of the Reforms

A first option is to exclude respondents without an opinion and simply accept the consequence of a very low N. Responses showing agreement with the old structure of the Nepali state (monarchy, Hindu state, Nepali-only and a unitary state) were coded '1', while those that showed agreement with the new structure (republicanism, secularism, multilingualism and federalism) were coded 2. The 'Other' responses such as 'Not understood', 'Not heard' and 'Do not know/cannot say' were treated as missing values and excluded from the analyses. As said, the result is a substantial decrease in the number of respondents in the analysis, but this is a deliberate choice in applying this first option.

I used principal component analysis with rotation (varimax). For the September 2006 survey data, the Kaiser-Meyer-Olkin measure suggests the sampling adequacy for the analysis (KMO = 0.6, which is mediocre (Field 2009: 647). Bartlett's test of sphericity  $\chi^2(6) = 36.2, p < .001$ , indicates that the correlations between the variables are sufficiently large for a principal component analysis. The analysis shows that only one underlying factor (component) structures public opinion on the four reform questions: only one factor has an eigenvalue higher than 1 with roughly similar values of factor loadings. This factor explains 39.9 percent of the variance (see Table 9.1). Note that this analysis is based on only 176 respondents who indicated a preference for each of the four issues.

This finding of a single factor underlying public opinion on these issues is supported or at least not contradicted if we look at the different combinations of preferences for the reforms among the 176 respondents (see Table 9.2). For example, over 30 percent either supported all four reforms or none of them. Another 30 percent supported three of the four reforms. Only small percentages supported only one or two of the reforms, with an exception for the combination of republicanism and federalism (10.8%).

Table 9.1: Summary of Exploratory Factor Analysis of Opinions on the Four Reforms, Model 1  
September 2006

Variable	Factor Loadings (Component 1)
Opinion on 'Hindu State vs. Secular State'	0.72
Opinion on 'Mono-lingualism vs. Multilingualism'	0.63
Opinion on 'Unitary State vs. Federal State'	0.59
Opinion on 'Monarchism vs. Republicanism'	0.57
Eigenvalue (>1)	1.6
% of Variance Explained	39.9
N	176

Table 9.2: Support for the Four Reforms: 16 Possible Combinations, September 2006

Combinations	Percent
Support for all four reforms	25.0
Support for Republicanism, Secularism, and Federalism only	16.5
Support for Republicanism, Secularism, and Multilingualism only	2.8
Support for Republicanism, Federalism, and Multilingualism only	5.7
Support for Secularism, Federalism, and Multilingualism only	5.1
Support for Republicanism and Secularism only	2.8
Support for Republicanism and Multilingualism only	1.7
Support for Federalism and Multilingualism only	4.0
Support for Secularism and Federalism only	4.5
Support for Secularism and Multilingualism only	0.0
Support for Republicanism and Federalism only	10.8
Support for Multilingualism only	1.1
Support for Federalism only	7.4
Support for Secularism only	2.3
Support for Republicanism only	5.1
Support for none of the four reforms	5.1
Total	100.0
N	176

A similar factor analysis was conducted for the January 2008 survey data, now with a higher, but still modest, N of 598. The Kaiser-Meyer-Olkin measure suggests that the sample size is adequate for the analysis (KMO = 0.5, which is mediocre [Field 2009: 647]). Bartlett's test of sphericity  $\chi^2(6) = 69.7, p < .001$ , indicates that correlations between the variables are sufficiently large for a principal component analysis. In this case, the analysis shows that there are two factors underlying public opinion with regard to the four reforms; both have eigenvalues above 1. One factor seems to underlie opinions on republicanism and secularism, the other opinions on multilingualism and federalism. The two factors together explain 61.7 percent of the variance in the opinions on the four reforms (see Table 9.3). It is worthwhile to mention here that this two

factors solution has much more explanatory power than the previous one factor solution (presented in Table 9.1) as that explains only 39.9 percent of the variance.

Table 9.3: Summary of Exploratory Factor Analysis of Opinions on the Four Reforms (Model 1), January 2008

Variable	Factor Loadings (Component 1)	Factor Loadings (Component 2)
Opinion on 'Monarchism vs. Republicanism'	0.79	
Opinion on 'Hindu State vs. Secular State'	0.77	
Opinion on 'Mono-lingualism vs. Multilingualism'		0.77
Opinion on 'Unitary State vs. Federal State'		0.73
Eigenvalue (>1)	1.25	1.22
% of Variance Explained	61.67	
N	598	

In other words, people who supported republicanism tended to also support secularism (and vice versa), but not necessarily also multilingualism and federalism. And people who supported federalism tended to also prefer multilingualism, but not necessarily republicanism and secularism.

Table 9.4: Support for the Four Reforms: 16 Possible Combinations, January 2008

Combinations	Percent
Support for all four reforms	20.6
Support for Republicanism, Secularism, and Federalism only	13.0
Support for Republicanism, Secularism, and Multilingualism only	4.8
Support for Republicanism, Federalism, and Multilingualism only	12.4
Support for Secularism, Federalism, and Multilingualism only	6.4
Support for Republicanism and Secularism only	2.8
Support for Republicanism and Multilingualism only	2.3
Support for Federalism and Multilingualism only	12.0
Support for Secularism and Federalism only	1.8
Support for Secularism and Multilingualism only	1.3
Support for Republicanism and Federalism only	7.5
Support for Multilingualism only	1.7
Support for Federalism only	3.9
Support for Secularism only	.8
Support for Republicanism only	5.8
Support for none of the four reforms	2.8
Total	100.0
N	598

Although it is easy to understand why opinions on federalism and multilingualism tend to go together (both reforms seek to address the cultural diversity of Nepali society), it is less clear why opinions on republicanism and secularism form one cluster, other than that the Nepali monarchy used the Hindu religion to legitimize its position.

The support pattern for various combinations of reforms does not always give the same picture as the factor analysis (see Table 9.4). True, the percentage supporting all four reforms, or opposing all four, is 23.4 - considerably lower than in September 2006. Also, 12 percent supported both federalism and multilingualism, but not republicanism and secularism, compared to only 4 percent in September 2006. But the combination of the first factor - republicanism and secularism, was supported by a mere 2.8 percent, exactly the same percentage as in September 2006.

### 9.2.2 Model-2: Including Responses without an Opinion as a Separate Category

In a second take, responses such as 'Not heard', 'Not understood' and 'Don't know' are not excluded, but kept as a separate answering category (coded '99') along with agreement with the features of the old political system ('1') and agreement with the reforms ('2'). This has the advantage of substantially increasing the number of observations (from 176 to 3000 in September 2006 and from 598 to 3010 in January 2008).

Standard PCA (as conducted for Model-1 above) assumes linear relationships between numeric variables. Categorical principal components analysis (CATPCA) or nonlinear PCA allows variables to be scaled at different levels, and relationships between variables can be modelled. This technique can be used if we do not have actual numerical data but each variable merely ranks the objects (Leeuw 2006: 111). CATPCA offers many advantages over standard PCA because it incorporates mixed measurement levels of data with ordinal, nominal and numerical variables (Leeuw 2006: 132). Since the variables in Model-2 are categorical variables, CATPCA has been applied.

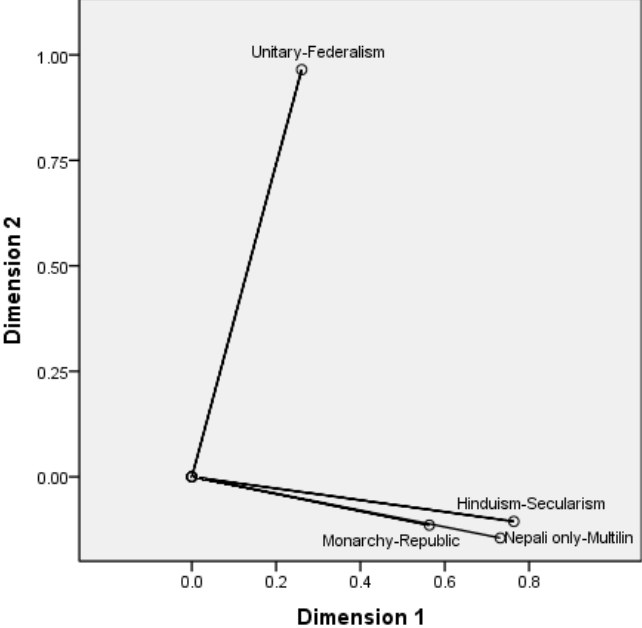
In the September 2006 survey data, about 62 percent of the total variance is explained by the two-dimensional model: 38 percent by the first dimension and 24 percent by the second. So, almost two-thirds of the variability on the individual objects level is explained by the model, which is quite good (see Table 9.5).

Table 9.5: Summary of CATPCA on Opinions on the Four Reforms (Model 2), Sep 2006

Variable	Component Loading (Dimension 1)	Component Loading (Dimension 2)
Opinion on 'Hindu state vs. Secular state'	0.764	-0.106
Opinion on 'Nepali only vs. Multilingualism'	0.732	-0.145
Opinion on 'Monarchism vs. Republicanism'	0.564	-0.115
Opinion on 'Unitary state vs. Federal state'	0.261	0.965
Eigenvalue	1.504	0.976
% of Variance Explained	37.606	24.412
N	3000	

All four variables have a positive component loading on the first dimension, which means that there is a common factor that correlates positively with all of the variables. The second dimension separates the variables. The variables 'Hindu state vs. Secular state', 'Nepali only vs. Multilingualism' and 'Monarchism vs. Republicanism' are located at the bottom of the plot forming a cluster having small negative loadings on the second dimension while the variable 'Unitary state vs. Federal state' is located at the top of the plot and far from the other three variables with large positive loading on the second dimension. The vectors of the cluster of the former three variables are perpendicular to the vectors of the latter variable, which means that the set of the former variables is uncorrelated with the later variable. In other words, public opinion on 'Hindu state vs. Secular state', 'Nepali only vs. Multilingualism' and 'Monarchism vs. Republicanism' is strongly related, meaning that if someone supports a secular state, there is a high likelihood that this person supports multilingualism and republicanism as well. However, public opinion on 'Unitary state vs. Federal state' has no direct connection to public opinion on the other three reforms (see Figure 9.1).

Figure 9.1: Plot of Component Loadings, Sep 2006



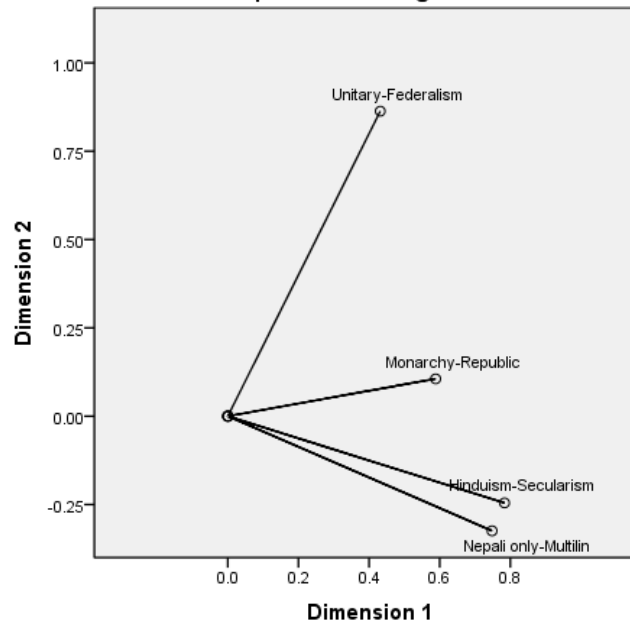
A similar CATPCA was performed on the January 2008 survey data. About 66 percent of the total variance is explained by the two-dimensional model: 43 percent by the first dimension and 23 percent by the second. So, two-thirds of the variability on the individual objects level is explained by the model (see Table 9.6).

Table 9.6: Summary of CATPCA on Opinions on the Four Reforms (Model 2), Jan 2008

Variable	Component Loading (Dimension 1)	Component Loading (Dimension 2)
Opinion on 'Hindu state vs. Secular state'	0.783	-0.245
Opinion on 'Nepali only vs. Multilingualism'	0.748	-0.324
Opinion on 'Monarchism vs. Republicanism'	0.588	0.106
Opinion on 'Unitary state vs. Federal state'	0.432	0.863
Eigenvalue	1.706	0.922
% of Variance Explained	42.660	23.046
N	3010	

All four variables have a positive component loading on the first dimension, which means that there is a common factor that correlates positively with all of the variables. The second dimension separates the variables, but in a different way than in the 2006 survey. The variables 'Hindu state vs. Secular state' and 'Nepali only vs. Multilingualism' are located at the bottom of the plot forming a cluster having small negative loadings on the second dimension. The variable 'Monarchism vs. Republicanism' is located at the middle of the plot with small positive loading in the second dimension. The variable 'Unitary state vs. Federal state' is located at the top of the plot and far from other three variables with large positive loading in the second dimension. The vectors of the cluster of the variables Monarchy-Republic and Hinduism-Secularism are perpendicular to the vector of the variable Unitary-Federalism, which means that the set of the former variables is uncorrelated with the latter variable. In other words, public opinion on 'Hindu state vs. Secular state' and 'Nepali only vs. Multilingualism' is strongly related meaning that if a person supports a secular state, there is a high likelihood that this person also supports multilingualism. However, public opinion on 'Unitary state vs. Federal state' has no direct connection with public opinion on the former two reforms. Public opinion on 'Monarchy vs. Republic' is relatively closer to the former two reforms than on 'Unitary state vs. Federal state' (see Figure 9.2).

Figure 9.2: Plot of Component Loadings, Jan 2008



### 9.2.3 Model-3: Treating Responses without an Opinion as Support for the Status Quo

In a third and final model of the factor analysis of the same survey data, responses such as ‘Heard but not understood’, ‘Not heard’ and ‘Do not know/ Cannot say’ were treated as support for the old political system and combined with those who explicitly supported the status quo ante. The reasoning is, in a nutshell, that people who did not give definitive substantive responses did not explicitly support the reforms. So, both opinions that show agreement with the old structures of the Nepali state (i.e. explicitly opposed the reforms) and ‘item non-response’ were coded ‘1’, while only answers that explicitly agree with a reform were coded ‘2’. The advantage is that a dichotomous variable fits better with factor analysis’ assumption of interval data. The disadvantage is that combining responses without an opinion with support for the political system as it was before the transformation is to some extent arbitrary, and is heavily based on the assumption that no opinion means no support for the reform.

The type of factor analysis remains unchanged: principal component analysis with varimax rotation. For the September 2006 survey data, the Kaiser-Meyer-Olkin measure seems to verify that sample size is adequate for the analysis (KMO = 0.58, which is mediocre [Field 2009: 647]). Bartlett’s test of sphericity  $\chi^2 (6) = 360.67$ ,  $p < .001$ , indicates that correlations between the variables are sufficiently large for a principal component analysis. As shown in Table 9, the analysis identified opinions on republicanism, secularism, federalism and multilingualism as one underlying factor (i.e. one cluster of the variables); only one component had an eigenvalue of more than 1, which explained 35.4 percent of the variance. Table 9.3 shows the factor loadings of the variables, eigenvalues and the percentage of variance explained by that factor. Here too, some hesitation results from the factor loading of one variable being considerably lower; this time it is not the opinion on federalism, but the opinion on multilingualism that is rather low.

Table 9.7: Summary of Exploratory Factor Analysis of Opinions on the Four Reforms (Model 3), September 2006

Variable	Factor Loadings (Component 1)
Opinion on 'Hindu State vs. Secular State'	0.72
Opinion on 'Mono-lingualism vs. Multilingualism'	0.35
Opinion on 'Monarchism vs. Republicanism'	0.68
Opinion on 'Unitary State vs. Federal State'	0.56
Eigenvalue	1.41
% of Variance	35.35
N	3000

The same analysis was performed on the January 2008 survey data. The Kaiser-Meyer-Olkin measure 'verifies' that the sample size is adequate for the analysis (KMO = 0.59, which is mediocre [Field 2009: 647]). Bartlett's test of sphericity  $\chi^2(6) = 463.6, p < .001$ , indicates that correlations between the variables are sufficiently large for a principal component analysis. As for the data from September 2006, the factor analysis shows that the opinions on all issues are related to one underlying, latent factor (i.e. one cluster of the variables); only one component has an eigenvalue of more than 1 (see Table 9.8). This component explains 36.9 percent of the variance. Again, the factor loading of the opinion on multilingualism is much lower.

Table 9.8: Summary of Exploratory Factor Analysis of Opinions on the Four Reforms (Model 3), January 2008

Variable	Factor Loadings (Component 1)
Opinion on 'Hindu State vs. Secular State'	0.65
Opinion on 'Mono-lingualism vs. Multilingualism'	0.30
Opinion on 'Monarchism vs. Republicanism'	0.66
Opinion on 'Unitary State vs. Federal State'	0.73
Eigenvalue	1.47
% of Variance	36.86
N	3010

### 9.3 Discussion

This chapter presented PCA and CATPCA on public opinions with respect to the four reforms. The aim was to determine or at least explore to what extent opinions on the four reforms are clustered, and if so, in how many and in which clusters. This analytical ambition is seriously hampered by the fact that one variable in particular (i.e., opinions on federalism) is affected by a very high proportion of respondents who were unable to make a substantive choice between a unitary state and a federal state. This considerably reduces the number of observations, in particular for the September 2006 survey. In an attempt to deal with this problem, three models were used for the factor analysis: one excluding responses without such a substantive opinion, one including such responses as a third answering category, and one combining such responses with support for the status quo ante. Each of these models was applied to both the September

2006 and the January 2008 survey data, i.e., the two surveys that included all relevant variables on state reform.

Only a single factor underlies public opinion on the four separate reforms when Model-1 was applied to the September 2006 data. When Model-1 was applied to the January 2008 data, the PCA shows two factors that crossed the eigenvalue threshold of 1: opinions on republicanism and secularism loaded on one factor, and opinions on federalism and multilingualism on the other factor. In Model-2, CATPCA show two clusters in the September 2006 data: one with 'Unitary vs. Federalism' and another with 'Hindu state vs. Secular state', 'Nepali only vs. Multilingual' and 'Monarchy vs. Republic'. In the January 2008 data, Model-2 shows three clusters: one with 'Unitary vs. Federalism', one with 'Monarchy vs. Republic' and another with 'Hindu state vs. Secular state' and 'Nepali only vs. Multilingual'. Only a single cluster underlies the opinions on the four separate reforms in Model-3 for both the September 2006 and the January 2008 data.

In models that included responses without an opinion (i.e. Model-2 and Model-3), at least one variable showed much lower factor loadings (federalism in Model-2 and multilingualism in Model-3). All in all, however, the conclusion seems rather robust that opinions on all four reforms form one cluster: someone who prefers one state reform is also likely to support the other reforms, and someone who opposes one reform is likely to also oppose the other reforms. Note the word 'likely': the preceding chapters showed variation among the four reforms with regard to development over time and support patterns. Overall, however, this chapter shows that despite such variation, the four reforms have much in common.