Managing Ethnically Diverse Bureaucrats: Evidence from the Nigerian Civil Service*

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Abstract

We document the correlations between public service delivery, management practices, and the ethnic diversity of bureaucrats. We do so in the context of Nigeria, where ethnicity is a salient form of identity. We thus expand the empirical management literature highlighting beneficial effects of workplace diversity, that has focused on private sector firms operating in high income settings. Our analysis combines three data sources: (i) independent engineering assessments of completion rates for 4700 public sector projects; (ii) a survey eliciting management practices in the 63 civil service organizations responsible for these projects, following the approach of Bloom and Van Reenen [2007]; (iii) a survey to bureaucrats eliciting their ethnic identities. Management practices and ethnic diversity in organizations significantly impact public service delivery: a one standard deviation increase in good management for bureaucrats corresponds to 21% higher completion rates; a one standard deviation increase in the ethnic diversity of bureaucrats corresponds to 14% higher completion rates. The two organizational characteristics are found to be substitutes for one another. In line with the management literature, this evidence highlights a potentially positive side of ethnic diversity *in public sector organizations*, in the context of Sub Saharan Africa.

Keywords: ethnic diversity, management, public service delivery.

JEL Classification: D73, J45, M12.

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1 Introduction

The effective functioning of government bureaucracy matters. As the literature on state capacity has emphasized, it is an important determinant of poverty, inequality, and economic growth [Besley and Persson 2010]. In earlier work, Rasul and Rogger [2014] (henceforth RR), we documented how the management practices bureaucrats operate under correlate to public service delivery, using public project-level data from organizations in the Nigerian Federal Civil Service. This paper extends our analysis to exploit a key feature of Nigerian society: that is it highly ethnically fractionalized. We thus explore the interplay between public service delivery, management practices and the ethnic diversity of civil service bureaucracies.[1]

An established management literature documents the potentially beneficial impacts of *workplace* diversity on organizational performance. Theoretically, diversity can positively impact organizations if it matches workers with a variety of abilities, experiences, enhances creativity or problem solving capacities. Lazear [1999], Hung and Page [2001] and Prat [2002], among others, develop models along these lines to make precise when workplace diversity beneficially impacts organizational performance. Shore *et al.* [2009] overview the empirical evidence, much of which originates from private sector firms, operating in high income settings, and considers diversity along age-race-gender lines. We provide novel evidence extending the empirical literature along all three margins: in the context of Nigeria, we document the relationship between public service delivery and: (i) good management practices; (ii) the ethnic diversity of civil service organizations; (iii) the interaction of these organizational characteristics, thus shedding light on whether good management and organizational diversity are substitutes or complements.[2]

The impact of bureaucratic diversity on public service delivery in this context is not obvious. While the management literature suggests it might have positive impacts if it helps bureaucrats solve problems etc., an established macroeconomic literature documents a negative correlation between *societal* diversity and economy-wide outcomes. Beginning with Easterly and Levine [1997], a body of cross-jurisdiction evidence has suggested that more ethnically diverse societies have lower growth, choose worse policies and are more likely to experience conflict [Alesina and La Ferrara 2005]. As such, ethnic fragmentation has been argued to be an important factor explaining Africa's growth tragedy, given it is the world's most ethnolinguistically diverse continent.

Our preliminary analysis begins to shed light on whether the positive channels through which diversity operates, as stressed in the management literature (e.g. increased skill complementary

[1] Eifert *et al.* [2010] use the Afrobarometer data to highlight that most individuals in sampled countries identify more with their ethnic group than their nation. They find the strength of ethnic identification in Nigeria to be among the highest in the sample, and document that a higher fraction of Nigerian's base their identity on ethnicity rather than their occupation/class, religion or gender.

[2] In Kenyan private sector settings, Hjort [2014] and Macchiavello and Morjaria [2014] show ethnic divisions impact productivity due to worker discrimination, and these divisions increase when ethnic conflict is more salient. In line with Eifert *et al.* [2010], this suggests ethnic identification is not hard wired but instrumental and hence can be manipulated to be more or less salient.

of workers in the production of private goods), dominate the negative channels through which diversity might operate, as stressed in the macro literature (e.g. divisions in preferences over public goods, free-riding on other groups' contributions, ineffective social sanctions etc.). If the positive effects of diversity are found to dominate, we are then able to begin to address issues of whether ethnic diversity acts as an effective substitute for good management practices. If the negative effects of diversity dominate, we ask whether good management mitigates such tensions.[3]

2 Data

To study the link between public service delivery and management practices, RR merged data on the outputs of government bureaucracies with details of how bureaucrats are managed. Both data sources are described in RR and here we just recap the core details.

On outputs, we use project level data for 4700 public sector projects implemented by 63 organizations in the Nigerian civil service, including government ministries and other federal agencies. We exploit data coded from the OPEN initiative in Nigeria, that traced, by project, the use and impact of 10% of *all* federal Government social sector expenditures approved in 2006/7. Monitoring teams visited project sites 18 months after projects were centrally approved and recorded whether the project had started, and its stage of completion. Our outcome variable is a *continuous* zero to one measure of project completion rates. Projects are of 11 types, including construction (boreholes, buildings etc.) and non-construction types (procurement, training etc.).

On management, we adapt the methodology of Bloom and Van Reenen [2007] (henceforth BVR) to measure management practices for bureaucrats in each civil service organization. We use the BVR evaluation tool that elicits management practices through a semi-structured interview covering multiple topics. To apply the BVR approach in the context of public bureaucracies we extend the practices elicited to cover those most relevant for managing bureaucrats. Our management survey thus covers nine topics: roles, flexibility, incentives, monitoring, culture, targeting, facilities, skills and staffing. We then produce an aggregate measure of management practice that collates information from all nine categories into a single z-score index.[4]

We measure the ethnic diversity of bureaucrats through a survey fielded to a representative sample of 4100 civil servants, corresponding to 13% of all bureaucrats in the 63 organizations we study. Civil servants were asked to name their ethnicity directly. Such self-reports have the

[3] Glennerster *et al.* [2013] find the ethnic diversity of villages does not impact public goods provision because of the presence of traditional tribal chiefs who enforce sanctions against non-contributors. We might view this as an example of top-down management practices mitigating the negative impacts of diversity.

[4] In RR we considered three dimensions of management practice: the autonomy/flexibility given to bureaucrats in their daily task management; the provision of incentives/monitoring of bureaucrats; all other practices compiled into a third index. For this paper we first define each of these sub-indices to be increasing in good management (so more autonomy, less use of incentives/monitoring, and more use of other practices) and take a simple average across all three dimensions before re-normalizing as a z-score. This ensures all three dimensions of management practice considered in RR receive equal weight in the management practice measure used here.

advantage of measuring the identity most salient to the individual. However, such direct elicitations do not necessarily conform to a common dictionary. To convert responses to comparable ethnolinguistic groupings, we proceed in two steps. First, we utilize Otite [1990]'s comprehensive assessment of Nigeria's ethnic groups. This outlines 374 unique ethnicities (often combining ethnic groups known by multiple names). In our data we are able to match bureaucrat responses to 128 ethnic groups from Otite [1990]'s list. Second, to determine how each ethnic group relates to others, we use the work of Blench [2012] to build an ethnolinguistic tree: Figure 1 represents the constructed family tree. Each individual's ethnicity can thus be defined at three tiers: 3 families (Niger-Congo, Afro-Asiatic, Nilo-Saharan), 17 sub-families and 51 sub-sub-families.

Table 1 describes how bureaucrats in the Nigerian civil service are distributed across families, sub-families, and sub-sub-families of ethnicities according to this ethnolinguistic tree. A substantial fraction of civil servants are from the Niger-Congo family of ethnicities, but are then split across 38 sub-families. Following the ethnic diversity literature, for each tier of ethnicity, we construct a standard measure of ethnolinguistic fractionalization in organization n, ELF_n, (one minus the Herfindahl index of ethnicities). This is interpreted as the probability that two randomly selected bureaucrats have different ethnicities, and so a higher ELF_n measure implies a more diverse organization. We do so for each organization using these three tiers, as well as based on Otite [1990]'s list. As shown at the foot of Table 1, the average fractionalization of organizations is .19 if we use the highest tier of family ethnic groupings, .38 using the sub-family definition, .60 using the sub-sub-family definition, and .65 using Otite [1990]'s most disaggregated list.

Two points are of note. First, these latter two indices are very close in magnitude to Posner [2004]'s ELF measure for Nigeria (.66) that is based only on 'politically relevant' ethnic groups. Second, the Nigerian bureaucracy appears far less diverse than the population, even using the most disaggregated ethnic groupings. For Nigeria as a whole, the ELF is typically measured to be over .80 [Easterly and Levine 1997, Alesina and La Ferrara 2005].

The management literature stresses any beneficial impacts of *workplace* diversity on organizational performance likely operate through enhanced skill complementarity of workers. To probe this idea a little in our data, we examine whether there are significant differences across bureaucrats of different ethnicities, in their self-reported *experiences* on-the-job, *beliefs* about the job, and own *motivation* to originally join the Nigerian civil service.

On experiences, as part of the survey administered to bureaucrats, individuals were asked, 'think about recent projects and/or programmes you worked on for this organization. In what proportion of the projects have you had to face the following difficult challenges?'. Responses were ordered as Never (1), $1-25\%$ (2), through to $75-100\%$ (5). We then use an OLS model to regress these responses on bureaucrat characteristics and a set of ethnicity dummies, as defined at the sub-sub-family level. We then test whether the ethnicity dummies are jointly significant, conditional on these other individual characteristics.[5] We just highlight those areas of experience

[5]Individual controls in this regression include whether the official is male, whether they are a manager, years of

that significantly differ across ethnicities. For example, bureaucratic reports significantly differ by ethnicity relating to whether officials have been under pressure to divert funds (the p-value on the joint F-test of ethnicity dummies is .01), or to change project specification (p-value .07); being under pressure to change supplier was of borderline significance (p-value .12).

Focusing next on bureaucrat beliefs, and again just highlighting a few areas where there are significant differences, we find that bureaucrats significantly differ by ethnicity on their belief that 'officials should work within a team to achieve duties' (p-value .01), or their belief that it is 'sometimes right to go around the strict rules of government' (p-value .05). Finally, we consider a proxy for civil servant's *intrinsic motivation*: we asked bureaucrats which factor had most influenced them to *originally* enter the civil service. As in RR, we define those that answered, 'the chance to serve Nigeria' as being intrinsically motivated. Around a third of officials state that they entered the civil service to serve Nigeria, and we find this original motivation to join the civil service to differ significantly across ethnicities (p-value .02).[6]

These dimensions provide some highly suggestive evidence on how ethnic diversity might be beneficial for bureaucratic organizations. It suggests project completion rates might be higher in more ethnically diverse organizations if such bureaucracies bring together civil servants with divergent experiences, beliefs and motivations.

3 Results

To investigate the impact of management and ethnic diversity on organizational performance, our empirical specification has as its unit of observation project i of type j in organization n. We estimate the following OLS specification, where y_{ijn} is the project completion rate, $Managment_n$ is our aggregate measure of management practices in organization n and ELF_n is the ethnolinguistic fractionalization in the organization,

$$y_{ijn} = \gamma_1 Management_n + \gamma_2 ELF_n + \gamma_3 \left(Management_n \times ELF_n\right) + \beta_1 PC_{ijn} + \beta_2 OC_n + \lambda_j + \epsilon_{ijn}. \tag{1}$$

PC_{ijn} and OC_n include project and organizational characteristics respectively.[7] As many organizations implement project type j, we control for project type fixed effects λ_j. To ease comparison, $Management_n$ and ELF_n are both measured in effect sizes and we use the ELF measure based on sub-sub-families of ethnicities. Standard errors are clustered by project type-organization.

schooling, years in the civil service, and years at the organization. In a few cases we imputed missing values based on other data sources.

[6] The options were: 'I was interested in the type of work', 'income prospects', 'the prestige associated with such a job', 'the stable career path that a job in the service affords', 'the chance to serve Nigeria', 'it was the only employment I could get', 'educational opportunities', 'other'.

[7] PC_{ijn} includes project complexity, log project budget and whether the project is a rehabilitation or not. OC_n includes the log number of staff, log total organization budget, log capital budget, the proportions of officials with a college and postgraduate degree, and, following BVR, 'noise' controls related to the management interview.

Table 2 presents our results. Column 1 shows that management practices in bureaucracies matter for public service delivery: a one standard deviation increase in good practices is associated with 19% higher project completion rates. To put this in context, the average completion rate is 46%, and 38% of projects have a zero completion rate. Column 2 shows that additionally controlling for ELF_n, measured at the sub-sub-family level, management continues to have a positive and significant correlation with project completion. Moreover, ELF_n is itself positively correlated with completion rates: a one standard deviation increase in organizational diversity is associated with 10% higher completion rates, all else equal. Hence in line with a body of evidence from the management literature that has been based on private sector organizations operating in high income economies, here we also find the ethnic diversity of public sector organizations is positively correlated with their performance.

Column 3 estimates (1) in full and additionally reveals there is a negative interaction between management and diversity: hence good management and organizational diversity appear to be *substitutes* for each other. Considering the range of ELF_n observed across civil service organizations, the magnitudes in Column 3 imply the marginal impact of management practices are always positive and, have the following range of effect sizes: (i) .42 in the least diverse civil service organization; (ii) .14 in the most diverse organization. Similarly, the magnitudes in Column 3 imply the marginal impact of diversity is also nearly always positive and the effect size of diversity covers the following range: (i) $-.03$ in the best managed civil service organization; (ii) .36 in the worst managed organization.[8] In short, management practices and ethnic diversity are likely to be substitutes: having more of one reduces the return on the other, but these returns remain positive to each organizational characteristic in nearly all bureaucratic organizations.[9]

4 Discussion

We contribute to the management literature documenting the impacts of workplace diversity on organizational performance. We do so in a public sector setting, considering organizations in the Federal Civil Service in Nigeria, a society in which ethnicity is the most salient dimension of diversity. Ethnic diversity in bureaucracies is found to be a force for good: more diverse organizations have significantly higher project completion rates. While the impacts of diversity are smaller than those of good management practices, we provide evidence consistent with the two organizational characteristics being substitutes.

[8] Examining the extensive margin, we also find comparable impacts of management, diversity and their interaction on whether a project starts (and thus has some strictly positive completion rate).

[9] This pattern of result is largely robust to alternative aggregations of the ELF_n measure (based on more aggregated family/sub-family divisions, or Otite [1990]'s more disaggregated ethnic grouping). In each case, the partial correlations of management practices and ethnolinguistic diversity with project completion rates remain positive and significant, and the interaction between the two is negative and significant at conventional levels when ELF_n is defined using the more disaggregated sub-family or Otite [1990] divisions. The results are also robust to using a generalized linear model to estimate (1).

We make two concluding remarks to highlight important areas for future work. First, in linking to the literature on ethnic fragmentation and macroeconomic outcomes, we note that body of work has emphasized that poor policy choices are a key channel through which ethnic fragmentation lowers economic growth [La Porta *et al.* 1999]. In this paper we have taken as *given* the set of projects the Nigerian bureaucracy is tasked to implement. Our focus has been, given this portfolio of projects, does the ethnic diversity of bureaucrats matter for the *implementation* of public projects, and do management practices affect this link? Clearly, future work should study the assignment of projects, and also whether the implementation of projects is impacted by the ethnic fractionalization among the communities being served by the project.[10]

Second, in contrast to diverse societies, in diverse organizations it might be much harder for certain groups to become segregated from others, and it becomes much easier for groups to be exposed to each other and thus potentially offset biases held against members of other groups. Both channels can be expected to improve performance, all else equal [Boisjoly *et al.* 2006, Alesina and Zhuravskaya 2011]. This suggests it is important to more closely study the processes by which bureaucrats are recruited into service, and the use of specific human resource strategies employed by bureaucracies in diverse societies, say related to assignments to teams and jobs, as well as job rotation, for the effective delivery of public services.[11]

References

[1] ALESINA.A AND E.LA FERRARA (2005) "Ethnic Diversity and Economic Performance," *Journal of Economic Literature* 43: 762-800.

[2] ALESINA.A AND E.ZHURAVSKAYA (2011) "Segregation and the Quality of Government in a Cross Section of Countries," *American Economic Review* 101: 1872-911.

[3] BESLEY.T AND T.PERSSON (2010) "State Capacity, Conflict and Development," *Econometrica* 78: 1-34.

[4] BLENCH.R (2012) *An Atlas of Nigerian Languages*, 3rd edition, Kay Williamson Educational Foundation: Cambridge, UK.

[5] BLOOM.N AND J.VAN REENEN (2007) "Measuring and Explaining Management Practices Across Firms and Countries," *Quarterly Journal of Economics* 122: 1351-408.

[10] Along such lines, Burgess *et al.* [2014] provide evidence of ethnic favoritism in infrastructure provision in Kenya, documenting how such favoritism is tempered during periods of democracy.

[11] Focusing on the executive branch of government, Francois *et al.* [2014] show that political cabinet appointments are typically made to be inclusive of many ethnicities: rarely are large ethnic minorities left out of government, and their size does matter in predicting the share of posts they control, even when they do not coincide with the leader's own ethnic group.

[6] BOISJOLY.J, G.J.DUNCAN, M.KREMER, D.M.LEVY AND J.ECCLES (2006) "Empathy or Antipathy? The Impact of Diversity," *American Economic Review* 96: 1890-905.

[7] BURGESS.R, R.JEDWAB, E.MIGUEL, A.MORJARIA AND G.PADRO I MIQUEL (2014) "The Value of Democracy: Evidence from Road Building in Kenya," *American Economic Review*, forthcoming.

[8] EASTERLY.W AND R.LEVINE (1997) "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics* 112: 1203-50.

[9] EIFERT.B, E.MIGUEL AND D.N.POSNER (2010) "Political Competition and Ethnic Identification in Africa," *American Journal of Political Science* 54: 494-510.

[10] FRANCOIS.P, I.RAINER AND F.TREBBI (2014) "How is Power Shared in Africa?," *Econometrica*, forthcoming.

[11] GLENNERSTER.R, E.MIGUEL AND A.D.ROTHENBERG (2013) "Collective Action in Diverse Sierra Leone Communities," *Economic Journal* 123: 285-316.

[12] HJORT.J (2014) "Ethnic Divisions and Production in Firms," *Quarterly Journal of Economics*, forthcoming.

[13] HUNG.L AND S.E.PAGE (2001) "Problem Solving by Heterogeneous Agents," *Journal of Economic Theory* 97: 123-63.

[14] LAZEAR.E.P (1999) "Globalisation and the Market for Team-Mates," *Economic Journal* 109: C15-40.

[15] MACCHIAVELLO.R AND A.MORJARIA (2014) "The Value of Relationships: Evidence from a Supply Shock to Kenyan Rose Exports," *American Economic Review*, forthcoming.

[16] OTITE.O (1990) *Ethnic Pluralism and Ethnicity in Nigeria*, Ibadan: Shaneson C. I. Ltd.

[17] POSNER.D.N (2004) "Measuring Ethnic Fractionalization in Africa," *American Journal of Political Science* 48: 849-63.

[18] PRAT.A (2002) "How Homogeneous Should a Team Be?," *European Economic Review* 46: 1187-207.

[19] RASUL.I AND D.ROGGER (2014) Management of Bureaucrats and Public Service Delivery: Evidence from the Nigerian Civil Service, mimeo, UCL.

[20] SHORE.L, B.CHUNG-HERRERA, M.DEAN, K.EHRHART, D.JUNG, A.RANDEL AND G.SINGH (2009) "Diversity in Organizations: Where Are We Now and Where Are We Going?," *Human Resource Management Review* 19: 117-33.

Table 1: Ethnicities of Civil Servants

	Family	Number of Bureaucrats	Sub-family	Number of Bureaucrats	Number of Sub-sub-families	Number of Otite [1990] Ethnicities
	Niger-Congo	3,172	West Benue-Congo	2,477	6	26
			Cross River	189	4	10
			Plateau	147	9	19
			Southern Bantoid	139	4	14
			Atlantic	117	1	1
			Adamawa	58	6	10
			Kainji	27	2	8
			Jukunoid	11	2	3
			Kwa	3	1	1
			Mande	2	1	1
			Ijoid	1	1	1
			Mambiloid	1	1	1
	Afro-Asiatic	558	Chadic West A	476	4	18
			Biu-Mandara A	64	5	10
			Chadic West B	13	2	3
			Semitic	5	1	1
	Nilo-Saharan	43	Saharan	43	1	1
Number	3		17		51	128
Ethnolinguistic Fractionalization (ELF)	.19		.38		.60	.65
(standard deviation)	(.19)		(.26)		(.29)	(.28)

Notes: The sample of civil servants described here are those who gave their ethnicity during the Civil Servants Survey, and their self-reported ethnicity could be located within the Otite [1990] categorization of ethnicities. This covers approximately 90% of all civil servants interviewed. The ethnolinguistic family structure relies on the coding of Blench [2012]. We construct measures of ethnolinguistic fractionalization in organization n, for each level of aggregation of ethnicities (by family, sub-family, sub-sub-family and based on Otite [1990]'s disaggregated groupings). This measure is one minus the Herfindahl index of ethnicities, and is interpreted as the probability that two randomly selected bureaucrats have different ethnicities. Hence a higher ethnolinguistic fractionalization measure implies a more diverse organization.

Table 2: Management Practices and Ethnic Diversity

Dependent Variable: Project Completion Rate
Standard Errors: Clustered by Project Type Within Organization
OLS Estimates

	(1) Management Practices	(2) Ethnolinguistic Fractionalization	(3) Interaction
Management Practices [z-score]	0.19***	0.22***	0.21***
	(0.02)	(0.02)	(0.03)
Ethnolinguistic Fractionalization [z-score]		0.10***	0.14***
		(0.03)	(0.04)
Management Practice x Ethnolinguistic Fractionalization			-0.07**
			(0.03)
Controls	Project and Organizational	Project and Organizational	Project and Organizational
Fixed Effects	Project Type	Project Type	Project Type
Observations (clusters)	4721 (201)	4721 (201)	4721 (201)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% level. Standard errors are in parentheses, and are clustered by project type within organization throughout. All columns report OLS estimates. The dependent variable in all columns is the proportion of the project completed (that is a continuous measure between zero and one). The aggregate measure of management practice first takes the three dimensions of management practice considered in RR: the autonomy/flexibility given to bureaucrats in their daily task management; the provision of incentives/monitoring of bureaucrats; all other practices compiled into a third index. We first define each of these sub-indices to be increasing in good management and take a simple average across all three dimensions before re-normalizing as a z-score. We construct measures of ethnolinguistic fractionalization (ELF) in organization n, using the sub-sub-family level of aggregation of ethnicities. This measure is one minus the Herfindahl index of ethnicities. Both the Management Practices aggregate index and the ELF index are measured in effect sizes. Project type fixed effects relate to whether the primary classification of the project is as a financial, training, advocacy, procurement, research, electrification, borehole, dam, building, canal or road project. Project controls comprise project-level controls for the project budget, whether the project is new or a rehabilitation, and an assessment of its aggregate complexity by Nigerian engineers. Organizational controls comprise the logs of number of employees, total budget, and capital budget, the share of the workforce with degrees, and the share of the workforce with postgraduate qualifications. Noise controls (at the organization level) include four interviewer dummies, indicators of the seniority, gender, and tenure of the managers who responded, the day of the week the interview was conducted, the time of day the interview was conducted, a dummy variable indicating whether the interview was conducted during Ramadan, the duration of the interview, and an indicator of the reliability of the information as coded by the interviewer.
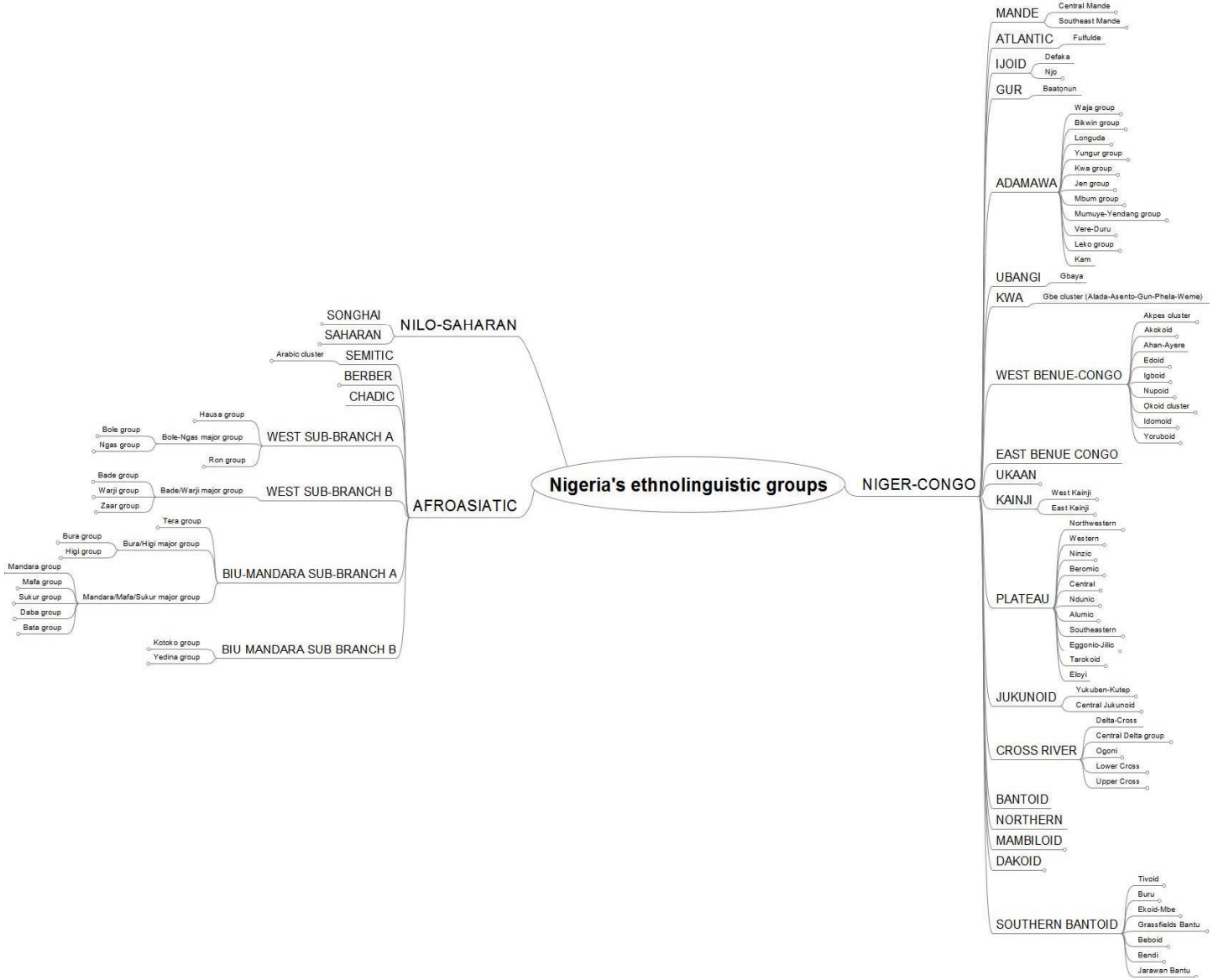
Figure 1: Nigeria's Ethno-linguistic Family Tree [Blench 2012]