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FACTOR ANALYSIS OF RECRUITMENT AND SELECTION ATTRIBUTES TO PROMOTE WORKFORCE PERFORMANCE IN THE NIGERIAN CONSTRUCTION INDUSTRY

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Abstract
This study aims to identify and assess recruitment and selection (RNS) attributes to promote workforce performance in the Nigerian construction industry. A mixed-method research approach was adopted. The qualitative approach was achieved using a Delphi technique while the quantitative strand was achieved using a well-structured questionnaire among 355 construction professionals. Data obtained were analyzed using frequency, mean, and exploratory factor analysis (EFA). The study is underpinned by five theories. It was revealed that the "appointments based on merits", "internal promotion to fill the position", "use of line managers in RNS process", "unbiased interview panels", and "careful screening and evaluation of candidates," were the top five RNS attributes that the industry should leverage on to promote workforce performance. Further analysis using EFA revealed two principal components, namely, internal and transparent systems as well as firm methods. However, both the "internal promotion to fill the position" and "line manager's usage in RNS process" had poor extraction values, cross-loading, and erroneous loading. The study provided a solid platform for future researchers seeking to explore the recruitment and selection attributes that the industry could leverage for effective workforce performance within the construction industry. Whilst several studies have been conducted on workforce RNS, there is a lack of studies that establish an ordered grouping structure that the construction industry could leverage to enhance the hiring and selecting of quality workforce to promote their effective performance in the construction industry.

Keywords: *Construction industry, Delphi technique, Nigeria, performance, recruitment and selection, workforce.*

Introduction

Employees are assets to the construction sector, and their contributions and performance are crucial to the success of organizations (Abbasi et al., 2022). To achieve success, the construction industry must engage construction workers and other stakeholders who are rare and valuable through effective strategies for attracting and selecting the most qualified candidates for the job (Aldhuhoori et al., 2022). As a result, despite using human resource management practices (HRMPs), the construction industry has received criticism for its productivity and human resource issues (Dosumu et al., 2021; Babalola and Aigbavboa, 2022). Understanding the characteristics of hiring and selecting personnel is one of the major tactics for discovering the aspects that contribute to greater employee performance in construction organizations. Having in mind that construction organizations have been noted for not putting conscious effort into the recruitment and selection (RNS) process of the workforce as well as difficulty in selecting the best candidate for a position (Dosumu et al., 2021), the adoption of the RNS attributes can help to attract, hire, and promote quality workforce in the construction industry.

Internships, social media, green recruitment and selection, referrals, interviews, internal promotions, and many other recruitment and selection methods have been found to be effective in attracting and hiring quality talent, choosing the best people, locating and hiring the right candidates, evaluating job knowledge, as well as evaluating interpersonal, communication, and teamwork skills. Social media, also known as social networking sites, has made it possible for organizations to connect with many prospects, especially millennials, in addition to enabling individuals to create and exchange ideas, content, and values (Villeda and McCamey, 2019; Adeosun and Ohiani, 2020). This is because social media allows organizations to validate the

information shared by potential candidates using big data analytics and content analysis to screen and analyze candidates' data, which is then used to make decisions, select candidates, and evaluate applicants (Sinha and Sinha, 2019). According to Yaro (2014) and Sharaburyak et al. (2020), the RNS method can be used to assess applicants' knowledge, skills, and other attributes that are necessary for the position. In addition to correlating interview results, the procedure shows applicants' capacity for creativity, teamwork, and personality attributes (Hoek et al., 2016). This allows for screening techniques that assist to weed out unsuitable and unqualified individuals, but the screening approach must not result in the exclusion of potential candidates (Dhabuwala and Pitroda, 2021).

The internship approach is another RNS-seeking strategy that has the power to draw quality workers and consequently improve their performance. Zhao and Liden (2011) assert that internship programmes demonstrate a candidate's abilities as well as their performance once hired. As a result, internships are now recognized as a practical learning experience that exposes a candidate to communication, technical, managerial, leadership, organizational, ethical, and professional abilities, improving their competitiveness in the workplace (Karji et al., 2020). Future job satisfaction has been demonstrated to be positively correlated with this process of investigating and experiencing (Binder et al., 2015). For instance, it has been discovered that internships can help job hopefuls stand out to recruiters and help them land a job fast, and easily with a higher compensation (Binder et al., 2015; Seow et al., 2018). By networking with other employees in the company, candidates are also given the chance to expand their professional network (Karji et al., 2017). Additionally, potential candidates are noticed by employers who are eager to hire interns over non-interns or other applicants without any real-world work experience (Bae et al., 2020). Thus, through internship programmes, candidates can acquire practical aids such as the technical skills, knowledge, and abilities gained during the internship that prepare them to enter a professional job as well as personal welfare that directly affects the intern's personality, such as a positive self-image and attitude (Gower et al., 2012).

It is imperative to encourage the adoption of the RNS qualities due to the many advantages the RNS process has for construction organization activities. Adopting the RNS qualities can improve a construction organization's ability to attract and hire top personnel and can also enhance employee productivity. Despite the efforts of existing studies in suggesting RNS attributes to promote workforce performance in developed nations (Pan et al., 2018; Sharaburyak et al., 2020), there are relatively few studies that exist in developing countries, a gap this study aims to fill. Therefore, it is necessary to improve the quality of the workforce recruited as well as organizational performance by utilizing the RNS features. The study's objectives are to first define the RNS qualities and then evaluate those attributes to improve workforce performance in the Nigerian construction sector. A mixed research approach was used to collect and analyze both qualitative and quantitative data to meet this goal. The knowledge gained is anticipated to add to that already known about the qualities of RNS that support workforce effectiveness. Through this, government officials, policymakers, and stakeholders in the construction industry will also receive guidance on the necessity of establishing workable and useful regulations to encourage the adoption of RNS features in the sector.

RNS was conceptualized, in accordance with Babalola (2023), as a method of identifying and luring people to fill firm employment openings as well as selecting the best-qualified candidates to fill open positions. As a result, the study adopts this definition since, according to Aman et al. (2018), RNS are the greatest decision-making tools for identifying the best and most qualified individuals with creative abilities for a certain position. According to Letam et al. (2020), adoption of RNS attributes is almost non-existent in poor nations like Nigeria. Additionally, previous research has either been carried out in developed nations or, in some cases, has identified factors that might be used to encourage the understanding and application of RNS in promoting workforce performance (Pan et al., 2018; Sharaburyak et al., 2020). When this study was being conducted, previous research that had identified RNS attributes that might promote and enhance workforce performance had done so by offering advice, suggestions, and implications for everyday life in passing. Consequently, this work goes a step further by conducting an empirical examination of a few RNS attributes.

Numerous realistic RNS features have been discovered by studies as helping to improve workers' performance in a business organization. For instance, the research by Horwitz and Jain (2008), Kanchana and Vasantha (2013), Amin et al. (2014), Tran-Huy et al. (2020), and Wang et al. (2020) indicated the use of an impartial interview panel, meticulous screening and evaluation of selected applicants, and proper selection techniques/process. Some of these attributes considered were used when measuring the human resources (HR/workforce) perception, both observation-based and experience-based. Key characteristics to improve workforce performance

Table 1: Shows the various modules that make up the architecture of the entire system

Code	EI attributes	Authors
RNS 1	Appointments based on merits	Amin *et al.* (2014); Gope *et al.* (2018)
RNS 2	Use internal promotion to fill the position	Gope *et al.* (2018)
RNS 3	Use of line managers in the recruitment and selection process	Emerald (2018)
RNS 4	Use of unbiased interview panels	Horwitz and Jain (2008); Wang *et al.* (2020)
RNS 5	Careful screening and evaluation of selected candidates	Kanchana and Vasantha (2013); Amin *et al.* (2014); Wang *et al.* (2020)
RNS 6	Impartial recruitment and selection processes	Rozario *et al.* (2019)
RNS 7	Analyzing the long-term labour needs of the organization	Nguyen (2019)
RNS 8	Appropriate recruitment procedures	Boohene and Asuinura (2011); Alzyoud (2018); Adeosun *et al.* (2020); Tran-Huy *et al.* (2020)
RNS 9	Use of external requirement system	Gope *et al.* (2018)
RNS 10	Use of internship for recruitment	Bodin *et al.* (2018)
RNS 11	Justice treatment for all applicants	Boohene and Asuinura (2011); Jalil *et al.* (2014); Tran-Huy *et al.* (2020)
RNS 12	Appropriate selection techniques	Amin *et al.* (2014); Wang *et al.* (2020)
RNS 13	Adequate information for the selection decision	Boohene and Asuinura (2011); Tran-Huy *et al.* (2020)
RNS 14	Promote internship programmes	Bodin *et al.* (2018)
RNS 15	Use of headhunting techniques for the recruitment process	Tafamel and Akrawah (2019)

were also identified in studies by Amin et al., 2014; Kanchana and Vasantha, 2013; and Gope et al., 2018. These include merit-based appointments, internal promotions to fill positions, meticulous screening and evaluation of chosen applicants, usage of an external requirement system, and proper selection processes. Bodin et al. (2018) conducted a study of a similar nature and developed RNS features, such as the use of internships for recruiting and the promotion of internship programmes. These qualities were essential to boosting staff productivity in service organizations. RNS components to enhance worker performance have also been discussed by Boohene and Asuinura (2011), Jalil et al. (2014), Alzyoud (2018), Adeosun et al. (2020), and Tran-Huy et al. (2020). Some of the motivators included proper recruitment practices, treating all applicants fairly, providing sufficient information for the selection processes, and proper selection strategies. These recommendations by Tran-Huy et al. (2020) were underpinned by the Psychological Contract Theory. Other traits include the inclusion of line managers on selection and recruitment panels (Emerald, 2018), the use of fair selection and recruitment procedures (Rozario et al., 2019), the analysis of the organization's long-term labour requirements (Nguyen, 2019), and the application of headhunting techniques during the hiring process (Tafamel and Akrawah, 2019). Table 1 summarises the RNS features to increase workforce performance as determined by the review of prior studies. Notably, a mixed-method approach was deemed appropriate, taking into account that these traits were suggested based on variations in cultural, economic, legal, and organizational contexts. This will give a multifaceted impression of how these qualities might be applied in the Nigerian environment and strengthen each approach (Babalola, 2023).

Underlying Theory for the Study

The universalistic theory, network theory, equity theory, social exchange theory, and resource-based theory all serve as the foundation for the study. Pfeffer (1994) advanced the Universalistic theory. Best practice or high-performance work practice are some names for the theory (Huselid, 1995; Sofijanova and Zabijakin-Chatleska, 2013). It has to do with the idea of best practice, which holds that there is only one optimal way to carry out a certain process in order to maximize financial gain for the organization (Hamid, 2013). The Universalistic theory is appropriate because it tackles the requirement for best practices to be used in the construction sector in Lagos State, Nigeria, which draws in top talent to generate the greatest possible economic benefit for an organization.

According to Johanson and Mattsson (1988), every business venture exploits the networks that are already in place to gather the human and material resources it needs to achieve its goals and objectives. The network theory is useful in addressing the issue of how construction organizations in Lagos State engage and network with the business environment

to use the available recruitment channels through social networking for them to identify and recruit top-quality people. According to Adams (1963) equity theory, workers want to select positions that seem fair to them; hence networking by itself might not be able to resolve the issue. The proper recruitment and selection practices give each candidate an equal chance of success, even if it can be difficult for firms to locate suitable candidates to hire and promote (Deshpande and Golhar, 1994; Atkinson and Storey, 1994).

personnel. Construction employees are valuable, uncommon, and unique, according to the resource-based paradigm that claims competitive advantage can only be attained through the workforce (Barney, 1991; Almada and Borges, 2018).

Materials and Methods

A mixed-method research design (Figure 1) was used to identify and evaluate recruitment and selection variables that promote workforce performance in the Nigerian construction sector. This was done based on a pragmatic philosophical perspective of the study. In order to convey a wider

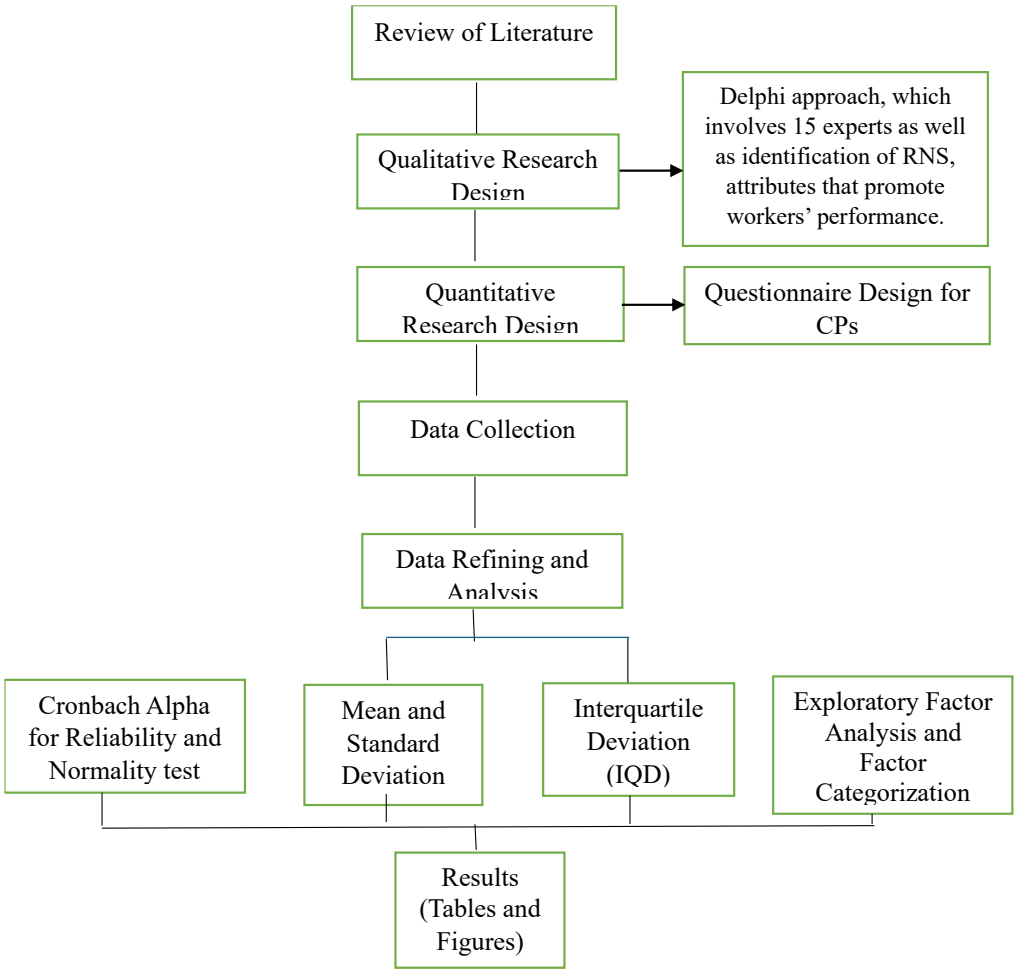

Figure 1: Adopted methodology by author

If employees believe that the company has treated them well, they will reciprocate by giving back to it. As a result, the interaction of the worker with their surroundings transforms them into social being that creates ongoing obligations (Blau, 1964; Emerson, 1976). The definition of social exchange theory is an action-reaction system (behaviour) based on reward mechanisms in exchange for value amongst individuals. This suggests that organizations may tend to recruit excellent people who will function as non-replaceable resources to the extent that they use rewards systems like salary packages to hire

range of viewpoints and gain a deeper understanding of the study's challenges, a mixed technique was adopted because a single approach might not offer the robustness that was represented. The first method, a qualitative study strategy, was utilized to identify RNS features by reviewing the corpus of prior research. The qualitative strand was established using a Delphi technique, which entails numerous rounds until consensus among experts is formed (Oke et al., 2023). Out of the seventeen (17) experts who were invited to participate in the study, fifteen (15) participated in a Delphi process based on

Table 2: Experts background information for Delphi method

Criteria	Classification	No. of experts
Area of specialization	Engineers	6
	Builders	3
	Project managers	2
	Architects	2
	Quantity surveyors	2
	Total	15
Years of work experience	1-5	1
	6-10	1
	11-15	1
	16-20	9
	Over 20 years	3
	Total	15
Academic qualification of experts	Ph.D.	8
	Master degree (M. Eng/ M.Tech/ M.Sc.	7
	Total	15

this. The 15 experts expressed interest in taking part in the study and agreed to do so after fulfilling the requirements. These prerequisites included holding a degree from an accredited higher education institution, academic credentials in a construction-related course, membership in a professional organization, a top management position in a construction organization, and years of work experience- at least three of the above qualifications. Because previous research recommended a panel size of 15 experts for the bulk of construction-related studies, the 15 experts were regarded as adequate (Babalola and Aigbavboa, 2022). Table 2 gives a summary of the standards that the experts met. When agreements on the opinions of the experts were established, consensus was reached (Oke et al. 2023). By looking at the median and interquartile deviation (IQD), the consensus was found.

This paper focuses on the results of a questionnaire that was created based on the quantitative assessment of the study and distributed among the construction professionals (CPs) working in the built environment. This takes us to a point where what was gleaned from the CPs in the Delphi study meets our expectations. A questionnaire was judged appropriate since it enables statistical analysis for the quantification and generalization of data. It can also generate an objective data analysis (Oke et al. 2023). Two components make up the questionnaire. To determine how well-suited the respondents were for the study, Section A evaluated their background data. The fifteen (15) RNS attributes (identified from prior research and validated using the Delphi method) were allowed to be evaluated by the respondents in Section B using a 5-point Likert scale (5- very high influence, 4- high influence, 3- average/moderate influence, 2- low influence, and 1- no influence). The Likert scale was used because it has a higher chance of producing replies that accurately reflect the subject matter.

Due to the execution of a significant number of construction works with a sizable workforce (Ojelabi et al., 2017), the study was conducted in Lagos State, Nigeria. The respondents were selected using a combination of convenience and snowball sampling procedures. Based on the respondents' availability, accessibility, and closeness to the researchers, the convenience sampling technique was used to collect data from construction industry professionals. This sampling strategy was proven to be efficient in a study of a comparable nature by Oke et al. (2023). The use of snowball sampling techniques was particularly beneficial because it allowed for the distribution of respondents and the gathering of data via social networks and referrals. To find more knowledgeable volunteers, local construction firms in Lagos State that are well-known for performing construction work all year long were contacted. A bigger portion of the sample was easily reached by using the electronic form of the questionnaire (Google Forms). Due to location restrictions, as well as the privacy and confidentiality of professional members, an electronic questionnaire was also used. The responses of respondents were likewise kept private and exclusively used for the investigation.

The population was made up of the entire group of construction professionals working in the built environment in Lagos state, Nigeria. The study's population is 6491 according to the report from the many construction professional groups, which frequently make up the core of the construction

Table 3: Delphi results on RNS attributes to promote workers' performance

Attributes	(M)	($\bar{x}$)	(σx)	(IQD)	(R)
Appointments based on merits	8	8.60	0.83	1.00	1
Use internal promotion to fill position	8	8.33	1.50	1.00	2
Use of line managers in the recruitment and selection process	8	8.27	1.28	1.00	3
Use of unbiased interview panels	8	8.27	1.28	1.00	3
Careful screening and evaluation of selected candidates	9	8.20	1.47	1.00	5
Impartial recruitment and selection processes	8	8.13	1.51	1.00	6
Analyzing the long-term labour needs of the organization	8	8.07	1.71	1.00	7
Appropriate recruitment procedures	8	8.00	1.77	1.00	8
Use of external requirement system	9	8.00	1.93	1.00	8
Use of internship for recruitment	8	7.87	1.36	0.50	10
Justice treatment for all applicants	8	7.80	1.42	0.50	11
Appropriate selection techniques	8	7.73	1.58	0.50	12
Adequate information for the selection decision	8	7.67	1.76	0.50	13
Promote internship programmes	8	7.60	1.72	0.00	14
Use of headhunting techniques for the recruitment process	8	7.47	2.00	1.00	15

M = Median, $\bar{x}$ = Mean, σx = Standard deviation, IQD = interquartile deviation

process (engineers, builders, project managers, architects, and quantity surveyors). The Yamane equation (Yamane, 1967) was used to calculate a sample size of 377 responders from the indicated population at a precision level (e) of 5%. The equation was used in the study because it provides a more straightforward formula for estimating sample sizes when the size of the population is known. This condensed approach was also used in related investigations, including Oke et al. (2023). 355 of the 377 copies of the questionnaire that were sent were returned electronically, representing a 94% response rate. The collected data were filtered and purified to make sure they were appropriate and ready for examination. The data that had been retrieved was examined using descriptive and EFA approaches. The EFA's goal was to gather information on the factors' unidimensionality to assess how factor-analyzable they were (Pallant, 2010). Using EFA, it was also established that the RNS factors' effects in Lagos State, Nigeria, were reliable and legitimate. The analysis strategy adopted for the investigation was maximum likelihood with an eigenvalue greater than 1 and Oblimin rotation. The empirical and theoretical reliability tests were carried out following a preliminary data analysis and content validity assessment. Pallant (2011) states that a scale's coefficient must have a minimum value of 0.70; as a result, this cut-off alpha was used to assess the reliability of the data collection tool. Each component's Cronbach's alpha values were 0.921 and 0.840, respectively, proving the reliability of the data collection method and the outcomes it generated. Out of the fifteen (15) RNS characteristics, two (2) components were produced.

Results and Discussions

Delphi

The 15 professionals that participated in the study were six engineers, three builders, two project managers, two architects, and two quantity surveyors. The 15 specialists belonged to a professional organization. Eight of the specialists held PhDs, while seven had master's degrees. Three of the professionals had more than 20 years of experience, while nine others had between 16 and 20. In the first round of the Delphi process, fifteen (15) RNS traits that enhance workforce performance were presented to the experts, and they were given a ten-point rating scale to assess them. The anticipated RNS features that are required, practical, and attainable in the Nigerian construction industry were allowed to be added by experts. After reviewing the responses, as was to be expected, no consensus was reached, and no new variables were introduced during the initial round. This is due to different views by the experts in rating the RNS features. The responses were then returned to the respondents, who were then given the option of following their initial judgements or selecting the median value decided by the experts. The second round established consensus on the fifteen (15) RNS factors that had been identified in the literature, proving their application to the NCI. High median values between 8 and 9 were observed, as indicated in Table 3, and IQD values had a significant consensus agreement between 0.50 and 1.00. In order to produce the questionnaire displayed in Table 3, the RNS qualities were used after a second round of consensus.

Respondents' background information

Table 4: Respondents' background information

		Frequency	Valid Percent
Current profession	Engineers	160	45.1
	Quantity surveyors	66	18.6
	Builders	42	11.8
	Project managers	51	14.4
	Architect	36	10.1
Years of experience	1-5 years	60	16.9
	6-10 years	70	19.7
	11-15 years	63	17.7
	16-20 years	63	17.7
	Above 20 years	99	27.9
Level of education	Ordinary National Diploma	18	5.0
	Higher National Diploma	53	14.9
	Postgraduate Diploma	28	7.9
	Bachelor's degree	106	29.9
	Master's degree	138	38.9
	Doctorate	12	3.4
Organization status	Contracting firms	43	12.1
	Consulting firms	72	20.1
	Government	195	54.9
	Consortium	45	12.7

More engineers, who made up 45.1% of the population overall, participated in this survey, according to an analysis of the background data of the respondents (Table 4). In that order are quantity surveyors, builders, project managers, and architects, with corresponding major representations of 18.6%, 11.8%, 14.4%, and 10.1%. The results showed that whereas more than 80% of respondents had more than five years of work experience, only 16.9% of respondents had one to five years. This implies that the respondents have a degree of education in the study area that is sufficient for them to be able to reply to the research questions. Additionally, a combined 5.0%, 14.9%, and 7.9% of respondents had earned an ordinary national diploma, a higher national diploma, and a postgraduate diploma. The following highest degrees of education are a bachelor's degree

Table 5: KMO and Bartlett's test for recruitment and selection attributes

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.909
Bartlett's Test of Sphericity	Approx. Chi-Square	2796.556
	Df	78
	Sig.	0.000

Table 6: Communalities

Recruitment and Selection attributes	Initial	Extraction
Appropriate selection techniques	1.000	0.617
Establishment of long-term labour needs	1.000	0.541
Adequate information on selection decision	1.000	0.561
Suitable recruitment procedures	1.000	0.650
Usage of internship for recruitment	1.000	0.773
Usage of internship programmes	1.000	0.792
Headhunting techniques for the recruitment process	1.000	0.655
Usage of external requirement system	1.000	0.372
Usage of unbiased interview panels	1.000	0.556
Impartial recruitment and selection processes	1.000	0.601
Appointments based on merit	1.000	0.706
Careful screening and evaluation of candidates	1.000	0.724
Fair treatment for all applicants	1.000	0.680

Extraction Method: Principal Component Analysis

(29.9%), a master's degree (38.9%), and a PhD (3.4%). Contracting, consortium, and consulting industries are all represented, accounting for 12.1%, 12.7%, and 20.1% of all responses, respectively. There were 54.9% of the total population working in the government establishment.

Exploratory factor analysis for recruitment and selection attributes to promote workforce performance

The 15 identified RNS qualities were exposed to EFA to improve RNS attributes that support workforce performance in the Nigerian construction industry. In Tables 5 to 8 and Figure 2, results of the EFA on RNS qualities that support worker performance in the NCI are displayed.

The KMO measure of sample appropriateness reached a value of 0.909, exceeding the maximum value of 0.6, as indicated in Table 5. Because any number more than 0.6 is purposefully acceptable, this is regarded as acceptable for the factorability of the used data (Eiselen et al., 2005:107). At a p-value of 0.05, the Bartlett's test of sphericity was statistically significant (Pallant, 2005).

Table 6 displays the communalities of the variables having at least a 0.500 extraction value that indicates how the variables were determined. However, Pallant (2005) pointed out that communalities have been measured using values as low as 0.3. The pattern matrix was also examined for both cross-loading and inappropriate loading (Stat Wiki, 2016). Although two variables (line manager use in the recruitment and selection process as well as internal promotion to fill posts) had poor extraction values, cross-loading, and erroneous loading, the factor loading was nevertheless trustworthy. Similar to this, the variables are constant, and each one is properly matched to the others in its component. The communalities for this investigation ranged from 0.372 to 0.792.

The overall variance explained in Table 7 demonstrated the characteristics of RNS promoting worker performance in the NCI with regard to each eigenvalue individually. Additionally, the Kaiser's criterion of remaining components with eigenvalues above 1.0 was used in this investigation. Only two components were recovered for this investigation, and their variances are component 1 (50.504) and component 2 (12.781). About 63.286% of the variation is explained statistically by PCA and the statistics of the eliminated components.

The components that break below 1.0 after the second component are depicted in Figure 2 as a break. The cluster to be interpreted for this factor analysis, which will be submitted to direct oblimin rotation, was visible in the component before the break in the steep slope, whereas the remaining components, which have eigenvalues below 1.0, were visible in the steadily falling component. The

Table 7: Total variance explained

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.566	50.504	50.504	6.566	50.504	50.504	6.314
2	1.662	12.781	63.286	1.662	12.781	63.286	3.588
3	0.935	7.192	70.478				
4	0.717	5.519	75.997				
5	0.546	4.202	80.199				
6	0.485	3.731	83.930				
7	0.407	3.132	87.062				
8	0.354	2.723	89.785				
9	0.333	2.559	92.345				
10	0.312	2.399	94.744				
11	0.279	2.146	96.890				
12	0.212	1.633	98.523				
13	0.192	1.477	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance

direct oblimin rotation was applied based on the correlation between the thirteen variables.

Table 8 shows the factor loadings for each variable inside the scree plot-identified cluster of two components collectively, as well as the total variance explained. The two components' maximum item loadings are shown, indicating that the discovered items are the RNS qualities with the highest rankings

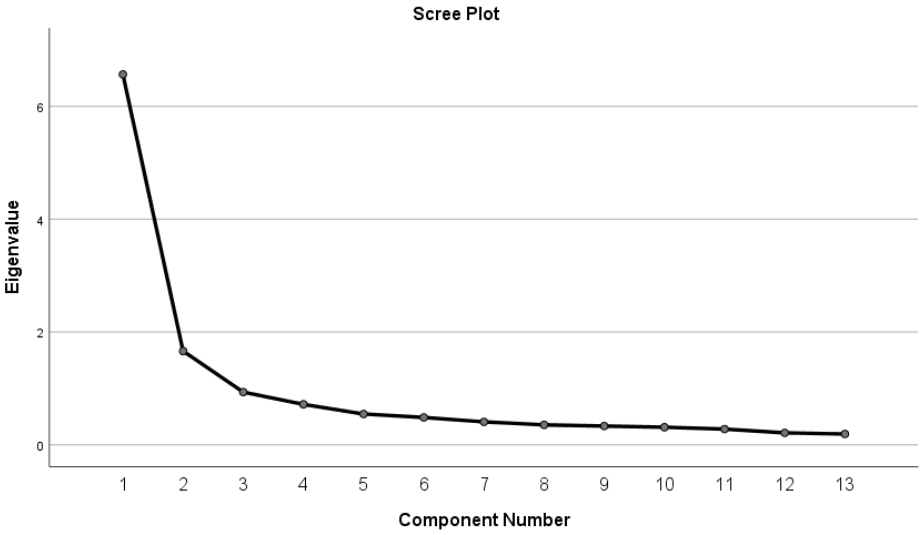

Figure 2: Scree plot

that support workforce performance in the NCI.

Two components were identified by the principal component analysis as having an eigenvalue larger than one (Table 7). After careful observation, the underlying causes of each component were renamed accordingly as follows:

•Component 1: Internal and transparent system
•Component 2: Firm methods

Internal and transparent system

This component, as indicated in Table 8, contains a total of ten elements, all of which are connected to the first cluster. These factors include careful screening and evaluation of candidates, appointments based on merits, justice treatment for all applicants, impartial recruitment and selection procedures, appropriate selection techniques, suitable recruitment procedures, usage of unbiased interview panels, adequate information on selection decisions, the establishment of long-term labour needs, and usage of external requirement system, which together account for 50.504% of the total variance. This makes it the highest ranked RNS attributes to promote workforce performance. This component was dubbed the "internal and transparent system component" due to the hidden similarities across these variables in addressing RNS features. One of the most significant RNS features encouraging workforce effectiveness, according to the findings (Boohene and Asuinura, 2011; Jalil et al., 2014; Tran-Huy et al., 2020), is justice treatment for all applicants. Fairness can affect an applicant's personality qualities including conscientiousness and neuroticism, as well as the ethical principles and virtues that govern human and social relationships, in addition to increasing the acceptance rate of job offers and candidate recommendations (Wang et al., 2019). Justice practises are also predicated on the notion that successful outcomes and conflict resolution are determined by procedures that are perceived to be effective (Konradt et al., 2016). Similarly, treating applicants fairly encourages fairness and equitability; the extent to which managers and employees engage in interpersonal conduct and interactions that convey dignity rather than disdain determines this. Notably, fairness of a firm's procedures or policies has been defined as justice in construction organisations (Goldman and Cropanzano, 2015). Thus, in terms of the interpersonal interactions between the organisation and the candidates, justice treatment has been regarded as one of the traits that have been utilised to promote organisational and workforce policies (Nnaji-Ihedinmah, 2020).

Furthermore, the study also found that merit-based appointments improve staff performance.

According to Gope et al. (2018), finding and attracting qualified candidates to fill open positions should be based on merits. This helps to reduce the number of applicants and narrow the field to those with the right credentials (Amin et al., 2014). A characteristic of the study that supports Odeku's (2015) conclusion that the ability of an organisation to manage effectively and efficiently through equal evaluation of applicants without showing favour or prejudice, prior to, during, and until all processes have been completed is the use of impartial interview panels. The impartiality of the panels has been viewed as a component that adheres to the law from the point at which open jobs are announced to the job description and specification, potential sources of competent candidates, and finally the selection stage (Hamza et al., 2021). The careful screening and evaluation of chosen candidates, appropriate recruitment processes, and appropriate selection techniques were also rated as some of the RNS attributes promoting HR performance (Boohene and Asuinura, 2011; Kanchana and Vasantha, 2013; Amin et al., 2014; Alzyoud, 2018; Adeosun et al., 2020; Tran-Huy et al., 2020; Wang et al., 2020). Wang et al. (2020) claim that thorough applicant screening and formal evaluation enhance workforce performance in an organisation. This is in line with the findings of Dhabuwala and Pitroda's research from 2021. They claimed that as a function of human resources management, appraisal has a big impact on how well the organisation accomplishes its goals. If organisations are discovered accepting bribes before and after the RNS process, as well as failing to disclose both the positive and negative aspects of the job to applicants at the entry point into the organisation, these attributes of RNS may cause undue expectations, frustration, and eventually turnover (Murage et al., 2018).

Firm methods

Having only three (3) attributes loaded, the cluster explains 12.781% of the total variance. Attributes relating to the usage of internship programmes, usage of internships for recruitment, and headhunting techniques for the recruitment process were identified under the "firm methods component". The caliber of a company's employees recruited through the RNS process is extremely important for its success and efficiency. This was observed in other research that looked at how internship programmes, internship use for hiring, and headhunting methods for hiring were perceived

Table 8: Component Matrix[a]

	Component	
	1	2
Careful screening and evaluation of candidates	0.900	
Appointments based on merits	0.887	
Justice treatment for all applicants	0.871	
Impartial recruitment and selection processes	0.793	
Appropriate selection techniques	0.748	
Suitable recruitment procedures	0.746	
Usage of unbiased interview panels	0.742	
Adequate information on selection decision	0.654	
Establishment of long-term labour needs	0.615	
Usage of external requirement system	0.503	
Usage of internship programmes		0.891
Usage of internship for recruitment		0.879
Headhunting techniques for the recruitment process		0.777
Cronbach's alpha of each component	0.921	0.840

Rotation Method: Oblimin with Kaiser Normalization.[a]

a. Rotation converged in 4 iterations

(Bodin et al., 2018; Tafamel and Akrawah, 2019). The study's identification of headhunting as a recruiting process attribute is consistent with Skyba's (2022) opinion that headhunting is a technique for identifying and choosing highly qualified and competitive candidates for vacancies within a company. Dosumu et al. (2021) disagree with these conclusions regarding talent headhunting as a characteristic of RNS, though. The rules and principles of employment regardless of the business, unique characteristics of the concerned industries, as well as study cultural backgrounds, may be the cause of this discrepancy in the conclusions. In accordance with the findings of Lei and Yin (2019) and Karji et al. (2020), the findings also showed that using internship programmes and internships for recruiting are key characteristics of RNS for talent performance. According to these authors, identifying potentials among construction team members and other stakeholders through internship programmes improves the RNS process effectiveness by bridging the gap between interns and non-intern applicants.

Implications of the findings

The clusters under discussion suggest that, in order to have an effective selection process and successful recruitment of talent, the government, in collaboration with construction organizations and professional bodies, must be prepared to strengthen appointments based on merit. Top-level managers of construction organizations must be prepared to create an environment that is fair, honest, and just to its candidates in order to further ensure the fair treatment of the entire workforce. Another aspect is that via rigorous screening and evaluation of the chosen skills, building experts can pinpoint areas of strength and improvement that can enhance the worker's expertise and help the construction business organization. To ensure the effectiveness of the RNS attributes in the construction industry, the policymakers can work in tandem with the government as well as cooperate with the construction professionals to enforce the implementation of the recruitment and selection procedures without any political influences. In general, the government should upgrade and provide enough infrastructure, such as a steady supply of electricity and the Internet, to help the construction industry verify the details supplied by the prospective candidates.

Conclusion

RNS process in the activities of the building sector has been observed globally in every organization due to the many advantages they provide. However, unlike affluent nations, developing economies like Nigeria have implemented these processes very slowly. As a result, it is crucial for RNS to have qualities that encourage and improve employee performance as well as adoption. Therefore, the study aimed to identify possible and representative attributes to promote workforce performance within the Nigerian construction industry. A mixed-method research design approach (Delphi technique and survey questionnaire) was used to analyze the fifteen (15) criteria to boost worker performance in the construction industry to achieve this purpose. Based on the analysis, it was concluded that internal and transparent systems as well as firm methods are the two main components of attributes that are needed to promote the workforce performance.

This article's originality is demonstrated in two different ways. First off, as of the time this research was being conducted, the study is one of the first to examine the RNS qualities to support workforce performance in the context of a developing nation and the first in Nigeria. Second, the study established an ordered grouping structure of the traits to enhance workers' performance, making it one of the pioneering studies in Nigeria and developing nations. A gap in the literature was addressed where previous studies had only highlighted some of these tactics in passing as ideas for further research and advice. The study's findings offer a strong theoretical foundation for future research on the RNS qualities that enhance workforce performance. A better understanding of the RNS qualities for enhancing workforce performance in construction organizations can be attained by building on the study's findings, especially in nations where such studies are lacking. Therefore, the findings of this study possess ample practical relevance that can inform construction stakeholders and other key players on the various RNS attributes for enhancing and promoting HR performance in the construction industry.

Despite the uniqueness of this investigation, some restrictions were found. First off, although the sample size used met the requirements for analysis, the results were generally low when compared to the target population. As a result, it is challenging to generalize the study's results to the entire nation. Accordingly, future research can focus on other states to gather more responses and a wider viewpoint on potential RNS qualities that may or may not have been taken into account. Since construction professionals make up the majority of construction teams, only their perspectives were taken into account in the qualitative component (Delphi study). Future research could take into

account the opinions of policymakers and governmental organizations to determine the practicality of some of the RNS features. Furthermore, given that the factors were only examined in the setting of Nigeria, future research can go even further by using the RNS characteristics and methods used in other developing nations. The results attained could be utilized to track converging and diverging market-specific analyses, implications, and inferences.

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