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Development and Validation of a Questionnaire for Papua New Guinea's Law and Justice Sector

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Abstract:

This study developed, validated, and conducted reliability checks on a questionnaire designed to evaluate the effectiveness of service delivery in Papua New Guinea's law and justice sector. The use of questionnaires to address social issues through focus group interviews (FGIs) in fields with limited published research has proven to be a valuable method in social research. This study, using a mixed methods research design, created and validated a quantitative questionnaire for assessing service delivery based on key themes identified in FGIs with participants from Papua New Guinea's law and justice sector. The quantitative questionnaire consisted of ten items gathering biographical information, along with 57 items derived from themes discovered in the FGIs. These 57 items were tested with a sample of employees in the law and justice sector. Principal component analysis (PCA) was employed to streamline the questionnaire, resulting in a final version of 44 items. Additionally, Cronbach's alpha was used to verify the internal consistency of the questionnaire. The Law and Justice Sector questionnaire serves as a reliable tool for evaluating service delivery in Papua New Guinea, with the goal of enhancing service provision within the PNG law and justice sector.

Keywords: law and justice sector, principal component analysis, sequential exploratory design, Government of Papua New Guinea.

巴布亚新几内亚法律和司法部门调查问卷的制定和验证

摘要:

本研究开发、验证了一份调查问卷，并对其进行了可靠性检查，该调查问卷旨在评估巴布亚新几内亚法律和司法部门提供服务的有效性。在已发表的研究有限的领域中，通过焦点小组访谈（FGI）使用问卷调查来解决社会问题已被证明是社会研究中的一种有价值的方法。本研究采用混合方法研究设计，根据巴布亚新几内亚法律和司法部门的参与者在 FGI 中确定的关键主题，创建并验证了用于评估服务提供的定量调查问卷。定量调查问卷包括 10 个收集传记信息的项目，以及源自 FGI 中发现的主题的 57 个项目。这 57 个项目

是针对法律和司法部门的雇员样本进行测试的。采用主成分分析(主成分分析)来简化调查问卷,最终形成44个项目的版本。此外,还使用克隆巴赫阿尔法来验证问卷的内部一致性。法律和司法部门调查问卷是评估巴布亚新几内亚服务提供情况的可靠工具,其目标是加强巴布亚新几内亚法律和司法部门的服务提供。

关键词: 法律和司法部门, 主成分分析, 序贯探索性设计, 巴布亚新几内亚政府。

1. Introduction

The development of questionnaires is necessary to objectively collect information on current social issues. Moraitis (2007) affirms that a robust law and justice system is important for the provision of peace, harmony, and justice for the people of Papua New Guinea (PNG). DT Global (2016) reports that Papua New Guinea's eco-social development is crippled by significant law and order issues such as crime, corruption, land and property altercations, and gender-based violence.

The law and justice sector was selected for this study because of the problematic service delivery that has plagued the sector. Dinnen (2002) affirmed that improving the performance of law and justice processes must be integrated into other areas of governmental reform. Duncan and Banga (2018) and Reilly et al. (2015) reiterated the need for significant improvement in service delivery in Papua New Guinea because the significant increase in budgetary allocation over the last two decades has failed to reach a greater population of the citizenry.

To effectively conduct research that would improve service delivery in the law and justice sector of Papua New Guinea, the development of good-quality questionnaires is needed to examine social issues such as these law and justice order-related issues (Kumah et al., 2023). Dinnen (2002), in Working Paper 01/3 on state, society, and governance in the Melanesia Project, acknowledged the current lawlessness in Papua New Guinea and evaluated the social situations in the country. Dinnen (2002) concluded that improving law and justice performance is a complex and long-term task that needs integration with other areas of governance.

Port Moresby became a veritable geographical location for evaluating the questionnaire developed in this research because major government offices that provide social services to the citizenry are currently domiciled there. Considering the above-mentioned issue, this research developed a questionnaire that would examine social issues with the aim of improving service delivery in the law and justice sector of Papua New Guinea.

2. Aim

The aim of this research was to develop, validate, and conduct a reliability check for evaluating the effectiveness of Papua New Guinea's law and justice sector using a questionnaire to improve service delivery.

3. Methods

Following a mixed methods approach, the questionnaire was developed and validated using a sequential exploratory design. Nicolau et al. (2017) stated that the defining feature of a sequential exploratory design is the assistance or support given by the qualitative arm to the quantitative arm of the research. The first phase was the qualitative phase, which incorporates the development of the FGI guide and the conducting of FGIs with selected employees in the law and justice sector. The second phase was the quantitative phase, which involved designing the questionnaire, its validation, and establishing its reliability.

Streiner et al. (2015) and Kumah et al. (2023) recommend that researchers planning or engaging in the development of a new measurement scale should determine if there are existing measurement instruments that would evaluate the variables of interest. This step, recommended by Streiner et al. (2015) in the field of health sciences, is relevant to law and justice sector research in the field of social sciences. Streiner et al. (2015) further recommended the development of a new measurement scale if there are no existing questionnaires, which was the case in this study. Streiner et al. (2015) and Kumah et al. (2023) recommend that the following steps be followed in developing a new questionnaire:

1. Generate items for the questionnaire;
2. Pilot test them;
3. Revise them;
4. Check the reliability.

Due to the paucity of literature and scholarly articles on service delivery in Papua New Guinea, this study adopted a further related step. This means that a process different from that recommended by Streiner et al. (2015) and Kumah et al. (2023) was used. The questionnaire was developed as follows:

3.1. Phase 1: Development of the Questionnaire

3.1.1. Literature Review

A detailed review of the literature was conducted using the Google search engine to establish the existence of questionnaires used in previous research on law and justice service delivery. The search term was "questionnaire on law and justice sector in PNG". The initial search produced 19,700 research articles and working paper series in 0.11 seconds. The research instruments featured in these scholarly documents were developed or adopted using data from respondents' responses on law-, justice-, crime-, and violence-related issues. A further search was initiated on Google Scholar using "measurement scale on service delivery in PNG".

The search returned 30,500 research articles in 0.13 seconds, comprising working papers and reports published in the open research repositories of universities in Australia and Thailand. The scales featured in the search results were used for healthcare delivery- and nation-building-related studies. On the completion of the research article titles, abstracts, and texts, none revealed a measurement scale or questionnaire on service delivery in the law and justice sector of Papua New Guinea. This gap led to the convening of FGIs with selected employees from Papua New Guinea's law and justice sector to develop a research instrument for data collection.

3.2. Phase 2: Focus Group Interviews (FGIs)

An FGI guide was developed based on the objectives of the research project. The FGI comprised ten questions in the biographical information section, while six questions were developed to elicit responses from the interviewees. Subsequently, the guide was given to the moderators, who were research assistants, for comments on the appropriateness of the questions in the guide, which would offer information on participants' demographics and factors that warranted service failures in the PNG law and justice sector. The FGI guide was simultaneously checked for quality by two experts from South Africa and Papua New Guinea, who are senior scholars in the field of education and social sciences with strong expertise in qualitative and quantitative research. The feedback informed the revision and improvement of the FGI guide to ensure its trustworthiness and confirm that it would answer the questions of interest in the research (Appendix A).

The FGIs were conducted with 19 selected employees from an organization within the Papua New Guinea law and justice sector. The employees were purposefully selected because they play an important part in the PNG law and justice sector. As a result, their experience has equipped them with considerable knowledge of factors related to service delivery in PNG. Three FGIs were conducted with the participants divided into junior personnel, middle cadre employees, and senior employees. Each FGI conducted in late January 2023 lasted for 1 h and 30 min on average. In line with the steps identified by Kumari et al. (2021), the interviews were transcribed verbatim in English and de-identified by expunging any personal information.

3.3. Validation of the Guide for FGIs

The FGI guide was critically appraised by two experts with expertise in mixed methods research and questionnaire design and development. Feedback from these experts was used to improve the items featured in the FGI guide. Before the commencement of the FGI, Question 10 of the FGI guide was restructured.

3.4. Ethical Considerations

This study was approved by the National Research Institute under BSCRIP 1.2, and permission from the participating organizations was obtained. The top

management of the organizations, whose employees participated in this study, gave written approval after examining the research questionnaire designed for the study. The identification number 5-1-1 was allocated to the institutional approval given by one of the organizations in the law and justice sector that permitted employees to participate in this study. Ethical issues were given utmost attention and priority during the development and validation of this questionnaire (Omodan & Ige, 2021). Informed consent was obtained from the participants before the start of the FGIs after explaining the details of the study. The participants were informed that they had the right to withdraw from the study at any point without penalty. The identities of the FGI participants and employees who completed the questionnaire were protected to ensure anonymity.

3.5. Analysis of Data from FGIs

The NRI qualitative Venn diagrammatic analysis (NRI-QVDA) developed by Ige, a senior researcher at the Papua New Guinea National Research Institute (PNGNRI), was adopted to analyze the data generated from the FGIs. The NRI-QVDA uses a 3-circle Venn diagram to identify recurring qualitative themes across de-identified data generated during FGIs.

The underlying principle of the NRI-QVDA is $FGI \cup FGI_2 \cup FGI_3$, where FGI represents the FGIs and \cup represents the union of the primary themes that feature during the analysis of data from the FGIs. The application of this principle enabled the identification of 10 themes from FGI-1, 20 themes from FGI-2, and 10 themes from FGI-3, which are problems related to service delivery in the law and justice sector of Papua New Guinea.

The second underlying principle, $FGI \cap FGI_2 \cap FGI_3$, was used to identify themes recurring from excerpts of the three FGIs. The themes were coded and entered into Microsoft Excel and analyzed using frequency counts in the Statistical Package for the Social Sciences (SPSS 29.0). The SPSS output was manually consulted to identify the themes with the highest frequencies across the three FGI groups. The tally system (i.e., III, II, I) was adopted. The following themes emerged from the final analysis as challenges related to the improvement of service delivery in Papua New Guinea:

1. Funding;
2. Human Resources Issues;
3. Housing and Accommodation;
4. Justice Delivery;
5. Prison System and Rehabilitation;
6. Inducement;
7. Ease of Conducting Business.

Literature that discussed the identified themes informed the development of the quantitative questionnaire. The initial version of the quantitative questionnaire included 10 items on biographical information and 57 items on the themes identified from the FGIs (Table 1 in Appendix A).

For the pilot study, the questionnaire was completed by six employees in another organization that is an

integral part of the law and justice sector in Papua New Guinea. The selected organization was not involved in the FGIs completed in the earlier phase of the research project. The questionnaire data were coded and analyzed using Cronbach's alpha option featuring 'Reliability Analysis' in SPSS 29.0. The questionnaire yielded a reliability coefficient using Cronbach's alpha. This reliability of the different sections of the questionnaire led to the removal of 13 items because they were not reliable. This resulted in a final version of the questionnaire consisting of 44 items, as presented in this research article, which is freely available for use by students, teachers, and researchers and can be adapted for research related to improving service delivery.

The construct validity of the 44-item questionnaire was evaluated using factor analysis with SPSS 29.0. The degree of correlations was subjected to a correlation matrix. The Kaiser-Meyer-Olkin value was 0.765, and the approximate chi-square of Bartlett's test of sphericity was 54.782 ($df = 21$, $P\text{-value} < .001$) for section B1: Funding of the questionnaire. For section B3: Housing and Accommodation, the Kaiser-Meyer-Olkin measure of sampling adequacy yielded 0.500 and Bartlett's test of sphericity ($\chi^2 = 0.504$, $df = 1$, $P\text{-value} > 0.001$). The calculated Kaiser-Meyer-Olkin value for section B4: Justice Delivery was 0.502, and Bartlett's test of sphericity was (approx. $\chi^2 = 27.679$, $df = 3$, $P\text{-value} < 0.001$). Section B5 of the questionnaire (i.e., Prison System and Rehabilitation) has a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.471 and Bartlett's test of sphericity (approx. $\chi^2 = 18.237$, $df = 15$, $P\text{-value} > 0.001$). Section B6: Inducement yielded 0.723 when subjected to the Kaiser-Meyer-Olkin and (approx. $\chi^2 = 16.963$, $df = 3$, $P\text{-value} < 0.001$) for Bartlett's test of sphericity. The last section of the questionnaire, B7: Ease of Conducting Business, yielded the Kaiser-Meyer-Olkin measure of sampling adequacy 0.392 and Bartlett's test of sphericity (approx. $\chi^2 = 97.908$, $df = 28$, $P\text{-value} < .001$).

The PCA and varimax with Kaiser normalization were included in the factor analysis. The rotations converged in 3. The scree plot was used to estimate the number of tenable factors, while the eigenvalue at a cut-off of 1 was adopted to determine the number of factors (Kumari et al., 2021). The matrix for section B2: Human Resources Issues was not positive definite. The rotated component matrix using varimax with Kaiser normalization converged in five interactions. For section B3: Housing and Accommodation, the solution cannot be rotated because only one component was extracted (including B4: Justice Delivery and B6: Inducement). The Cronbach alpha coefficient of the sections of the questionnaire as a whole was 0.69, whereas the Cronbach alpha based on standardized items in all the sections of the questionnaire was 0.71. The researcher performed further reliability checks by excluding data from section B of the questionnaire that the matrix was not positive definite. The questionnaire yielded a Cronbach's alpha coefficient of 0.72, whereas

the Cronbach alpha based on standardized items was 0.76 (Appendix B).

4. Discussion

This paper presents the processes adopted or followed to develop and validate a questionnaire to examine and address challenges related to effective service delivery in PNG's law and justice sector. The questionnaire was designed to evaluate factors that would inform policy and practice in different organizations constituting the law and justice sector. The construct validity of the questionnaire was determined by PCA, and the internal consistency was evaluated by Cronbach's alpha.

The final version of the questionnaire includes 44 items after 13 items were removed because of the following issues:

1. The reliability statistics values were negative because of a negative average covariance that violates the model assumption's reliability principle. Notwithstanding this outcome during the analysis of data, the item coding was double-checked to ensure that these were correct.

2. Other items were deleted from the questionnaire because the analysis reported a factor loading of less than 0.3 (Kumah et al., 2023; Peterson, 2000).

3. Item 2 "Female prisoners escape more than male prisoners from PNG's prisons" was included in the final version of the questionnaire despite its low reliability coefficient. The inclusion of Item 2 was predicated on the dominant male population that completed, coded, and analyzed the questionnaire for the first reliability tests. The researcher believes that the completion of the questionnaires by male respondents could have warranted the low-reliability value of Item 2.

The 44 items featured on the questionnaire were scored on a unipolar scale. Twenty-seven items that are associated with funding, justice delivery, the prison system and rehabilitations, inducement, and ease of conducting business were scored on a Likert scale of 1 to 5 using 'not all,' 'a little,' 'a moderate amount,' 'very much,' and 'an extreme amount'. A higher score confirms the greater effect of the factor presented in each statement on service delivery in the law and justice sector. It also confirms the level of each respondent's knowledge of factors hampering effective service in the PNG law and justice sector.

The Cronbach alpha of the different subscales in the questionnaire yielded 0.69–0.77. The overall reliability coefficient of the questionnaire using Cronbach's alpha was > 0.7 . According to Kumari et al. (2021) and Kumah et al. (2023), the reliability coefficient of 0.72 attributed to the questionnaire suggested a good internal consistency of the subscales.

The following strengths are associated with the questionnaire. First, little or no guidance is needed by respondents from the researcher in administering the questionnaire. The completion of a questionnaire with

little or no support from researchers or third parties during data collection is a factor attesting to its user-friendliness. This ease of completion was facilitated by the user-friendly font type and font size used in the questionnaire design. The scale used with the featuring of the weight allocated to each response on the questionnaire enabled respondents with low English proficiency to make sense of the items featured in the questionnaire. Second, it could help stakeholders in regions other than the National Capital District in Papua New Guinea evaluate matters relating to service delivery in other cities, towns, and villages in Papua New Guinea. Third, the different sub-scales in the government department assisted in gaining insights into factors militating against effective service delivery in the law and justice sector in the country. Government departments interested in conducting research on services provided by their organizations can use one or more of the sub-scales featured in the questionnaire. Finally, the questionnaire could inform practice in different organizations on designing questionnaires or scales to evaluate the effectiveness of essential services provided to local and international clients. The process adopted to design the quantitative questionnaire using FGIs is suitable for adoption by organizations with responsibilities and oversights on service delivery matters in Papua New Guinea.

There are potential limitations in the design and validation of the questionnaire presented in this study. The primary limitation is the sample size of six staff members who completed the first version of the questionnaire to test for reliability. The return rate of the 30 questionnaires given out for the first stage of validation was low. One way to address this low return rate is to involve respondents from other organizations, which would reduce the number of respondents available for the second stage of the research.

The inability to recruit a larger sample of respondents for the first stage is consistent with the outcome of similar research completed by Kumah et al. (2023). For instance, only 46 of the 335 respondents consulted agreed to participate in the research on the development and validation of a questionnaire on evidence-based and evidence-informed practices completed by Kumah et al. (2023). Therefore, the occurrence of a paucity of respondents reported in this study is normal in questionnaire construction studies. In light of the foregoing, the outcomes of this research should be generalized with caution because the selected sample is not representative of employees in the Papua New Guinea law and justice sector.

5. Conclusion and Policy Relevance for Papua New Guinea

The questionnaire developed in this research is one of the earliest studies to evaluate inter-agency challenges inherent in service delivery using rigorous methodologies and explore means to improve the current delivery of services in Papua New Guinea.

Although only employees from strictly organized organizations in the Papua New Guinea law and justice sector participated in the questionnaire validation, the questionnaire is considered adequate to collect data from all organizations within the law and justice sector in Papua New Guinea. The questionnaire is a valid and reliable research instrument for evaluating the public sector environment in Papua New Guinea. The questionnaire developed and validated in this study has the validity and reliability to elicit responses from employees in the healthcare sector and educational institutions in Papua New Guinea and can be adapted for evaluating service delivery in other sectors of the Papua New Guinea economy. This questionnaire highlights important aspects of work related to service delivery. The different sub-sectors presented in the questionnaire are useful for assessing funding, human resource issues, housing and accommodation deficits, justice delivery, the prison system and rehabilitation, corruption, and the ease of doing business in Papua New Guinea's public institutions, thereby complementing the Government of Papua New Guinea's policies to ensure effective service delivery in all provinces.

The lack of literature on service delivery in the Law and Justice sector informed the sequential exploratory design adopted for this research. The items featured in the questionnaire were entirely new. The principal component analysis and reliability coefficients of the items in the questionnaire confirm its suitability for measuring service delivery in organizations providing public services. However, further research on service delivery in public service organizations in Papua New Guinea is recommended.

6. Limitations and Further Study

The findings presented in this manuscript are limited to 19 employees of the law and justice sector in Papua New Guinea. Therefore, future researchers should exercise caution in generalizing the outcomes of this study to employees in other sectors of government or non-government organizations in other countries.

Ethical Approval

This research manuscript was written under BSCR 1.2.

Informed Consent

The organizations and human participants who participated provided institutional approval and informed consent before data generation and collection was completed.

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Appendix A

Table 1. Demographic information on selected law and justice sector employees in relation to some variables (N = 37) (Coding of field survey data)

Variable	Description	Mean	%	SD	Tolerance	VIF
Sex	1 = male, female = 2	1.270	Male = 27, female = 10	0.450	0.790	1.266
Age	1 = 25-35, 2 = 36-46, 3 = 47-57, 4 = 58-65, 5 = not specified	1.882	25-35 = 40.5, 36-46 = 29.7, 47-57 = 13.5, 58-65 = 8.1, not specified = 8.1	0.977	0.099	10.104
Marital Status	1 = never married, 2 = married, 3 = divorced, 4 = de facto	2.108	Never married = 8.1, married = 83.8, divorced = 2.7, de facto = 5.4	0.774	0.753	1.328
Educational Qualifications	1 = Bachelor's degree, 2 = diploma, 3 = Grade 10, 4 = Grade 12, 5 = Master of Business Administration (MBA), 6 = not indicated	2.750	Bachelor's Degree=24.3, Diploma = 21.6, Grade 10 = 10.8, Grade 12 = 35.1, MBA = 5.4, not indicated = 2.7	1.339	0.722	1.385
Work Experience (Years)	1 = 1-10, 2 = 11-20, 3 = 21-30, 4 = 31-40.	2.054	1-10 = 43.2, 11-20 = 27.0, 21-30 = 10.8, 31-40 = 18.9	1.153	0.085	11.720
Rank	1 = chief inspector, 2 = chief sergeant, 3 = chief superintendent, 4 = constable, 5 = first inspector, 6 = senior constable, 7 = senior inspector, 8 = sergeant	5.405	Chief inspector = 2.7, chief sergeant = 2.7, chief superintendent = 2.7, constable = 43.2, first inspector = 13.5, senior constable = 5.4, senior inspector = 13.5, sergeant = 13.5	2.192	0.521	1.920
Place of Birth in PNG	1 = Highlands Region, 2 = Momase Region, 3 = New Guinea Island Region, 4 = Southern Region	1.812	Highlands Region = 59.5, Momase Region = 16.2, New Guinea Island Region = 8.1, Southern Region = 16.2	1.151	0.669	1.494

Appendix B

Questionnaire on Strategy for Improving Service Delivery in the PNG Law and Justice Sector Research Project [QSIDPNGLJSRP]

The National Security and International Relations Research Program (NSIRRP) at the prestigious Papua New Guinea National Research Institute (PNGNRI) is undertaking a national research project to improve service delivery in the law and justice sector of the PNG national economy. This aspect of the research project aims to “sequentially” explore strategies that are appropriate for ameliorating crimes in PNG and improving the ease of doing business.

Please note that the outcome of this research would enable the researchers in NSIRRP to provide research-informed policies to the stakeholders in PNG regarding crime reduction and ease of doing business.

Section A: Biographical Information

1. Please indicate your sex (*Please tick only one*)

1. Male 2. Female

2. How old are you? (*Please indicate your age*)

.....

3. Please indicate your marital status (*Please tick only one*)

1. Never Married 2. Married 3. Divorced 4. Widowed 5. De facto

4. Please underline or circle the applicable region in PNG where you were born

a. Highlands Region b. Momase Region c. New Guinea Island Region d. Southern Region

5. Please list regions in PNG where you have previously worked with PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE

1. _____ 2. _____ 3. _____

6. Please specify the highest level of education you have gained

7. How long have you been employed in PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE?

Years _____ Months _____ Weeks _____ Days _____

8. Please specify your rank in PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE

9. When were you promoted to your current rank in PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE? Please specify the date of promotion.

10. Which PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE authority are you assigned to work in Papua New Guinea?

Section B: Focus Group Interview Guide (FGIG)

1. Do you face challenges as a member of the PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE? (*Please list and briefly explain the challenges in the space provided below*)

2. Can you describe in detail the most important challenges you have experienced since you were recruited to PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE? [Please feel free to cite specific examples]

3. Briefly cite examples of the solutions you provided to these major challenges you faced as a member of the PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE [You are free to cite specific examples]

4. Which stakeholders do you feel can address the challenges you faced as a member of the PNGCS/RPNGC/PNGICA/DJAG/MS/PngCJE? [Please explain how the stakeholders (Department of Justice and Attorney General (DJAG), Magistrate Services, Ministry of Police, Commissioner of Correctional Service, Deputy Commissioner of Operations, Deputy Commissioner Administration, Assistant Commissioner of Correctional Service Policy & Planning) you mentioned can solve the problems you have identified]

5. Can you describe how crime occurrences in PNG have affected the ease of doing business?

6. Can you explain the community-driven strategies necessary to reduce crime occurrences in PNG?

Thank you for participating in this study