

Summarisation of Zambian Legislative Documents

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Abstract—The National Assembly of Zambia produces a number of important legislative documents which are publicly accessible via its Website. One of the documents published by the National Assembly of Zambia are Bills and Acts, which all form the Laws of Zambia. The Acts and Bills are ideally meant to be open and accessible to the general citizenry, however, prior studies conducted have highlighted the lack of ease of access and difficulties with interpretation of such documents and the two main barriers to enabling open and accessible legal information. This paper presents a potentially viable solution to addressing the challenges with facilitating open and accessible legislative documents by leveraging the use of Natural Language Processing techniques for automatically summarising legislative documents. Specifically, the study was aimed at examining barriers faced by individuals when comprehending legislative documents and, additionally, determining the feasibility of implementing NLP modules capable of generating concise summaries of legislative documents. In order to understand challenges faced when comprehending legal documents, 150 undergraduate students were sampled from the University of Zambia using random sampling. To determine the feasibility of using NLP techniques to provide concise summaries of legislative documents, two (2) NLP models—an abstractive summarisation model and extractive summarisation model. A human evaluation strategy was used to perform a comparative evaluation of the two (2) NLP models, in order to determine the more effective approach. A significant portion—approximately 74.29%—of participants reported 'Never' (33.99%) or 'Rarely' (40.3%) engaging with legislative documents. In contrast, (25.71%) indicated frequent or very frequent interaction. This distribution underscores a significant gap in familiarity and engagement with Zambian legislative materials among the study participants. In assessing participants' overall understanding of legal documents, the majority (43.5%) expressed a neutral perception, suggesting that they found these documents neither easy nor hard to understand. The majority of the human evaluators had a preference for the abstractive summarisation model, indicating that its brevity, simplicity, and directness as reasons for their choice. In addition, the results of the abstractive summarisation model were stated as being easier to understand.

Index Terms—document summarisation, legislative documents, natural language processing, zambia.

I. INTRODUCTION

The National Assembly of Zambia is mandated by law to “To execute the legislative, oversight, representative and budgetary functions for enhanced democratic governance” [1]. In the 2022-2026 strategic plan [2], the “Strategic Objective 2.2” aims to “Enhance Public Perceptions of the National Assembly” by making parliament open and accessible to the public and, additionally strengthening ICT platforms for public engagement.

While parliament, and entities such as the Zambia Legal Information Institute (ZambiaLII) [3], publicly makes available important legislation, interpretation of the documents is problematic due to the size of the documents and the vocabulary used. Masson and Tahir report that the barriers associated with providing open and accessible legal information relies on two factors: ease of access and the capacity to interpret the documents [4].

This paper is organised as follows: Section I provides context and background information associated with the studies conducted; Section II comprehensively discusses existing work; Section III outlines the methodological approaches employed when conducting the studies; Section IV discusses the findings and, finally, Section V outlines concluding remarks and potential future work.

II. RELATED WORK

[illegible]

III. METHODOLOGY

A mix-methods approach was employed to conduct the studies outlined in this paper as follows:

- A survey, outlined in Section III-A was conducted with students at University X
- NLP summarisation models were implemented as outlined in Section III-B
- A controlled comparative evaluation was performed with human evaluators, as outlined in Section III-C, in order to determine the perceived effective summarisation technique

A. Understanding Legislative Documents

In order to understand participants' with legislative documents and, additionally, challenges associated with comprehending legislative documents, a survey was conducted with randomly sampled full-time undergraduate students at The University of Zambia. Socialdemographic factors—gender, age, school/faculty, programme of study and year of study—were collected from participants, in addition frequency with which legislative documents were accessed and, finally, difficulties with comprehending legislative documents using "Statutory Instrument No. 12 of 2018"—shown in Figure 1—as a reference.

B. Summarisation Models: Design and Implementation

The implementation of the NLP summarisation models and pipelines was guided by the Cross-industry Standard Process for Data Mining (CRISP-DM) model [5], with the six (6) phases used as follows:

- Phase 1.** Business Understanding—Acts and Bills available on the National Assembly of Zambia Website were analysed to understand the structure of legislative documents
- Phase 2.** Data Understanding—Data sources were identified, with data extraction conducted on publicly available PDF documents
- Phase 3.** Data Preparation—Data was pre-processed using common text pre-processing techniques
- Phase 4.** Modelling—NLP models were implemented in order to summarise legislative documents
- Phase 5.** Evaluation—Human evaluators were used to determine the most effective summarisation technique—abstractive and extractive summarisation
- Phase 6.** Deployment—A simple Web-based interface was implemented to comparatively evaluate the two abstractive and extractive summarisations models.

In order to implement effective NLP summarisation models, focus group discussions were held with University of Zambia Law students, in order to understand elements that comprise legislative documents.

Two NLP summarisation models were implemented use two common summarisation techniques: abstractive summarisation and extractive summarisation.

C. Summarisation Models: Comparative Analysis

In order to comparatively evaluate the abstractive and extractive summarisation models, a controlled experiment was conducted with human evaluators.

1) *Task Design:* The National Pension Scheme Act No. 1 of 2023¹ was used as input to the two summarisation models and corresponding summaries generated.

2) *Experimental Design:* A comparative analysis between the abstractive summarisation model and extractive summarisation model was performed. The study was conducted using a within-subject design, with counterbalancing applied by altering the summarisation models they initially read and rated.

3) *Procedure:* Each participant was required to sign a consent form and subsequently required to read the "National Pension Scheme Act No. 1 of 2023" document and, additionally, the two corresponding summaries. Finally, participants were required to complete a questionnaire design to evaluate the following:

- Relevance of each of the two summaries, relative to the original document
- Readability of each of the two summaries
- Preferred summary, when comparing the two generated summaries

IV. RESULTS AND DISCUSSION

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V. CONCLUSIONS AND FUTURE WORK

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¹<https://www.parliament.gov.zm/node/11020>

GOVERNMENT OF ZAMBIA		APPENDIX FIRST SCHEDULE (Paragraph 2)	
STATUTORY INSTRUMENT NO. 12 OF 2018		Fee Units	
The Local Government Act (Laws, Volume 16 Cap. 281)			
The Local Government (Street Vending and Nuisances) (Amendment) (No. 2) Regulations, 2018			
IN EXERCISE of the powers contained in section 84 of the Local Government Act, the following regulations are made:			
1. (1) These Regulations may be cited as the Local Government (Street Vending and Nuisances) (Amendment) (No. 2) Regulations, 2018 and shall be read as one with the Local Government (Street Vending and Nuisances) Regulations, 1992, in these Regulations referred to as the principal Regulations.	Title S. I. No. 134 of 1992	1. Spitting or vomiting on, or along, a street or prescribed road 2. Throwing litter on, or along, a street or prescribed road 3. Urinating in any unauthorised place 4. Defecating in any unauthorised place 5. Singing an obscene song or saying obscene words in a street or public place 6. Writing an obscene word or drawing an indecent figure or representation or, defacing a permanent structure 7. Wilfully or negligently extinguishing or damaging a street lamp or damaging a lamp-post, telephone or electric light wire, cable insulator or bucket or standard supporting any such cable or, causing an interruption in the supply of electric current by any means whatever, without the permission of the Council or its authorised agent	333.33 1,666.67 2,500.00 2,500.00 2,500.00 2,500.00 2,500.00
3. The principal Regulations are amended by the deletion of the First Schedule and the substitution therefor of the Schedule set out in the Appendix	Amendment of First Schedule	8. Plying trade by any licensed hawker within an area more than five days in a calendar month, in the same place for more than thirty consecutive minutes or plying on two or more	

Fig. 1. Statutory Instrument 18 of 2018: Street Vending and Nuisances.

- [4] M. J. Masson and O. Tahir, "The legal information needs of civil society in zambia," *Journal of Open Access to Law*, vol. 4, no. 1, 2016.
- [5] R. Wirth and J. Hipp, "CRISP-DM: Towards a standard process model for data mining," in *Proceedings of the Fourth International Conference on the Practical Application of Knowledge Discovery and Data Mining*, 2000, pp. 29–39. [Online]. Available: <http://cs.unibo.it/~danilo.montesi/CBD/Beatriz/10.1.1.198.5133.pdf>