The document is "A Machine Learning-based Modelling Assistant for Improving Understandability of Business Process Models" by Rosa Velasquez. The author argues that understandability is one of the most important quality criteria in BPMs, but that current methods for assessing understandability are limited. She proposes a new method that uses machine learning to identify the factors that influence the understandability of BPMs and to predict whether a model is likely to be understandable. This method could be used to develop an assisted modelling tool that would provide real-time guidance to modelers on how to create more understandable models.

This research uses Machine Learning (ML) to predict and improve understandability by:

1) Training an ML model to evaluate understandability.
2) Integrating the model with a BPM tool to assist modelers.

Design science methodology will guide this research with two main challenges:

1) Designing a platform to collect data for training the ML model.
2) Methodologically integrating the platform with BPM modelling tools.

This research aims to create more understandable BPMs through ML-based prediction and modelling assistance.

The "Background and Related Work" section explores the existing literature and research related to Business Process Models (BPMs) and their understandability. It discusses the significance of creating BPMs that are easily understood by all stakeholders involved, emphasizing the gap in research regarding how different factors affect BPM understandability. The section reviews various approaches and methodologies previously undertaken to assess and improve the comprehensibility of BPMs, highlighting the potential of machine learning techniques to offer more nuanced insights into the complex interplay of factors influencing BPM understandability.

The "Research Definition" section defines the objectives and hypotheses of a study on improving the comprehensibility of Business Process Models (BPMs) via an assistance tool based on machine learning. The aims include the analysis of factors affecting the comprehensibility of BPMs, the creation of an automatic evaluation model and an assisted modeling tool, and their empirical validation. Three main hypotheses are tested: the correlation between factors and comprehensibility, the feasibility of automatic evaluation via machine learning, and the effectiveness of the assistance tool in improving comprehensibility.

The "research method" section follows a concise three-phase approach:
Problem Investigation: Review literature to identify factors influencing BPM understandability and propose an instrument for evaluating these factors.
Treatment Design: Develop an ML model for automatic understandability evaluation and an assistant tool for BPM creation, using the CRISP-DM method for model development and Situational Method Engineering for tool integration.
Treatment Validation: Validate the assistant tool through empirical experiments, focusing on the impact of understandability factors, the accuracy of ML models, and the tool's effectiveness in enhancing BPM creation.

The "Contributions and Challenges" section introduces a two-fold contribution to using Machine Learning (ML) for improving the understandability of Business Process Models (BPMs): First, it develops an automatic evaluation model to predict BPMs' understandability based on ML-detected relationships. Second, it presents empirical evidence of incorporating this model into an assisted modeling tool. Data collection will be facilitated by adapting software using the Communication Analysis method in courses with undergraduate students, aiming for at least 1000 **observations.**

To conclude, this research highlights the need to delve into factors affecting Business Process Models' (BPMs) understandability and proposes a Machine Learning (ML)-based tool to enhance it. It outlines a method involving factor identification, ML analysis, an evaluation model development, and its integration into a modeling tool for practical validation.