Developing a web application to improve communication in the industry.

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EU European Union (Abbreviation)

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Chapter 2: Research Methodology

# Project description

The goal of this study is to develop a web application that can be used to enhance communication between developers and management at a South African software development company. To reach the goal of this study, research on the different research methodologies has to be done.

According to Cambridge University (2015), research is a detailed study of a subject, but more specifically to reach a new understanding or to discover new information. This is described as a number of overlapping or similar activities that involve the search of information.

# Problem description and background

In the corporate world, businesses rely on effective communication to succeed. As developers, we lack the number of screens that we need to keep all our important tabs open. This makes it harder for important messages to reach developers and influences productivity and creativity (Schrader, 2018).

# Aims and objectives of project

This study proposes the development of a communication web application that can easily be viewed in an office by all employees to allow easy access to important communication regarding specific software development projects. Where the primary objective is to develop a web application for a South African software development company that allows for easy access to important communication relating to specific project.

# Literature review

## Introduction

A research methodology is defined as the specific techniques or procedures that can be used to select, identify, analyse and process information or data on a specific topic (Duke & Mallette, 2011). The methodology section in a research paper, allows a reader to assess the overall reliability and validity of a study. This section revolves around a couple of questions: How was the data analysed? And how was the information and data generated or collected.

## Paradigms

According to Sahifa (2017) a research paradigm can be defined as a research model or approach used to conduct research. This model or approach has to be verified by the research community as well as be in practice for hundreds of years to be considered a paradigm.

The three paradigms that are most common are interpretivism, design science and positivism (Vijay Vaishnavi, 2004). The research paradigms will be discussed in short in the section below.

Each paradigm can be broken up into four philosophical assumptions named Ontology, Epistemology, Methodology, and axiology (McGregor & Murnane, 2010). Ontology focuses on the reality and strives to understand the social world, just like the natural world. Epistemology focuses on objects and strives to study a situation or fact that exists or happened, without disturbing or affecting that phenomena (Vosloo, 2014). Methodology focuses on the methods and how it is used to capture data. Axiology focuses on the values that are relevant to the study and what those values hold and why? (Vijay Vaishnavi, 2004).

The following table shows the philosophical assumption of the three research perspectives according to Vijay Vaishnavi (2004).

Table 1: Philosophical Assumption of Interpretive, Design and Positivist

|  |  |  |  |
| --- | --- | --- | --- |
| Basic Belief | Research Perspective | | |
| Interpretive | Design | Positivist |
| Ontology | Socially constructed and Multiple realities. | Socio-technologically enabled. Contextually situated, Multiple alternative world-states. | A single reality, probabilistic, knowable. |
| Epistemology | Subjective that is knowledge and values emerge from the researcher-participant interaction. | Knowing through constructing. Objectively constrained construction within a context. Iterative circumscription reveals meaning. | Objective. Detached observer of truth. Dispassionate. |
| Methodology | Participation. qualitative, dialectical, and hermeneutical. | Developmental. Measure artefactual impacts on the composite system. | Observation. statistical, quantitative. |
| Axiology | Understanding. Description and situated. | Creation, Control, Progress(improvement), and understanding. | Truth. beautiful and universal. Prediction. |

### The interpretivism paradigm

The interpretivism paradigm is there to understand and research the subjective world of human experience and emphasises the understanding of individuals and the interpretation of the world around them (Dean, 2018). Through a consistent manner, grounding theory is used to analyse and gather data, and researchers try to discover patterns in the data collected to understand a generated theory or phenomenon (Strauss & Corbin, 1990).

### Design science paradigm

Design science as a paradigm is based on two major activities that are design, and investigation of the artifact (Wieringa, 2014). The design of the artifact is designed to interact with someone or something to solve a certain problem. Evaluation methods in design science are to develop prototypes of the artifact, interviews and field experiments (Ken Peffers, 2008).

### positivism paradigm

The positivism paradigm is based on the theory that to maximise the understanding of humanity is trough reason and observation (Ntgrty, 2016). According to this paradigm, the assumption is made that reality is independent from humanity. It focuses on getting facts through empirical qualitative analysis and methods and is based on solving everyday problems with the use of analysing statistics (Vosloo, 2014).

## Positioning and motivation of the chosen paradigm

Design science research was chosen to be the most applicable paradigm for this study. This study is aimed to developing a web application to improve communication in the industry. Researchers using design science use and artifact to solve a certain problem (Peffers, 2008), thus designing and investigating a web application will solve the main problem of this study.

Design science research was the most suitable paradigm and will be discussed in the next section.

## Research methodology literature

## Reflection and Integration

# Conclusion

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