A SYSTEM DEVELOPMENT METHODOLOGY GUIDANCE TOOL FOR SUPERVISION OF IT PROJECTS

PRESENTED BY:

BONGO BETTY KUVUNA 089139

SUPERVISED BY:

ALLAN O. OMONDI
FACULTY OF INFORMATION TECHNOLOGY
STRATHMORE UNIVERSITY

2018 STRATHMORE UNIVERSITY RESEARCH AND INNOVATION CONFERENCE.
NAIROBI, KENYA
DATE: 29/10/2018
DEFINITIONS OF TERMS

- System development methodology – It defines the objectives of each phase of the system development and the results required before the next phase can begin.
- Guidance tool – This is the proposed project that will guide the developer through a system development methodology.
- Supervision – In this case, it is the process of overseeing the progress of an IT project.
Proper application of a system development methodology is critical for success in the development of an information system project.

It defines the objectives of each phase of the System Development Life Cycle and the results required before the next phase can begin.

In this day and age, the number of companies that lack seriousness to consistently apply and follow a process is baffling. More so, within Universities whereby students develop Information systems as projects.

Supervision of IT projects is as well an important part in the development of a system.
Causes of low success rate of IT projects: improper application of system development methodologies and lack of effective communication from the student to the supervisor and vice versa, as indicated from the data collected.

The intent of this study was to develop a system that will improve the success rate of IT projects through the proper implementation of system development methodologies and additionally, to improve supervision of these IT projects by reviewing the current methods of supervision. The main beneficiaries are students and supervisors.
INTRODUCTION: SPECIFIC OBJECTIVES

- To **identify** the challenges experienced in application of system development methodologies in IT projects. ✔
- To **review** current methodologies applied by Faculty members in supervision of IT projects. ✔
- To **analyse** web-based Software as a Service (SaaS) technologies used for project management. ✔
- To **develop** a web-based guidance tool for successful supervision of IT projects through proper implementation of system development methodologies. ✔
- To **test** the developed system using 2nd year Business IT projects in Strathmore University.
Saarinen (2018) implied that methods and tools should be sufficient in all stages of the system development lifecycle to ensure success and that certain approaches could be conducive to the correct choice of system development methods.

Albeit, Fitzgerald (2008) stated that there is much evidence that developers omit some aspects of a methodology, not because of ignorance, but since those aspects seem irrelevant.

This may seem contradictory but what stands out is that the system development methodology is applied regardless.
LITERATURE REVIEW: SUPERVISION OF IT PROJECTS

- Each supervisor has a different way of supervising and tracking project progress.
- Communication is mostly done through emails and weekly meetings to supervise project documentation.
- Tracking of the project progress can only be done during physical meetings.
Scrum methodology.

This methodology is appropriate because it insists on frequent updating of progress through meetings and constant feedback from customers. Issues can then be identified well in advance and it also becomes easier to make changes to the system.

Scrum framework (Introduction to scrum, 2018)
METHODOLOGY: SYSTEM REQUIREMENTS GATHERING

- A questionnaire intended for 3rd and 4th years was distributed to find out which system development methodology they prefer to use and how they apply it.
- An additional questionnaire was used for graduates, to identify the relation of applying a system development methodology and the success rate of IT projects.
- Information regarding supervisors and their current methods of supervision and thoughts on project success was also collected through a questionnaire.
STRUCTURED SYSTEMS ANALYSIS AND DESIGN TOOLS (SSAD)

- Use case diagram
- Level 0 DFD
- Level 1 DFD
- Flowchart
- Entity-relationship model
- Database schema
- GUI designs
USE CASE DIAGRAM

System

student signs up

Enters project
details

«extends»

Student logs in

Supervisor signs up

Supervisor logs in

View system development methodology details and project schedule

«extends»

Notified of tasks

Updates project progress

Enters project name

Views project progress

Manage web application

Administrator

Student

Supervisor
LEVEL 0 DFD

A System Development Methodology Guidance Tool for Supervision of IT projects.
LEVEL 1 DFD

Methodology

Administrator

View system development methodology phases and tasks

Register student

Student

Project details

Input project details

Supervisor details

Accounts created

Supervision sheet

Student

Supervisor

Register supervisor

Supervisor

Project progress

Student details

Student details

Student details

Supervisor details

Supervisor details

Project progress

Progress
**Start**

- **Student/supervisor logs in**
  - **Do they exist in the database?**
    - **No**
      - **Student/supervisor registers**
    - **Yes**
      - **Student/supervisor is logged in**

- **Is user a student?**
  - **No**
    - **Views project progress, phases, tasks, and goals of the system development methodology**
  - **Yes**
    - **Enters the project details**

- **Project progress update**
- **Project schedule**
- **Phases, tasks, and goals of the system development methodology**
- **Views project progress**

- **Student/supervisor logs out**

**End**
Which system development methodology did you use in your second year project?

- Rapid Application Development (30.4%)
- Agile Methodology (25%)
- Waterfall Model (22%)
- Extreme Programming (10.6%)
- V-shaped Model (8.9%)
- Spiral model (3.6%)
- Traffic modeling (2.5%)
- Prototype (1.8%)

Do you believe improper application of system development methodologies is a cause of low success rate of IT projects?

- Yes (28.6%)
- No (71.4%)
To what extent would you say you consistently applied ALL the principles of the chosen system development methodology with discipline

58 responses
Do you believe improper application of system development methodologies is a cause of low success rate of IT projects?

How can these method(s) be improved through the use of a computer-based Project Management System used by Faculty supervisors for University students’ projects?

5 responses

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

- Yes: 60%
- No: 40%

- Allow supervisor to track student progress and possibly grade the students on it.
- A formal structure be implemented in a system.
- Explaining to the students the importance of these deliverables and helping them keep track of milestones.
- A computer-based Project Management System can support the sending of notifications to both the supervisor and the student on key deliverables that have to be met before the next meeting.
- Provide continuous monitoring with a way of measuring performance (progressively).
The system should allow students/supervisors to sign up for an account and they will be authenticated upon login.

The system should allow students to enter details of their projects: SDM, project name, start date, end date, project members and supervisor’s name.

The system should inform the student what is expected (goals) at each phase of the SDM.

The web application will offer guidance on: RAD, waterfall, agile, extreme programming and v-shaped model.

The system should allow the supervisor to view a graphical representation of their supervisees’ project progress.

The system should allow the supervisor to give feedback to the student via an online supervision sheet.

