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**Feasibility Study**

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# 1. Executive Summary

Frey-Tech is a small, yet dedicated company that can be entrusted to pursue every avenue possible to succeed no matter the task. Frey-Teck is comprised of different individuals, who has a variety of expertise in areas such as technical knowledge, coding prominence, teamwork, and dedication. It is through the use of these skills that a feasibility study can be successfully conducted to identify weaknesses and strengths.

The main problem that the Department of Trade and Industry (DTI) is experiencing currently is that Black Industrials within the businesses of South Africa are not able to reach their full potential in terms of Project Management (PM). This is because these industrials are operating in an environment that is restricting them. They do not have the proper tools available to successfully manage projects.

Frey-Teck proposed the following solutions to address the problems that DTI is experiencing. The first solutions involve an intranet system with an installable client. The second solution will run on a cloud-base system with a browser-based interface. The last solution is also an intranet system, that will use a browser-based interface. These solutions will be described in detail in the feasibility assessment.

The methods undertaken to assess the feasibility of each solution is based on an evaluation that evaluate the solution according to scope, budget, schedule, and practicality. The scope, budget and schedule will be evaluated according to a feasibility score that will range between 1 and 5. A risk ranking criteria was also used to identify the most feasible solution according to risks that the solutions are exposed to. The risk ranking criteria measured the risk according to the maintainability, scalability, affordability, user-friendliness and development pace

From all the solutions that was proposed in the feasibility study, the intranet system with browser-based interface ranked the most feasible according to the risk ranking criteria. This solution was not only chosen because it yielded the highest score, it was also chosen because it meets the user requirement.

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# 2. Problem Statement

## 2.1. Business Environment

The internal and external environment of the organization was analysed, in order to identify the core aspect of the business environment that prompted the project to take place.

The following will elaborate more on the internal environmental factors that was identified:

The governance and strategic environment prompted the project to take place. From a governmental and strategic point of view there was a need for better organizational structure. According to Nae.global (2020) stated that Project Management Methodologies (PMM) are used to standardize and create organizational structures, provide methods and procedures. The tender indicated that projects need to be executed in line with a PMM. This indicates that businesses require a better organizational structure and strategies to be in place.

The following will elaborate more on the external environmental factors that was identified:

The political environment prompted the project to take place. From a political point of view there was a need for Black Industrials to unlock their full potential, and this can only be done through digital transformation. It is important to remember that DTI is a department of the government, the government thus has an influence. The Deputy Minister of Trade and Industry, Ms. Namalungelo also stated that digital transformation is required to bridge the gap (thedti, 2020). This was also stated in the tender’s Department Profile.

The social environment prompted the project to take place. From a social point of view a proper PMM is required. According to O’Farrell (2017) cultural trends form part of the social factors. The tender stated that PM is one the main factors that is used by businesses to execute their strategies. Therefore, it can be concluded that social trends regarding PM prompted this project to take place.

The technological environment prompted the project to take place. From a technological point of view a better project management and administration system is required, for the industrials to successfully manage projects in accordance to the PMM. The tender document indicated (Under Introduction and Background) that a proper administration system is required as well as a system that is able to manage a project in line with the established PMM. New and better technology is also needed to facilitate the digital transformation.

The other internal and external factors was excluded because it did not fit into the context of this project. This means that the analysis of the tender document did not indicate that these factors prompted the project to take place.

## 2.2. Business Problem

The tender document, the requirements as well as the Microsoft Access database management system that is currently being used, was analysed to identify the main business problems and to identify the root causes of these problems. The main problem identified: the current system that is in place does not support proper PMM.

The following will elaborate more on the causes of the problem identified from different aspects of the current system:

In general, the system does not really support proper administration of projects, projects are not able to be implemented in accordance with the PMM. A unified operating platform is needed for the system to operate properly, in the current system it is not the case.

The Microsoft Access database management system does not function properly. A lot of the reports and forms are not able to be generated, because their sources do not exist.

The requirements provided insight into potential causes and shortcomings of the current system. The current system does not have the proper update functionality in place, nor does it have proper database maintenance in place. The current system also does not have the proper tools in place for creating and managing new projects.

These problems and missing functionality experience in the current system limits DTI’s potential, because the business is not able to apply proper administration and managing of projects. In order to resolve these problems, an appropriate solution will be implemented in a timeframe of 6 months, spanning from the 30th of April to the 27th of October.

## 2.3. Business Opportunity

The business problem creates an opportunity to create an intelligent technological solution that is standalone, supports multiple users and is able to manage projects and handle their administration effectively. This solution will create a unified system that houses all the necessary and required functions. This system will house the templates that are required by new projects, budgets, and plans. The solution will implement a sophisticated database that will allow the resources to be effectively maintained. On top of this, the solution will connect and integrate all the different aspects of the system, such as users, data, information, and projects with each other. This opportunity requires a timeframe of 6 months, spanning from the 30th of April to the 27th of October.

This solution will also create other opportunities:

* Creates the opportunity to introduce digital transformation across businesses in Africa.
* Creates the opportunity to reduce the number of Information Communication Technology (ICT) projects that fails.

These opportunities, will have a positive impact on the business in the following way:

* Employees will be more capable to successfully implement and manage projects, because they have a supportive platform in place that does not limit their potential.
* When projects are better managed, less money is wasted, since the project has a better chance to succeed.
* These opportunities also save time, because allows certain processes to be automated. This also results in less money spent.
* By saving money, DTI will be able to reinvest money.

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# 3. Requirements Statement

Business drivers and requirements is needed to solve business problems and create opportunities.

## 3.1. Business Drivers

The following Business Drivers need to be present in order to allow for a solution to the business problem or opportunity to be found:

* **People** – Skilled individuals are needed to successfully complete the work or objectives set out by the client. Within Frey-Tech we have employees that fill different positions including a technical lead, developer and junior developer along with a technically gifted intern allowing us a variety of skills to call upon.
* **Profit** – The reason behind any project or work that is done is to make a profit while fulfilling a need. Frey-Tech can maximise their strengths and build on their weaknesses. This allows us to work towards our goal of turning a profit.
* **Technology** – Technology is used to create a project management system that is able to create, update and delete projects. Frey-Tech has the ability to understand different technologies. This understandability allows Frey-Teck to create a project management system that meets the client’s specifications and requirements.
* **Functionality** – A project management system will be able to perform tasks as required by the client, allowing for the system to be deemed functional.

## 3.2. Business Requirements

For the project to be considered a success, the following requirements must be included into the project to solve the following business problems and opportunities:

|  |  |
| --- | --- |
| Business Problem or Opportunity | Project Requirement |
| Current system in place does not support proper Project Management | The creation of a system that will meet all client specifications in order to be able to support proper Project Management. |
| Updating of currently active projects not possible | The ability of the system to update and edit existing projects is one of the functions a new system must be able to provide in order for it to be considered a success. |
| Creation of new projects not possible with current system | The ability of the system to create new tasks is a key function that is required. Therefore, the new system needs to be able to handle this sort of request. |
| Removal of projects that have already been completed or fulfilled | The ability of the system to remove a project from its database once it has been completed is another function of the system that must be implemented in order for the project to meet the client’s requirements. |
| Time needed to create a working project management system | Enough time given to develop a system that meets the client’s specifications will be required, at this moment 6 months is considered a viable time period for the creation of a system that meets the client’s requirements. |
| Money required to create a working project management system | Enough money to pay for the use of different technologies, payment for labour as well as payment for delivery and implementation of such a system has been included in the budget of Frey-Tech’s proposition of the project with the budget meeting business standards. It is through this budget that a successful project can be created that meet the client’s requirements |

# 4. Feasibility Assessment

## 4.1. Potential Solutions

1. Implementing an intranet system with an installable client
2. Implementing a cloud-based system that can be interacted with through a browser
3. Implementing an intranet system that can be interacted with through a browser

## Solution 1: Intranet system with an installable client

* + 1. **Description**

The first solution is to provide the stakeholder with a system that includes an installable client which will connect to an intranet server. This solution requires the organization to have a system in place that uses a device to host the system on. The system can provide installation and maintenance at an additional monthly fee. The core components include:

* Installable client
* Intranet server
* Local area network
* Subscription fee
  + 1. **Assessment**

The assessment methods that will be used are evaluating whether the solution meets the scope, to evaluate whether the project will be within budget and to evaluate whether the project will be completed within the schedule as well as the practicality.

The feasibility score will range between 1 and 5, with a higher number indicating a more feasible solution. The scope, budget and schedule will be evaluated according to what was mentioned during the project proposal.

* + 1. **Results**

|  |  |
| --- | --- |
| **Feasibility Score** | **Assessment Method** |
| 3 | Budget: The proposed solution requires additional monthly fees which are not mentioned during the project proposal |
| 5 | Scope: The solution meets the scope mentioned during the in the project proposal |
| 3 | Schedule: The solution will be executed within the proposed time. The development time will increase because of the installable client. |
| 4 | Practicality: The solution will allow the end-user to conduct project management but is not the most practical solution. |

* + 1. **Risks**

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk  Description** | **Risk Likelihood** | **Risk Impact** | **Actions Required  to Mitigate Risk** |
| Schedule | Low | High | The project manager must set deadlines according to the Gantt chart in the project proposal and it should be strictly met |
| Budget | Moderate | High | Discussion with the stakeholder fees that apply using this solution. |

* + 1. **Issues**

|  |  |  |
| --- | --- | --- |
| **Issue Description** | **Issue Priority** | **Actions Required to Resolve the Issue** |
| Technical competence of end-users | 5 | Technical training should be conducted with the end-users ensuring they are on track and understand how the system works |
| The standalone server on the organization’s side | 5 | Discussion with the stakeholder should be conducted ensuring they understand what the specifications of the standalone server should be. |
| Subscription fees | 5 | Stating clearly the benefits of a monthly subscription fee which will provide maintenance and installation. |

## Solution 2: Web-based solution

**2.1.1. Description**

The second solution is to provide the stakeholder with a web-based solution where the end-user can log in from remote locations. This solution requires the organization to use a system that have internet access. The stakeholder will then provide software as a service to the different organizations at a monthly rate. The solution will not require installation on the end-user’s side. The core components include:

* Web-based system
* Internet access

**2.1.2. Assessment**

The assessment methods that will be used are evaluating whether the solution meets the scope, to evaluate whether the project will be within budget and to evaluate whether the project will be completed within the schedule as well as the practicality.

The feasibility score will range between 1 and 5 with a higher number indicating a more feasible solution. The scope, budget and schedule will be evaluated according to what was mentioned during the project proposal.

**2.1.3. Results**

|  |  |
| --- | --- |
| **Feasibility Score** | **Assessment Method** |
| 4 | Budget: Hosting an online server nowadays does not require the end-user to have a server |
| 2 | Scope: It neglects the scope because it is not a local area network system |
| 4 | Schedule: The system would be provided on time |
| 5 | Practicality: It is the most practical solution considering the unprecedented time we live in end- users can shift their workspace to home hassle-free |

**2.1.4. Risks**

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk  Description** | **Risk Likelihood** | **Risk Impact** | **Actions Required  to Mitigate Risk** |
| Budget | Moderate | High | The project manager should manage the budget set forward in the project proposal |
| Schedule | Moderate | High | The project manager should manage time spent according to the project proposal and set reachable goals |
| Scope | High | High | The solution should be proposed to the stakeholder before the project is initiated. |

**2.1.5. Issues**

|  |  |  |
| --- | --- | --- |
| **Issue Description** | **Issue Priority** | **Actions Required to Resolve Issue** |
| Internet connection | 5 | Internet connection deals should be proposed by the stakeholder to the end-users because businesses can grow without an internet connection to conduct research |
| Technical competence of end-users | 5 | Technical training should be conducted with the end-users ensuring they are on track and understand how the system works |

## Solution 3: Local Web-based solution

**3.1.1. Description**

The third solution is to implement a local web-based which the end-user can connect to. The solution requires the organization to have a system that uses a device to host the local website. The end-users should have a workstation with the capability to run a web browser to connect to the system. The system can provide installation and maintenance at an additional monthly fee. The core components include:

* Local Web-based system
* Intranet server
* Local area network
* Subscription fee

**3.1.2. Assessment**

The assessment methods that will be used are evaluating whether the solution meets the scope, to evaluate whether the project will be within budget and to evaluate whether the project will be completed within the schedule as well as the practicality.

The feasibility score will range between 1 and 5, with a higher number indicating a more feasible solution. The scope, budget and schedule will be evaluated according to what was mentioned during the project proposal.

**3.1.3. Results**

|  |  |
| --- | --- |
| **Feasibility Score** | **Assessment Method** |
| 3 | Budget: The proposed solution requires additional monthly fees which are not mentioned during the project proposal |
| 5 | Scope: The solution meets the scope mentioned during the in the project proposal |
| 5 | Schedule: The solution will be completed within the proposed schedule |
| 3 | Practicality: The solution is not the most practical solution it will still enhance project management within small businesses |

**3.1.4. Risks**

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk  Description** | **Risk Likelihood** | **Risk Impact** | **Actions Required  to Mitigate Risk** |
| Budget | Low | High | The project manager should manage the budget set forward in the project proposal |
| Schedule | Moderate | High | The project manager should manage time spent according to the project proposal and set reachable goals |

**3.1.5. Issues**

|  |  |  |
| --- | --- | --- |
| **Issue Description** | **Issue Priority** | **Actions Required to Resolve Issue** |
| Technical competence of end-users | 5 | Technical training should be conducted with the end-users ensuring they are on track and understand how the system works |
| The standalone server on the organization’s side | 5 | Discussion with the stakeholder should be conducted ensuring they understand what the specifications of the standalone server should be. |
| Subscription fees | 5 | Stating clearly the benefits of a monthly subscription fee which will provide maintenance and installation. |

**Assumptions**

No assumptions were made in the feasibility assessment.

# 5. Feasibility Ranking

## 5.1. Ranking Criteria

A criterion was used to rank the 3 possible solutions. A solution is given a score out of 5 for each criterion. The score is then multiplied by a weight that represents the relevancy of that criteria. These criterions are described below.

**Maintainability:**

This refers to the ability of the proposed system to be updated and maintained after it has been released to the customer. A higher score would represent a system that is easily updated by developers, and support can easily be administered by the technical support team.

**Scalability:**

This refers to the future possibilities of the system to be expanded across different locations, or for more users than initially planned. If a system is scalable, it may provide good unforeseen income to the customer or to the company that developed the system.

**Affordability:**

Affordability is the system’s cost-effectiveness during development. A high score for this criterion would be characterized by a system that can be developed with the least amount of resources and using low-cost technologies for a production environment.

**User-Friendliness:**

This criterion rates a solution based on how easily the system can be installed and operated by the end-users, and how the users rate their experiences on the system. Another property associated with user-friendliness is how reactive the system is during use.

**Development Pace:**

The pace at which the system is developed is a crucial criterion. A high score awarded in this category would represent a project developed that might finish ahead of schedule, which provides more time for testing and development of additional features.

## 

## 5.2. Ranking Scores

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Solution** | **Intranet system with installable client** | | | **Cloud-based system with browser-based interface** | | | **Intranet system with browser-based interface** | | |
| **Criteria** | **Score** | **Weight** | **Total** | **Score** | **Weight** | **Total** | **Score** | **Weight** | **Total** |
| **Maintainability** | **2** | **10%** | **0,2** | **5** | **10%** | **0,5** | **4** | **10%** | **0,4** |
| **Scalability** | **2** | **20%** | **0,4** | **5** | **20%** | **1** | **3** | **20%** | **0,6** |
| **Affordability** | **4** | **30%** | **1,2** | **2** | **30%** | **0,6** | **5** | **30%** | **1,5** |
| **User-friendliness** | **4** | **20%** | **0,8** | **4** | **20%** | **0,8** | **4** | **20%** | **0,8** |
| **Development Pace** | **4** | **20%** | **0,8** | **3** | **20%** | **0,6** | **4** | **20%** | **0,8** |
| **Total Score** | **16** |  | **3,4** | **19** |  | **3,5** | **20** |  | **4,1** |

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# 6. Feasibility Result

The results of the feasibility ranking show that the most feasible solution based on the provided criteria for this scenario, is the intranet system with a browser-based interface. This solution rises above the other two solutions due to its future maintainability and scalability potential, as well as its affordability. The system’s maintainability and scalability potential is due to the centralised design of the system, where a central server provides the application to users within the intranet.

The second ranked solution is the cloud-based system with a browser-based interface. This system provides many advantages in scalability and maintainability but incurs a large cost from the user in the form of server and software costs. The development pace of a cloud-based system might be slower as well, due to the complexity of the cloud environment. The Intranet system with an installable client provides a very user-friendly environment but reduces maintainability and scalability potential.

Potential risks that may cause harm to the overall project:

**Physical** - The physical risks that will be taken for this project are relatively low. Because of the virtual nature of this project.

**Mental** - The mental risks for this project is quite a higher because personnel can become overworked. This induce burnout as a real risk that could impact the mental wellbeing of the people that will be working on the project. If burnouts are induced, it will cause the members to work inefficiently and thus create a higher workload on the other members in the project group.

**Hardware** - hardware could fail and thus cause the loss of data and work that was already done.

Who will be undertaking these risks:

These risks will be undertaken by our project team which will be developing the program as required by the client namely:

* Welmari Gerhardi Odendaal
* Estian Andries Yssel
* Jacobus Hendricus Warmenhoven
* Fraser Wilson
* Petrus Johannes Roos

What actions can be taken to prevent these risks:

* Unnecessary action will be removed so that time is not wasted.
* Sufficient break times will be given.
* Workdays will be reduced to 6 hours per day.
* Stress will be managed by spreading the workload to all team members so that burnout is not induced by stress.
* Ensure that all work that is done is saved to an online repository so that in the event of a hardware failure that work is not lost.

Make a record of the findings:

In this risk assessment, the primary risk that was identified is burnout in this project, but these risks can be mitigated to reduce the impact that the risks have. This will have a minimal impact on the project.

The project team will have to be informed of the risks that they will be undertaking and the steps to reduce risk will have to be implemented

Review the risk assessment:

If the measures are implemented the risk of burnout and data loss will be minimized so that no time is wasted. This will ensure that the project team will continue to work productively.

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