



WHIZZ ICT

ONLINE APPLICATION PLATFORM

BY

"TEAM CONSULTANTS"



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Business case and project outcomes

Introduction & background

Whizz ICT (formally known as Whizz ICT Skills and Service Centre (pty) Ltd) is a company that provides services that are linked with access and the use of information communication technology (ICT). It was registered in 2008 and started operating in Khayelitsha after research was conducted and it was found that there is very few information around ICT and related services in the vast community of Khayelitsha providing a massive market with consistent demand. Whizz ICT provide said services - services such as printing, communication as well as skills development services; these include training and education on computers and professional development services.

There are currently 10 part- and full-time staff on the team. The staff each have Google accounts, and use online ICT resources (Google/ Gmail). They use desktops and mobile IT resources to access the online ICT resources. Currently they make use of easily accessible and/or open-source products like Google, Facebook and WordPress that are user-friendly for the large customer base.

Khayelitsha is the biggest township in the Western Cape, and the sixth largest township in South Africa (Business Tech, 2016). Despite being a large township, it is one of the poorest areas of Cape Town with a median average income per family of R20 000 and roughly over half the households there live in informal dwellings (Strategic Delevopment Infromaion and GIS department, City of Cape Town, 2013). Due to this, when the founders of Whizz ICT did their research and found that there was a lack of ICT education and services, they started Whizz ICT for the primary purposes of supplying quality said services for the massive and low-income markets in Khayelitsha.

Currently to register for the courses and services offered by Whizz ICT, individuals would have to sign up/ register for these courses at the office site in person. To register, potential students would have to meet with the staff and register manually; fill forms in by hand, which will later be captured by the staff and stored in excel; this leads us to the problem statement/ definition as it is inefficient and with the new covid-19 cases, it is not safe.

Problem definition

As mentioned above, the current processes at Whizz ICT see prospective students applying by going to the centre to fill out applications by hand. Applicant information is then captured manually into an excel database.

Whizz ICT's current application process is unideal for several reasons. Manually capturing data can be very tedious and time-consuming. It also leaves much room for human error as data capturers could accidently enter the wrong letters and numbers, leading to inaccurate applicant profiles. These issues amount to a largely inefficient process overall. As well as this, manual application is not safe in current Covid-19 pandemic. Given that South Africa is entering a third wave, it is important to reduce face-to-face contact as much as possible. However, Whizz ICT's application process requires hundreds of applicants to enter the centre and interact with each other and Whizz ICT staff. This makes the manual process unsafe.

To solve this problem, Whizz ICT would like to implement an online application platform. This platform should be able to carry out the following functions: create application profile information, change, or modulate course offerings and save applicant profile information. This solution should be easily accessible and user-friendly for prospective students in the Khayelitsha community.

An online application platform would greatly reduce the need for in-person contact between prospective students and Whizz ICT staff. It would also make the application process much more efficient and less prone to human error.

Business Objectives

The following are the business objectives of Whizz ICT:

- Provide services that are linked with access and the use of Information Communication Technology (ICT)
- Support the massive and low-income market in Khayelitsha by providing quality services.
- Improve the economy of Khayelitsha by providing individuals with the necessary basic skills of obtaining a job.
- Improve the IT knowledge of the community by providing courses in end-user computer skills.

Assumptions and Constraints

These are the assumptions and constraints that we used as an outline while managing the project at hand. Some of these constraints were mentioned during the meeting with Whizz ICT, and some came from the brief that was given to the team.

Assumptions:

1. The Sponsor has employees that are able and willing to learn new skills and system applications.
2. The project management team has the technology (network data/ wifi, device and environment) to meet virtually throughout the lockdown and covid-19 restrictions.
3. Currently the detailed solutions are for low-income markets in Khayelitsha but are also expandable.
4. Because this is a charity initiative, solutions should be at the lowest possible costs but also at the best possible quality.

Constraints:

1. The project management team is given 10 weeks (from March 31st, 2021, to June 14th 2021) to present and recommend solutions to Whizz ICT.
2. Solutions need to be feasible and affordable as there are limited financial resources
3. Not all members of the project management team have access to stable and reliable network / data.
4. It is not possible to work at all round hours due to load-shedding.
5. It is not possible for members of the project management team to meet physically (which helps with communication and team building) due to covid 19 regulations.

Stakeholder Analysis

The figure below represents the external stakeholder analysis context diagram of the online application platform. This gives a better understanding of the relationship between the external stakeholders and the Whizz ICT platform:

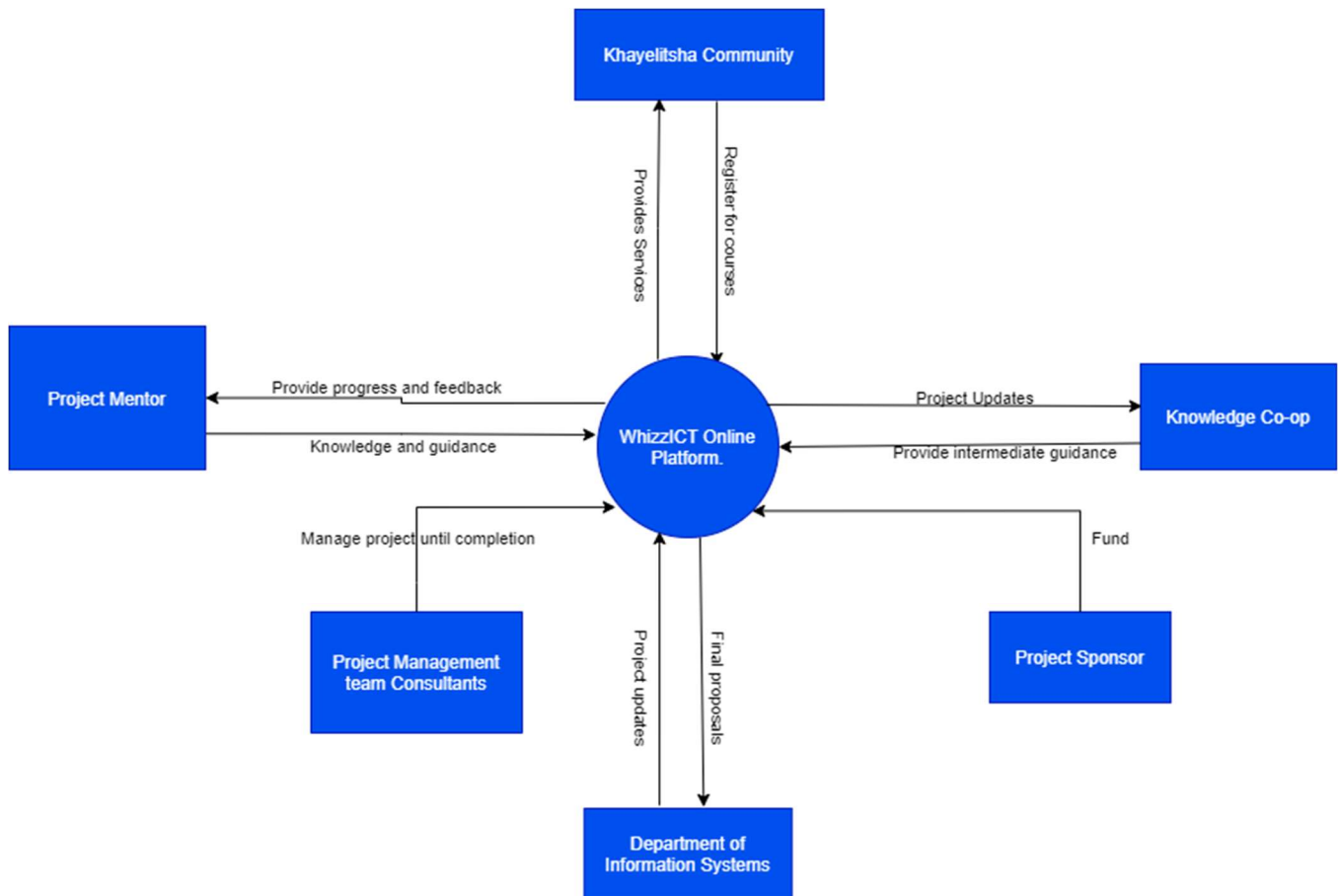


Figure 1: Stakeholder context Diagram

Proposed Solutions

In this section we will detail the possible solutions to what has been stated in the problem statement. We have identified three feasible and practical solutions.

Solution One: Use Google Sites as the online application platform.

Google Sites is a structured web page creation tool included as part of the free, web-based Google Docs Editors suite offered by Google. This allows one to create a website without having to know how to code it yourself.

There are many websites that have been created/ made using Google sites, a few examples include:

- Peter’s Field High (<https://www.petersfieldhigh.com/>) – a high school in Jamaica. This website is used to inform current and potential students / guardians of the academic, social and government affairs of that school.
- Xu Chu’s Group (<https://www.xchu.rocks>) – A research team from the University of Taranto which used this website to update individuals on their research and findings as well as allow users to register for the courses they offer.
- Moalboal Adventure Tours (<https://www.moalboaladventures.com/>) – A tourism company that uses the website to advertise and allow users to register / signup for a tour pack.

Listed below are several benefits and drawbacks of using Google sites:

| <u>Google sites</u> | |
|--|--|
| Advantages | Disadvantages |
| <ul style="list-style-type: none"> • Free to use. • Free training supplied online. • Fast and easy to edit. • No programming or database skills required. • Automatically connects to a database (Google drive and Google sheets). • Ideal for newbie who wants to build a website for the first time. • Easily integrated with existing Google accounts • No software installation required. • Integrated with Google apps • Creator can access tools anywhere. • Creator has full control on page access and permission. • Function as a basic project manager | <ul style="list-style-type: none"> • Limited functionality compared to other website builders. • Not really good website for business - not enough customization • Apps only limited to Google apps only. Apps outside Google apps may be inapplicable. • The site URL must begin with "sites.google.com/view/" which is too long for a website unless one pays for a domain name which can cost anything between R90.00 per annum to R600.00 per annum depending on the extension used. |

Figure 2: Table that compares the advantages and disadvantages of using Google sites

As seen on the table, no prior website development knowledge or database skills is required to use google sites making it ideal for business not interested in hiring a programmer to create their

website. It is free to use and easy to edit however it has limited functionality compared to most website builders. It is not really good for business website as it does not offer enough customization of the website.

In the context of Whizz ICT, Google sites would be a good solution to implement as it is completely free to train and use, and there is no prior coding or designing information / skills needed to use it. This means that one of the existing staff could manage the entire process of creating the website using Google sites. It also automatically links to existing google accounts (currently all the staff in Whizz ICT have a google account and are using Gmail and Google drive), making it easier to integrate the current ICT resources with the website. Google sites meet all the Whizz ICT requirements as it:

- a. Allows Whizz ICT the ability to change, add, remove, or modulate course offerings, as well as the ability to create application profile information for applicants.
- b. Applicants can "save" their information for multiple uses.
- c. Website allows users to submit applications for all three courses.
- d. Website can easily handle over 100 applications.

The images below show snippets of a very light mock-up of how the Google sites website platform for Whizz ICT could look like (on a mobile phone – majority of the community will use a mobile phone). These snippets are of the home page and registration page / process, to see the mockup website, please visit – <https://sites.google.com/view/whizzict>:

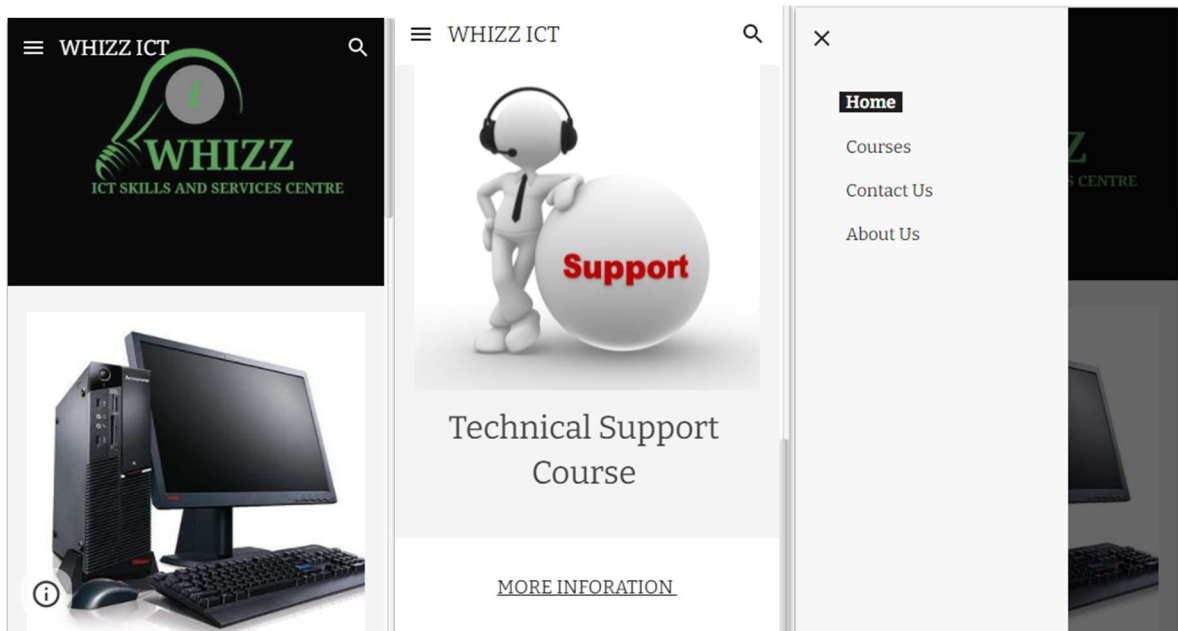


Figure 3: Snippets of the mobile home page of the mock-up Whizz ICT website

The landing/ home page has the name of courses offered by Whizz ICT accompanied by visual aid (these aids are impersonal; it would be of great benefit to use Whizz ICT staff and interaction pictures). The Home page also has a navigation bar to the rest of the pages on the website.

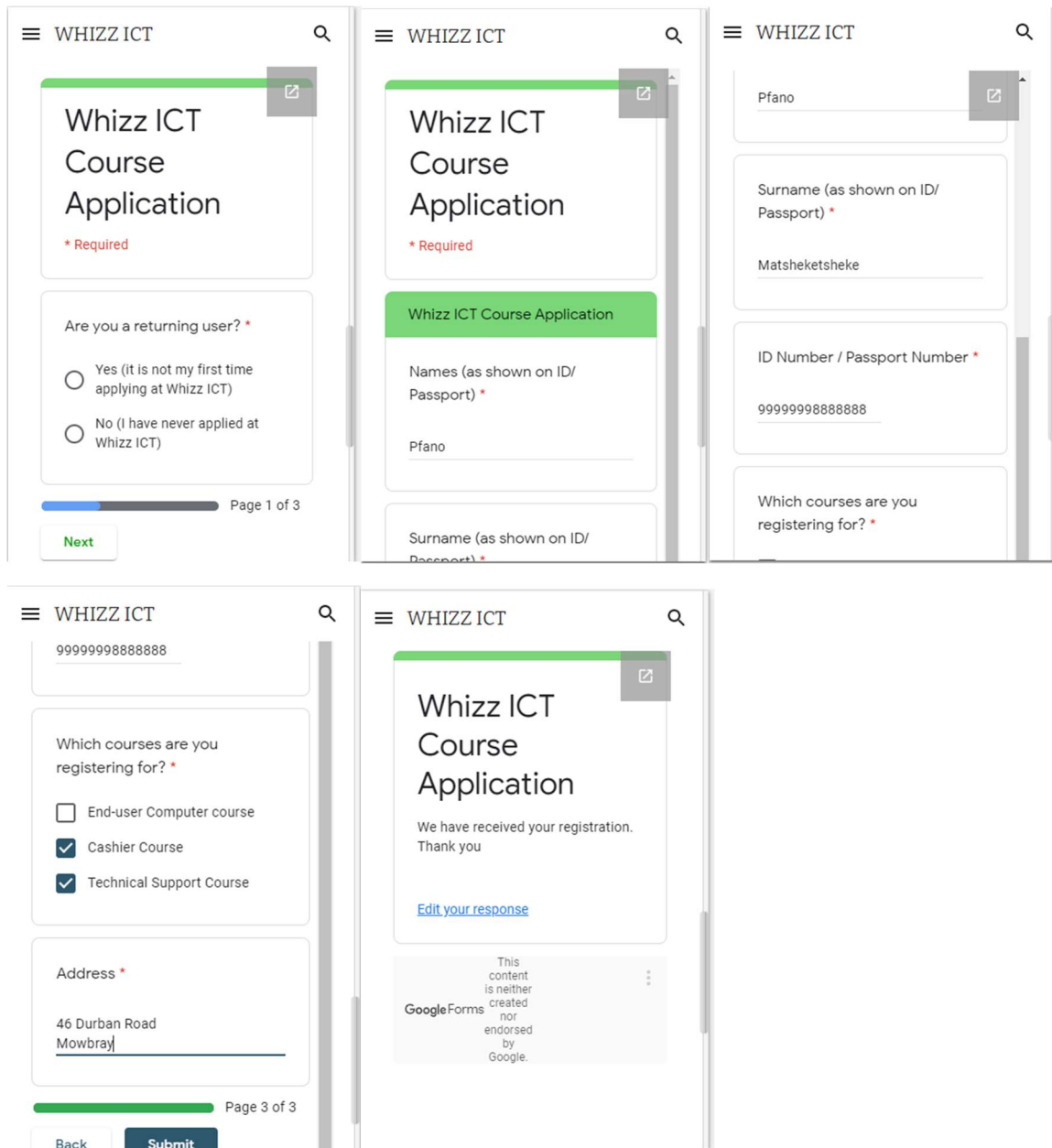


Figure 4: Images of the Whizz ICT mock-up website illustrating the course application form / process

The registration form is found under the courses page. After submitting the information is automatically sent to google sheets database which can be analysed, extracted, and used by the administrator. The images below will show how the user 's, "Pfano", information is stored in the google sheets database. Note that only individuals with the required permission will be able to access the database.

| A | B | C | D | E | F | G |
|--------------------|---------------------------|--|---------------------------------------|----------------|---------------------------------|----------------|
| Timestamp | Are you a returning user? | Names (as shown on ID/ Surname (as shown on ID Number / Passport Number) | Which courses are you registered for? | Address | | |
| 6/11/2021 10:04:21 | No | Pfano | Matsheketsheke | 99999998888888 | Cashier Course, Technic Mowbray | 46 Durban Road |

Figure 5: Image illustrating how user information is stored in google sheets after it has been submitted on google sties/ google form

The costs associated with this solution are broken down in the table below:

| Item | Description | Cost |
|----------------------------|---|---|
| Using Google site services | Using google sites to create and publish a website. | Free (R 0.00) |
| Training | Training on how to navigate google sites, create pages and links as well designing. | Free (R 0.00) |
| Domain name | The name users type to access the website. | Personalised domain name: R 90.00 - R 550.00 per annum (depends on extension name) Google sites domain name: Free (R 0.00) |

Figure 6: Table breaking down the potential costs of using google sites as an online application platform

Solution Two: Using Facebook and Google Forms.

There will be a link on the Wiz ICT Facebook page to a Google forms where customers can enter the information to sign up for courses and select which course they would like to sign up for (see figure 8).

Google Forms is a survey administration software included as part of the web-based Google Docs Editors suite. This allows users to collect and organize their information for free.

| <u>Google Forms</u> | |
|---|--|
| Advantages | Disadvantages |
| <ul style="list-style-type: none"> • Free to use. • Doesn't require IT staff to implement. • You get the data in digital format that you can read. • Quick to put together. • Access files anywhere • Edit + make changes to files. • Accessible via various devices | <ul style="list-style-type: none"> • It is necessary to have internet to be able to use this tool. • There are some security concerns. The user must create a good password and protects it to increase the level of security. • There are certain limitations regarding the capabilities of this tool. It accepts texts up to 500 Kb; images up to 2 Mb; and for spreadsheets the limit is 256 cells or 40 sheets. |

Figure 7: Table comparing the advantages and disadvantages of using google forms

This would make it much more convenient for customers to register for courses as they wouldn't need to physically go to the Whizz ICT location & sign in forms manually. It's also convenient in the sense that customers are likely to discover Whizz ICT through Facebook, so it would be easy for them to just follow a link from Facebook to the application form that is Google forms. A potential problem with the solution is that Whizz ICT may need to hire someone for customer support on Facebook to handle any queries relating to the Google forms.

Whizz ICT won't have to pay an IT staff to implement the Google form because it is quick to put together and it's also free. It is also freely available for their customers on most devices, so they could even complete a Google form on mobile or on their laptop.

Of course, as with anything that is free, it also has his own limitations. For example, spreadsheets are limited to only 256 cells or 40 sheets. Whizz ICT will also need to have very strong passwords to protect user sensitive and personal information from a potential security leak.

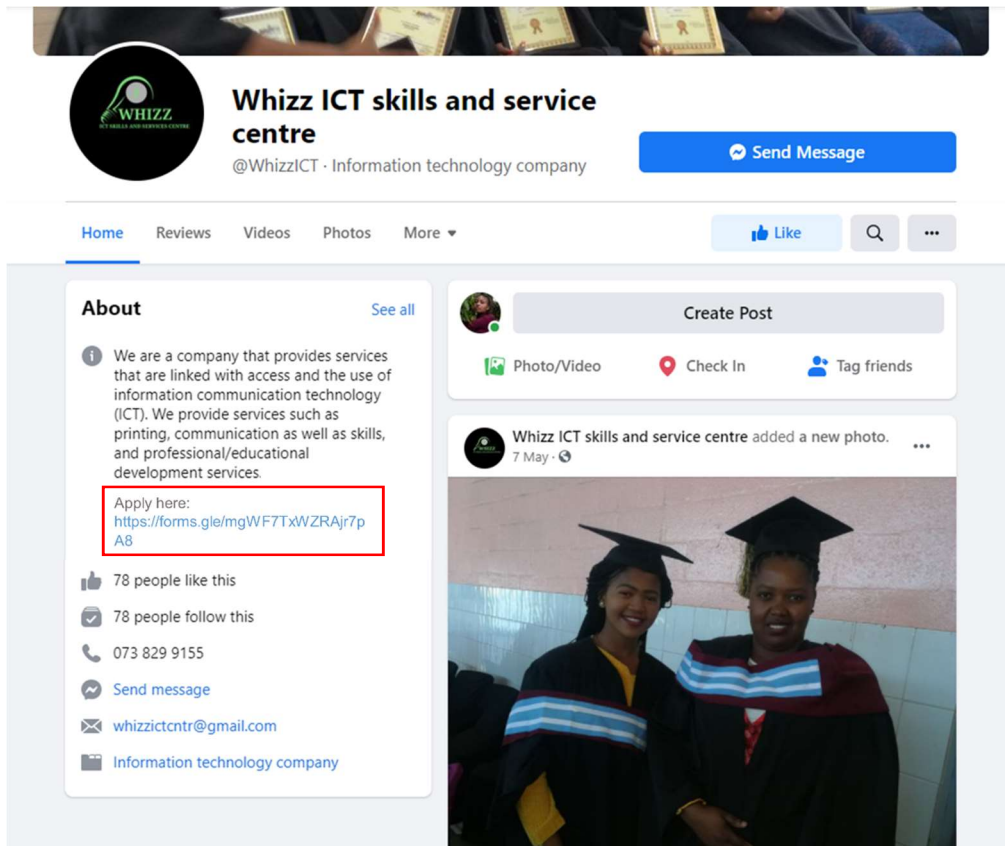


Figure 8: Image illustrating how the link to the Whizz ICT application form (using google forms) could look on Whizz ICT's facebook page

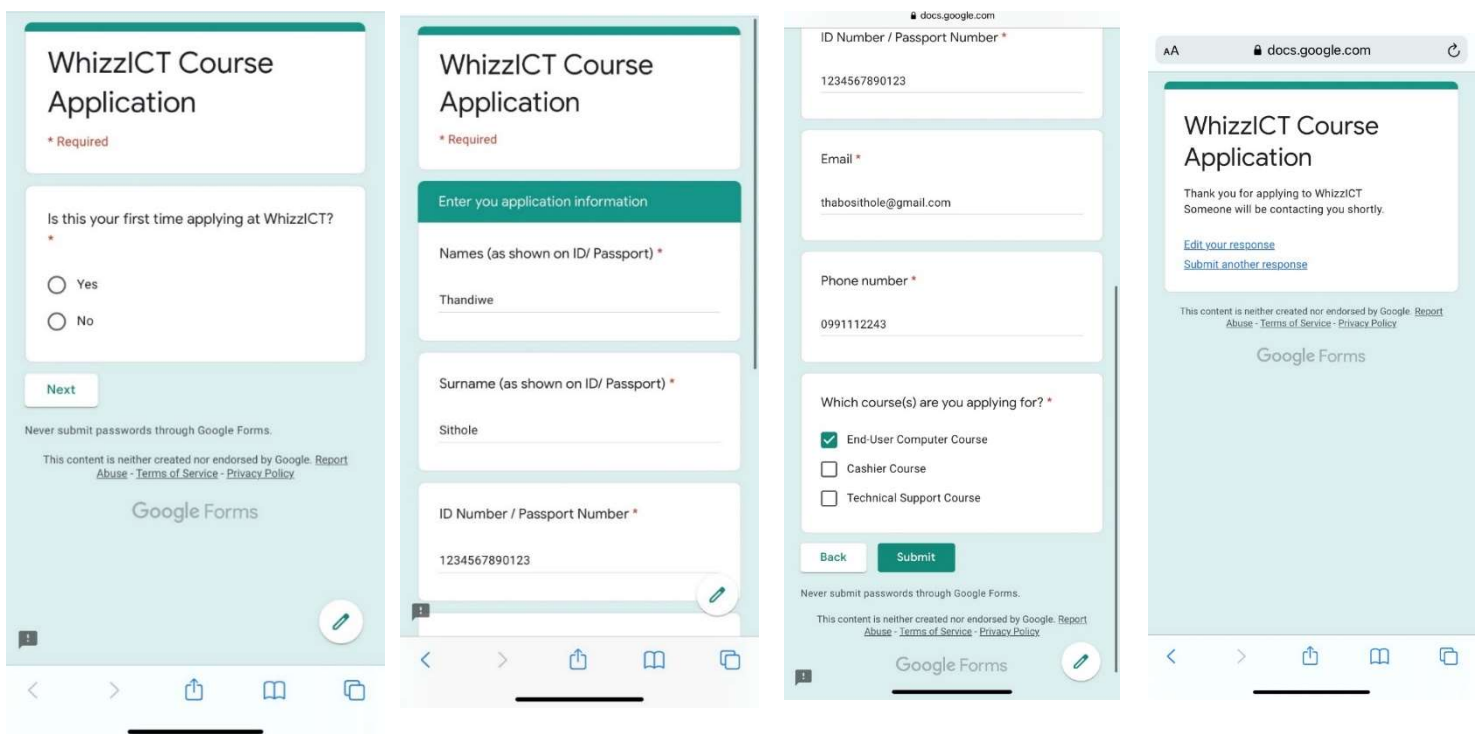


Figure 9: Images of the Whizz ICT mock-up google form illustrating the course application process

Solution Three: Hire a full stack web developer to create the online application platform:

A full stack web developer is a person who can develop both client and server software. This means that this person can understand the needs of the client, design the desired solution, and develop it with the user experiences met. These individuals are usually exposed to many clients related problems and solutions. In South Africa, according to payscale.com, full stack web developers earn from an entry level career of R 170 971 per annum (R 14 248 per month) to later level career of R 450 000 per annum (R 37 500 per month), where the main difference between the two is the amount of experience they have, although the base knowledge is the same.

A full stack web developer will usually use web development frameworks instead of content management systems (CMS). To clarify some definitions, a framework is a software which containing generic functionality that can be modified through coding. A CMS is a computer application that is used for creating and modifying digital content and is built upon a framework.

A couple things need to be considered when choosing a web development team, what sort of functions do you want your website to be able to do? What resources do you already have at your disposal? Or even whether he will need more website maintenance and in such things.

Usually, a company hires a full stack web developing team when they are hosting their websites on their own servers and require custom configurations for these servers. This is more applicable when the aim of the website is quite complex and has very specific requirements. Another possible reason could be that the site has complex functionality that uses server-side technology, or a website requires some sort of database for something like login verification.

Alternatively, the back end logic of a site may require in depth knowledge of web development frameworks. In which case Whizz ICT will need to hire a full stack web developer.

As a consequence of web development frameworks lacking “ready to use” tools take quite a bit more time than if a CMS was used, however, the advantage is that Web developers are able to customize a website more detail to be tailored to the to Whizz ICT requirement.

Web applications developed through frameworks tend to be more scalable. This means that the website can handle a spike in traffic without disrupting the end users’ activities.

As noted above, hiring a web development team will cost more money.

This provides several benefits and will compare the two in the table below.

| <u>Full-time Full Stack web developer</u> | |
|--|--|
| Advantages | Disadvantages |
| <ul style="list-style-type: none"> • Can make the website tailored to Whizz ICT requirement • Can make their website more scalable (run smoothly even with a spike in traffic) | <ul style="list-style-type: none"> • Web developers use complex tools such as frameworks – could make development take longer • Expensive to hire web developers |

Figure 10: Table comparing the advantages and disadvantages of hiring a full stack web developer

The web developers will need to design the site, build it, and test it as well as maintain its database which includes protecting customer data.

Selected Solution - Use Google sites as the online application platform (solution one)

The solution that we recommend to Whizz ICT is solution one - “Use Google sites as the online application platform”.

It is the most cost-effective solution (value for money) and falls within the constraints mentioned in earlier sections of “limited financial resources”. The solution is also the most integrable solution with their current systems; Google sites heavily relies on other google products such as Google drive, sheets, and forms; Whizz ICT staff uses Google accounts and ICT resources such as Gmail.

Please visit <https://sites.google.com/view/whizzict> for a basic mock-up of what the solution could look like

How to implement:

To implement this solution Whizz ICT would need to do the following:

1. Work with the University of Cape Town’s Information Systems (IS) students (2nd or 3rd year), through the UCT Information Systems Department, to design the website using Google sites:

- The curriculum of IS students include teaching them how to design websites that are based on user experiences, focusing on colours, navigation, flow of web pages just to name a few. As there exist a working relationship between Whizz ICT and UCT, this would be a great benefit to the experience of the students, and it will save time resources for Whizz ICT.
- IS students would receive specifications of the websites design from Whizz ICT
- Whizz ICT would then have a great number of designs to choose from as multiple students would engage in this activity.

2. Train administrative staff how to create and modify google forms as well as extract the required information form the form:

- One of the requirements of this online application platform is to allow Whizz ICT to create and modulate courses offered. Google sites allows one to do this through google forms. The imagine below is a sample that was created by the us. It illustrates how one can create, modify, or delete course offerings

The screenshot shows a Google Form interface. At the top, there is a title 'Which courses are you registering for?' followed by a 'Checkboxes' dropdown menu. Below this, there is a list of four course options, each with an unchecked checkbox and a delete 'X' icon to its right:

- End-user Computer course
- Cashier Course
- Technical Support Course
- Add option or [add "Other"](#)

At the bottom of the form, there is a 'Required' toggle switch which is currently turned on (blue).

Figure 11: Images displaying how it is possible to create, edit and delete application options

3. Train administrative staff how to use and extract information from google sheets:

- The information that is submitted through google forms can be linked (via automatic generation) to a google sheet (a .csv file). To effectively use this information, Whizz ICT would need to have staff who can extract and analyse this information.
- The images below are a sample of how the information below is stored in google forms and google sheets. As seen below, it is easier to analyse and extract from google sheets than the equivalent google form.

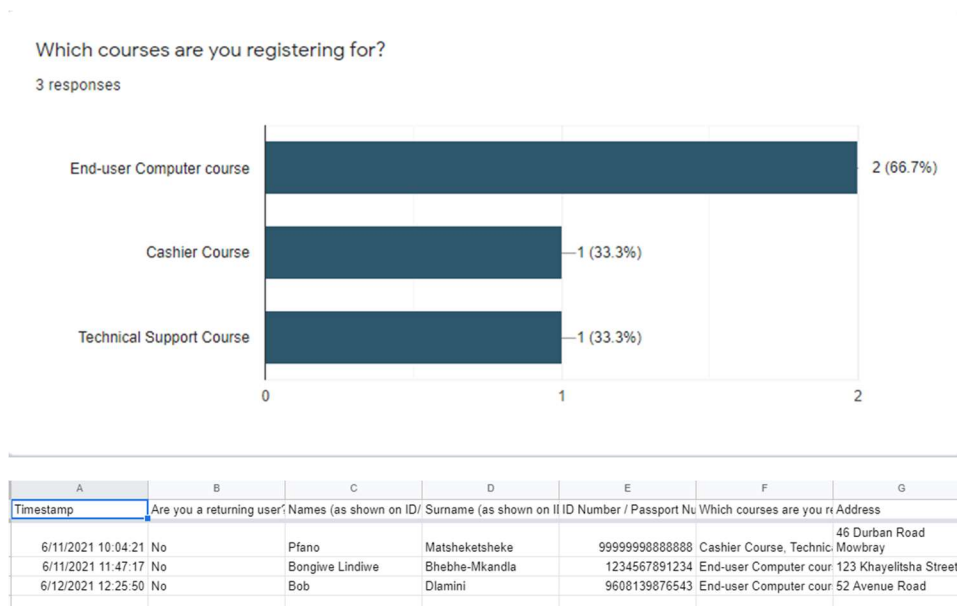


Figure 12: Images showing how the data received from the website is stored

4. Purchase a domain name with the extension “.co.za”:

- Although Google sits allows users to publish their website without having a domain name, the format is not one that easy to remember which will discourage users from using the website. The free domain name comes with “sites.google.com/view/” before the name of the domain. This is very long to type.
- Having a domain name makes it much easier to type and remember, encouraging users to visit the website more frequently.
- Domain extension “.co.za” is the most cost effect domain extension in South Africa. Using the name of the company “WhizzICT” as the name, we suggest buying the domain name “whizzict.co.za” which is R90.00 per annum (see figure 12).

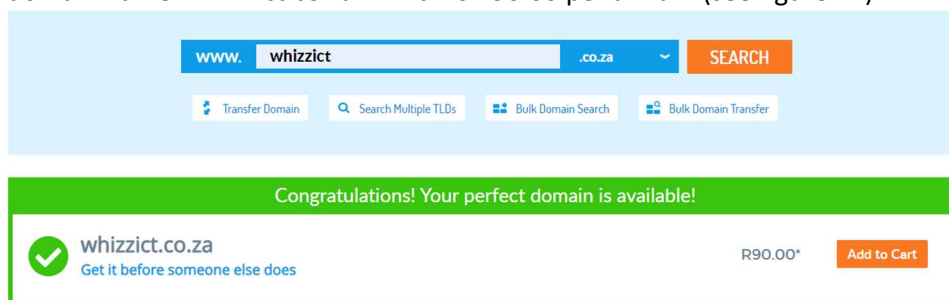


Figure 12: Image displaying the availability of the domain name “whizzict.co.za”, this is from domains.co.za