## Business Case

The Bank of the Sun realises that its online banking services are not appropriate for banking in 2018, and therefore aims to improve the current system and add to its existing functionality. These additions to the banking system should improve the user experience, while being functional and efficient.

### Issues

According to a client, one of their major concerns with the current system is the speed of processing various requests. Therefore, improved speed and usability will be an important specification when designing the new system. This agrees with studies which show that there is a significant correlation between Web download speed and the user satisfaction (Jayawardhena & Foley, 2000). Slower websites lead to dissatisfied customers who may look to a different bank to fulfil their expectations. Although Web speed is dependent on many external factors, including factors caused by the user itself, it can be improved by removing unnecessary high-quality images and non-functional elements.

For any bank or financial institution, security is of utmost importance. Just as there are security measures at a physical bank branch (cameras, bullet-proof glass, security guards, etc.), there should be sufficient security measures for the web application. Currently, when a user logs in all they need to provide is their account number and password as identification. This form of security is too basic and can lead to major losses, especially for large corporate companies who may share a common username and password. The reputation of The Bank of the Sun as being a secure bank would also be tarnished, which would in turn discourage current and future clients from investing.

### Proposed Solution

Having a fast website, while incorporating all the features required by the CEO, will be of the highest priority. These features include, but are not limited to – making transactions, internal and external transfers, view and create statements, applying for an account, and an online help/query function. Although some of these services are already provided by the existing online banking website, they will be remodelled and improved, especially in terms of effectiveness and efficiency.

The frontend of the website will be developed using HTML5 (Hypertext Markup Language), with CSS (Cascading Style Sheets) for easy modification and styling. The backend of the website will be developed with JavaScript (in particular the React library) and any other language or means that the development team deems necessary and beneficial to the project. As this project deals with confidential client information (such as bank balances, usernames and passwords, etc.) the team will not have direct access to the bank database but will communicate with it through an Application Programming Interface (API).

Making use of an API is one security measure, but other security measures such as two-factor authentication (2FA) and reCAPTCHA need to be implemented. 2FA provides an extra layer of security by confirming the user identity after login using a Time-Based One-time Password (TOTP) (Speakeasy, 2017). This TOTP is a six-digit code which lasts for 30 seconds and can only be used once (Gohil, 2018). reCAPTCHA is a free service from Google which uses advanced risk analysis techniques to distinguish between humans and bots (Google, 2016). Using both of these security measures will greatly improve the quality of the web app by offering protection from both bots and hackers.

### Justification

Providing a good internet banking service has advantages for both clients and the stakeholders. A study undertaken by Jayawardhena and Foley (2000) highlight several of these benefits. A major advantage for The Bank of the Sun is cost saving in the long term (Refer to Market Share Benefits for estimated figures). This cost saving is the result of a combination of factors such as a reduction and optimisation of workforce, equipment, resources, space, etc. (Jayawardhena & Foley, 2000, p. 21). Improved services also lead to an increased customer base and existing customer retention. The Bank of the Sun will build a reputation of being an innovative bank which will gain the trust and interest of existing and potential customers. Having a web application can also encourage the development of non-core business such as insurance and stock brokerage (Jayawardhena & Foley, 2000). Important advantages for the client include convenience and efficiency. The client will no longer need to stand in long queues to open a new account or to make transactions.

Two-factor Authentication is a must have for online banking (Gohil, 2018). With more than 65% of users that use the same password everywhere, it is extremely easy for hackers to breach user accounts. The advantage of using 2FA, and in particular Google Authenticator, is that verification codes are generated on your mobile device even when there is no data connectivity. Backup codes can also be printed or downloaded in situations where you may not have access to your cell phone (Gohil, 2018). The advantage of using reCAPTCHA is that it is a free service offered by Google, which is fairly easy to implement and helps to reduce phishing and spam on the website (Google, 2016).

Front-end website development is done, in most cases, using HTML and CSS. Back-end development can be done using a variety of different programming languages. The decision to use JavaScript is based on the fact that it is a powerful, flexible, expressive and accessible language (Brown, 2016, p. xv). Using libraries, such as React, further improve the functionality and power of JavaScript.

### Organisational Impacts

As a web application currently exists at The Bank of the Sun, and the project is to improve this website, there will not be any major organisational effects. There will be a short-term increase in the number of IT staff employed. New staff will have to be employed to answer the online questions, or existing staff will be redistributed to fill these positions. All staff will also be trained and familiarised with the new system in order to help clients that come to the physical branch with questions about the application. As this bank is small and is still developing the number of employees will change as the CEO deems necessary during its expansion. The fee system might also be restructured to include the costs of the new online banking features, but this is also up to the discretion of the CEO.

### Project Assumptions

The following assumptions apply to the web application:

* Due to privacy and security concerns the database of the bank will not be directly available, but will be accessed through an API
* Sufficient funding will be provided by The Bank of the Sun to complete the project – this includes planning, development and implementation of the web app; and training of the staff
* A hardened online banking system designed for production use is NOT required, but only a functional prototype
* Due to the demographics of the Stellenbosch area (i.e. mostly students), we assume that the target market is interested in online banking and will make use of these new features.

### Market Share Benefits

According to the FinScope Consumer survey (2016) 77% of South African adults (over 15 years of age) have a bank account, compared to 46% in 2004 (Ramos, 2017). This indicates a remarkable increase in the demand for banks in South Africa, and presents an opportunity for new banks, such as The Bank of the Sun, to fulfil the demand.

Initially developing an improved web application will lead to increased expenses (Hernando & Nieto, 2007). Marketing costs will increase as the bank aims to convert its existing clients to the new system or in order to capture new clients. Staff costs will also increase as existing IT employees or a third party company is required to develop the website. Return on equity (ROE) and return on assets (ROA) are two indicators of profitability. According to the research done by Hernado and Nieto (2007) on banks in Spain, both ROE and ROA will only become significant one and a half years after the implementation of online banking. The overall risk profile, measured using the Pearson Coefficient, will not be significantly affected. If these statistics are consistent with conditions in South Africa, it indicates that improving the banking website will be costly in the short-term, but profitable in the long-term.

The main competitors are those banks that have internet banking, but especially those that have a mobile banking application. According to research done looking at the stakeholder perspective of mobile banking - “banks need to offer mobile banking to compete and provide enhanced customer value – mobiles are the device of choice among many consumers and will drive industry adoption by creating further ‘demand pull’” (Mullan, et al., 2017, p. 1168). This agrees with research which predicts that over 1.75 billion mobile phone users will have used their devices for banking by the end of 2019 (Juniper Research, 2014). There is exceptional customer demand for mobile banking, and therefore this is something that The Bank of the Sun should look to invest in soon. For now, a temporary solution of a responsive web application that is compatible on all mobile devices will be implemented.

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