Budget Attack: Gamifying the Budget Planning Experience

MTA171035
Christoffer Bech
Andreas Heldbjerg Bork
Lasse Schøne Rosenlund

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Participants:

Christoffer Bech

Andreas Heldbjerg Bork

Lasse Schøne Rosenlund

Supervisors:
Nicola Morelli
Martin Kraus

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Synopsis

This project investigated how gamifying budget planning affected the motivation of the user to start planning a budget compared to planning a budget through a netbank. To achieve this, a game was developed for planning a budget by simulating automatically importing the user's personal finances to be used as elements in the game. The created game, Budget Attack, is a castle war genre game where the player's bills are represented as enemy castles the player must defeat. The bills must be defeated one at a time and when the game was completed the player was rewarded with their budget overview.
An experiment was conducted where twelve respondents tried budget planning through their netbank and through the game. Data comparing the two methods was gathered through a questionnaire and an interview and the results showed that Budget Attack was significantly easier for budget planning than using a netbank. Statements from the experiment also indicated that the game provided a more enjoyable and engaging experience, and all respondents expressed a desire to play a budget planning game, if their bank provided the option.

Contents

Preface

This report was created at Aalborg University by group MTA171035 as a Master Thesis project in Medialogy, with a specialisation in Games.

The first time a new term is introduced it is written in *italics* and subsequently without. If an abbreviation of a term is used, it appears in parentheses after the term and is henceforth referred to as this.

Associated with the report is a video production demonstrating the project and an APK-build of the game created in this project.

Acknowledgements

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Chapter 1

Introduction

Young adults in Denmark struggle with their personal finances: One out of twenty young adults between 18 and 30 years old are caught in RKI, the largest register of bad payers in Denmark [19]. This is caused by low financial literacy in the younger age groups in Denmark as, amongst other things, parents often handle their children's finances until they move away from home [41; 16]. Attracting young adults is an investment for banks, as this target group becomes profitable when they start taking loans for buying cars and houses. It is therefore valuable for the banks to attract these customers early, to create a bond between bank and customer. One way of attracting these customers is through gamification: This has gained popularity as a way to motivate users to start and continue using otherwise non-game related products and applications [25]. Spar Nord [46] and their Future Finance Incubator [23] approached the project group with a project proposal of gamifying the banking experience, to study whether this could make customers engage more in their finances and thereby establishing a bond to the customers. Gamification is an ideal way to adapt the banking experience to fit the needs of young adults, as they are a hard target group for the banks to attract. 39 % of young adults do not know how much money they have to pay each month [15], which suggests that they have not planned a budget of their expenses. Budget planning can be a good introduction for young people in order to improve their financial literacy. Therefore, budget planning was an ideal subject for the project and the Spar Nord project proposal was agreed upon. The project aims to investigate how gamifying budget planning affects the motivation of the user to start planning a budget.

This report describes the financial behaviour of young adults and how gamification can be used to engage users in a product. In addition, it describes the design and development process of a gamified budget planning game, Budget Attack, as well as an experiment conducted to compare budget planning through a netbank with the designed game. The experiment compares both methods' effect on the users' motivation to start planning a budget.

Chapter 2

Theory

The project group was approached with a project proposal by Spar Nord [46] and their Future Finance Incubator [23]. The proposal aimed to research gamifying the banking experience to study whether this would make banking customers engage more in their finances. Before the master thesis project was commenced, an idea was pitched to Spar Nord to gamify the budget planning process. This idea was based on an initial speculation that many young people have difficulties with their financials and lack a general overview of their monthly expenses. Spar Nord confirmed that this speculation was one of their focus areas and the project scope was agreed upon.
This chapter investigates the fi difficulties that exist for young people and which methods are available for budget planning. Additionally, a target group and personas for the project are defined, followed by a description of gamification and how it can be used.

2.1 Financial Background Information

According to Flensburg, T. and Freije, L. (2017), one out of five people in Denmark experience problems when trying to balance their income and expenses. These people struggle to make their money last on a monthly basis due to their lack of knowledge about money, budget planning and how to create savings [19]. This is caused by parents handling their children's finances while they live at home. According to Erichsen, A. L. (2015), this can be difficult for young adults when they move away from home because their financial situation undergoes changes with new expenses, but also because they are distanced from the financial aid and guidance of their parents. Pengeuge (the money week) is an initiative to strengthen the financial literacy of young adults and involving them in their personal finances [41; 18]. This initiative incorporates personal finances into the teaching of young people aged 13 to 16 in order to teach them about finances, budgeting, income and expenses. This is relevant as the lack of knowledge and bad financial situation of young adults is not only a large burden for the individual's financial future, but also for the Danish society according to Finansrådet (2016).

Many young adults are caught in debt: One out of every twenty young adults between 18 and 30 years old in Denmark is registered in Ribers Kredit Information (RKI) [19], which is the largest register in Denmark of bad payers used by companies, public authorities and the financial sector. This is what Pengeuge aims to prevent by equipping young people with knowledge about the consequences of spending money, taking loans and not planning your budget.

Especially the cost of spending money and the cost of loans are often overlooked by people: A financial term called *the pain of paying* describes the behaviour of paying for products and services by credit cards and instalment payments [17]. The payments become abstract and the consumers find it easier to spend a lot of money, since they do not pay for the services and products right away. Exactly these abstract payment methods were described by Carroll, A. (2015). He mentions the advancement in technology and its effect on the behaviour of young consumers. He describes the *cashless society* where technology is advancing towards a society without physical money and instead relying on services such as credit cards and online or mobile payment services. An example of these services is MobilePay made by Danske Bank [13], which is widely used by more than three million people in Denmark [39]. MobilePay is a payment service used to transfer money and can be used to transfer between individuals, in physical stores, online shops and other smartphone apps. According to Carroll, A. (2015), the lack of physical money gives young people an abstract view of payments as they grow up in a more and more cashless society. The money becomes arbitrary and leads to spending more money without thinking about the consequences [17]. Carroll, A. (2015) believes that budget planning and general financial literacy should be taught to young people early in their life, in order for them to have a better chance at a healthy financial situation in the future. A consequence of the lack of financial literacy is that 46 percent of the Danish population above the age of 18 do not know how much money they pay each month in fixed expenses [15]. Therefore it is relevant to study which options are available for budget planning and why there is a tendency to not use them.

2.2 Budget Planning

This section investigates what a budget is, how it is used and some of the available methods for planning one. Additionally it analyses why young adults have a tendency to not use it.

What is a Budget?

The purpose of a budget is to give an overview of income and expenses, often over a one year period [34]. The project focuses on budgets based on the fixed expenses, which are recurring bills such as rent, insurances and electricity. Other budgets, which in this report are disregarded, can also include living expenses such as food and clothing. These were not the focus for this project, as banks create budget accounts based on fixed expenses

[43; 38; 30]. By comparing expenses with income it is possible to calculate a *disposable income*, which is much money is left after paying the fixed expenses. Knowing this, the person knows exactly how much money can be spend on other consumptions, such as food, clothing, going to the movies or putting money in a savings account.

Fixed Expenses

The number of fixed expenses is individual from person to person and is dependent on many factors, such as where you live, whether you live alone and what services you need.

Fixed expenses are paid for by paying bills sent by the providers or companies. The most common methods for paying these bills are: Through giro forms, through Payment Business Services (PBS) agreements [1] and through subscriptions directly to a credit card. The giro forms are received as letters in the mail and have to be paid manually. The two other methods are automated once signed up for and the money is charged when the bill is due, thereby making sure that they do not miss any due dates. Especially due dates for fixed expenses can be tricky, as they may not all occur on the same dates or frequencies. Some bills are paid yearly, biannually, quarterly, monthly or other fixed intervals. This can make it difficult to assess how much money has to be paid every month or if less money is available in some months compared to others. As this is something a budget gives an overview of, it is relevant to look into how a budget can be planned.

How to Plan a Budget?

Budgets can be structured in different ways, but they commonly contain the following information about the bills [38]:

- A list of all the bills with their names to give an overview (e.g. "Eniig Energi A/S" or "Electricity").
- The cost of the bill.
- In which months the bills are due.
- The total monthly cost of the bills and a monthly average for all the bills.
- The yearly sum of the cost of all the bills.

Some budgets are more detailed than others. The budget described here is based on meetings with a bank advisor from Spar Nord, who gave a detailed explanation of how budget planning is normally conducted within the bank. The key information gathered from the budget is the total average monthly payment, which gives the consumers an overview of how much money they have to transfer to a budget account each month to cover their expenses. An example of a budget can be seen in Figure 2.1. Templates such as this one are available for download from various banks and websites to ease the budget planning process.

Name of Bill	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Monthly Average	Yearly Cost
Tryg Indboforsikring									1093				91	1093
Telenor	99	99	99	99	99	99	99	99	99	99	99	99	99	1188
Fitness World	199	199	199	199	199	199	199	199	199	199	199	199	199	2388
DR Licens					1239						1239		207	2478
Stofa A/S Internet	627			627			627			627			209	2508
Eniig Energi A/S		670			670			670			670		223	2680
Plus Bolig	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	4250	51000
Total	**5175**	**5218**	**4548**	**5175**	**6457**	**4548**	**5175**	**5218**	**5641**	**5175**	**6457**	**4548**	**5278**	**63335**

Figure 2.1: An example of a plotted budget with the name of the bills, cost, monthly- and yearly averages.

Demotivating Factors of Budget Planning

Certain aspects of the budget planning process can be analysed to give an idea of why some people are discouraged to plan a budget. Gathering the data by themselves through the netbank is not always an intuitive task. This can result in the process being time-consuming and boring [49], which can be demotivating factors for people who have not planned a budget before.

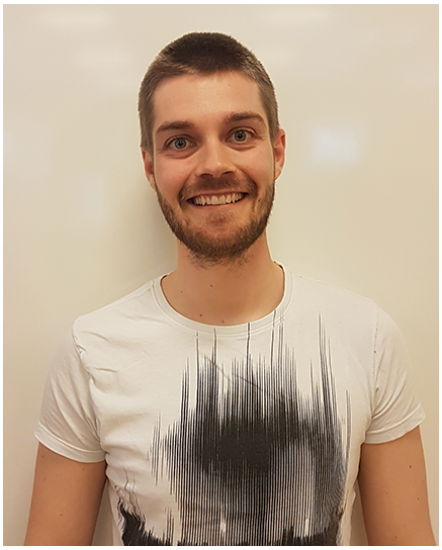
2.3 Personas

When designing a product it is important to define for whom the product is designed. According to Cooper (1999), one common mistake in software design is that the developers design for themselves and not the intended users of the product. It is important to apply a user-centred design approach in order to create more fitting products. To accomplish this, the targeted users of the product need to be clarified, e.g. by creating personas. The general purpose of a persona is to create a realistic representation of the target group to assist designers in the decision-making. Realistic personas make it easier for the designers to relate to the needs and expectations of the target group, thereby making design choices for the users instead of the designers themselves. The personas are based on research on the target group and comments from an interview with a bank advisor from Spar Nord. The personas provide descriptions of their backgrounds and behaviours [54]. This section clarifies the target group and describes two personas, which represent the target group for the product. The personas include information about their demographics, their financial behaviour, what challenges they face and how these motivate them to use the product.

Target Group

Before creating personas, a target group was established. As described in Section 2.1, one out of every twenty young adults aged 18 to 30 are registered in RKI, which suggests that this age group could benefit from more options for improving their financial literacy. In addition, research by Erichsen, A. L. (2015) showed that 39 percent of young people between 18 to 25 years do not know how much they have to pay each month. This suggests that the lack of a budget is common for young adults in Denmark. A report by Danske Bank (2009) found that 37 percent of young adults in Denmark did not believe the bank could help them improve their personal finances and 41 percent believed it would be a waste of time to have the bank review their finances. This suggests that young adults are reluctant to contact the bank, which is supported by Jeppesen, J. L. (2015). Because of this, a different approach for reaching this target group is worth considering. According to Spar Nord Bank A/S (2016), the behaviour and needs of their customers are changing as new technological possibilities become available. Especially the young adults have become used to their service needs being solved quickly and easily with a few clicks on their smartphones [44]. According to TNS Gallup (2015), 91 percent of young people aged 18 to 29 own a smartphone and In 2016 smartphones and tablets became the preferred medium over computers for surfing the internet [48]. Further research shows that 69 percent of 18 to 34 year olds check their mobile bank or netbank every week [51]. This suggests that creating an option for budget planning on smartphones would fit the target group, as it is easily available and does not require them to contact the bank.
From this information a target group was narrowed down to young adults aged 18 to 30, as some have difficulties with their personal finances and are reluctant to contact the bank about them. In addition, they are valuable customers for banks because many things happen in this age group, such as buying a house, a car or starting a family [28]. This is therefore an ideal target group to focus on for developing a new approach to help young adults plan budgets.

Defined Personas



Name: Jonas Mathiesen
Age: 20
Occupation: Student with a non-paid study-relevant job.

Demographic: Jonas moved out of his parents' house two months ago and into a rented apartment in Aarhus. He started his bachelor's degree in law last year, is single and has a study-relevant job working for a private law firm, without pay.

Background Information: Jonas spends most of his time either on his studies or his job, and therefore found a cheap apartment so that he can afford it without a paying job. His current job might be without pay, but it is beneficial for him to have it on his resumé as law is a tough business to get into. Jonas is interested in technology and is especially reliant on his smartphone, which he uses for keeping in contact with family and friends, managing his appointments and easy access to surfing the internet. As it is such an important part of his life, he highly prioritises owning the newest smartphone model.

Financial Behaviour: Jonas recently moved out of his parent's house, so he now has to start keeping an eye on his bank account. He added all his bills to PBS because it was cheaper and he does not have to spend time paying them every month. Jonas primarily uses his phone when paying for living expenses, as he finds it convenient. He also carries a credit card in case paying by smartphone device is not available in the store.

Challenges: Jonas has no time for a job with pay, so he intends to live only on the Danish state education grant (SU). Jonas wants to have the newest smartphone, however,he does not have an overview of how much money he can spend. As he has settled into his new apartment he wants to get an overview of his new expenses to know his disposable income. He knows that a budget will inform him about this, but he perceives the budget planning to be time-consuming and has not found the time to start it yet. He has contacted his bank about a meeting on several occasions, but he has canceled the all the meetings as he is always studying or working during their opening hours.

Name: Maja Andreasen
Age: 23
Occupation: Student with a job as student counselor.

Demographics: She moved to Copenhagen three years ago to study philosophy at the university. She lives with her boyfriend in a rented apartment in which they share the costs. Her income is SU as well as her part time job as a student counselor with few hours every week.

Background Information: Maja's apartment is quite expensive but as she shares the rent with her boyfriend, it is usually manageable. Her education and her job are not stressful, which is perfect for Maja because she likes to spend her afternoons on the couch watching TV or going out with her friends.

Financial Behaviour: Maja checks her bank at the start of the month to see how much she has left for the rest of the month and then checks up on it occasionally. She checks her balance via her mobile bank, because it is easy. She does not have a clear idea of her monthly spendings as she pays her bills with PBS for the convenience and do not regularly check up on them. Maja does not carry around physical money and instead uses a credit card to pay for living expenses, which she shares with her boyfriend.

Challenges: Maja and her boyfriend usually make their money last the entire month, but it has become harder in the past year. They have taken a loan to have enough money at the end of the month. She also feels that some months are much harder than others, but she does not know why. Her father recommended that they should ask a bank advisor for help, but Maja does not like the idea of discussing her financial difficulties with someone she does not know. She would prefer to plan a budget herself, but she does not know where to begin.

Using the Personas

These two personas, Jonas and Maja, represent two different reasons for needing to plan a budget. They have different challenges, such as Jonas not having time to meet with a bank advisor and Maja having difficulties figuring out how to plan a budget by herself. Keeping these in mind can help decision-making during the design phase of the project.

2.4 Gamification

The personas spend a lot of time using smartphones and have become used to everything being accessible through these. Making budget planning easily available through smartphones can therefore help reach a bigger part of the target group. However, budget planning can still be seen as demotivating or difficult, which means that another way to motivate the target group is needed. This can be done through *gamification*, which Deterding et al (2011) defines as:

> *"the use of game design elements in non-game contexts."*

This definition is widely used in gamification-related research papers [25; 26; 4] and will be the definition used in this report.

Gamification has become popular within many areas such as finance, health, education and news (Groh, F., 2012). Introducing game elements, such as levels and rewards to these applications, can increase user activity, social interaction and provide an enhanced feeling of productivity [26; 4]. Hamari, J., Koivisto, J. and Sarsa, H. (2014) concluded, based on 24 different studies, that the effects of gamification are generally positive, but dependant on the context in which they are applied. If the gamification does not fit with the needs of the users or are not implemented in an intuitive and useful way, it can confuse the users and ultimately make them less inclined to continue using the application. It is therefore important to keep the personas in mind when gamifying the budget planning process. In addition, Cechanowicz et al. (2013) concluded that the positive effect of utilising gamification was consistent across age, gender and game experience, indicating that the effect of gamification is not restricted by any of these demographics. Most importantly, Koivisto, J. and Hamari, J. (2014) and Cechanowicz et al. (2013) state that one of the main benefits of gamification lies in its ability to motivate users to start using a product, as their results indicate that the effects of gamification diminish over time. Gamifying the budget planning can therefore potentially motivate users to engage more in their budget and reach a broader audience, who may not find budget planning motivating.

Chapter 3

Related Work

This section describes examples of gamification used in the banking industry, the state of the art budget applications and alternative bank solutions.

3.1 Gamification in the Banking Industry

Danske Bank started a Financial Literacy Programme in 2007 [9], aimed to increase financial literacy of the younger age groups across Denmark, Finland, Norway, Sweden and Ireland. The Financial Literacy Programme utilised gamification, amongst other things, to reach a wider audience and make it more interesting. This started with Moneyville [12] in 2007 which was a game aimed for children aged 5 to 9 for teaching basic understanding of money spending and saving. The game included features such as earning in-game money by completing small tasks and using this money to buy clothes, toys etc.

In 2010 Danske Bank released two new websites: Control Your Money [8] and Mind Your Money [11]. Control Your Money was aimed for young people aged 10 to 15 for use in cooperation with their school's curriculum. Students signed up for missions where they completed financial tasks related to real life, such as planning class trips or buying furniture. Mind Your Money was aimed for young adults aged 18 to 27 with a design similar to Control Your Money but with more age-appropriate content. A mobile application was made for Mind Your Money which allowed for manually creating a budget and sending this to your e-mail.

In 2011 Danske Bank released Dream On [10], which was aimed for 15 to 17 year olds. This game involved teaching the users to plan for a financially stable future. Dream On implemented social interaction between the users where they can compare financial dreams.

In 2011 the Commonwealth Bank of Australia developed Investorville, a game where users could invest in virtual property to improve their knowledge of investment strategies, rental returns and interest rates [5]. The investment values were based on real data from the suburban housing market in Australia which further increased the sense of immersion. According to a report from 2012 the game generated about 600 housing loans within a year [37]. The users of the application could choose their desired investment method and see the long term results that the investments were projected to generate.

3.2 Applications in the Banking Industry

In 2015 Jyske Bank launched an application called Weekly to help customers control the amount of money they spend [29]. Through the application the user could specify a weekly amount they wanted to spend and the application would keep them up to date on how much they were spending. Spending more than the weekly limit would subtract money from the next week's limit. Spending less would add the remaining amount to savings [31]. A similar application to keep track of your weekly spendings is Lommebudget [42].

Spiir launched in 2011 as a website and in 2017 as an application, making it easier to get an overview of your own income and expenses [47]. Spiir has seamless integration with most banks, meaning the user can consent to Spiir fetching and displaying the user's own financial data in the application. The application itself allows for setting specific goals for yourself, such as the amount of money you may spend on tobacco etc [47]. Spiir aims to give a clear and easy overview to their users to help them control their finances.

A new Danish application called SubHub is set to launch in May 2017 [33]. The purpose of SubHub is to track the user's subscriptions, such as Netflix and Spotify, and to give a clear overview of what they pay for. Their goal is to make a platform that eases canceling any unwanted subscription directly through the application. The application can find hidden subscriptions by analysing the user's bank accounts to find subscriptions they might not know about.

Lunar Way launched in Denmark in 2016 [36], which is a bank platform working together with Nykredit based solely on a mobile application [35]. The bank is aimed towards an audience who wants all information accessible with smartphones. The bank has no physical branches, making them cheaper than regular banks, and any contact with the bank is through their smartphone application, Snapchat or their chatbot on Facebook Messenger. By making the banking experience entirely based on the application, they have gained a special following where 85 percent of the users of Lunar Way follow them on Snapchat [40].

Related Works Summary

Danske Bank has over the years created many different solutions for improving financial literacy, utilising gamification in the form of missions, tasks and online social interaction, and some of the solutions have been used by schools for several years. In addition, the game Investorville proved that utilising gamification for simulating finances could be useful for the players and result in real-life decisions, in the form of taking housing loans. This suggests that gamification can successfully be utilised within the banking industry and aid the users outside of the game.
Applications such as Spiir, Weekly and Lommebudget have become popular with young adults because of their accessibility and simple functionality in their smartphone platform. In addition, the banking platform Lunar Way only focuses on smartphone application, which is a big part of the bank's source of popularity and indicates that smartphone solutions are important for young adults. SubHub's approach for automatically gathering the information of the expenses from a user's bank account is another important point. This approach reduces the time-consuming aspect of budget planning, which is one of the main demotivating factors.

Chapter 4

Problem Statement

As mentioned in Section 2, this project was based on a collaboration with Spar Nord and Future Finance Incubator, in order to research the effect of gamifying the banking industry. It was found that especially the young adults aged 18 to 30 in Denmark have poor financial literacy. This was also a valuable customer segment for the banks to attract, as they were about to buy cars, houses and start families. This age group was therefore chosen as a suitable target group for a gamified bank experience. Budget planning was chosen as the subject in this project, based on the research described in Section 2.1. This research showed that almost half of the young adults in Denmark did not know what their monthly expenses were, which indicated that budget planning is not common in this age group. Personas were created to establish relatable and realistic representations of the target group and thereby ensure a user-centred design approach for the product. In order to understand how to approach the target group, Section 2.3 explored Spar Nord's own marketing strategy: New technological possibilities have changed customer behaviour and needs and Spar Nord finds relevance in exploring new ways to fulfil the needs and reach a broader customer segment. One technological approach for Spar Nord to explore is gamification, such as a budget planning game, since gamification was found to help motivate users to begin using a product. As it was found uncommon for the target group to have planned a budget, gamification could therefore help motivate users to start the process of planning a budget.

Section 3 researched implementations of gamification in the banking industry and the options available for establishing an overview of personal finances. It was found that several gamified banking experiences have helped children and young adults in Denmark improve their financial literacy. Some of these have been used for several years by educational institutions, which suggest that they are useful tools for understanding financial terms. The section also found that mobile budget applications have become popular, which supports Spar Nord's statement that young people wants to access everything through their smartphone and that this is the way to reach them.

The gathered information was used to narrow down the scope of the project to the following problem statement:

> *How is the user's motivation to plan a budget affected when comparing planning it through a netbank with planning it through a game, which automatically implements the user's fixed expenses?*

Chapter 5

Design

This chapter describes the design and implementation of the game called Budget Attack, which the game will henceforth be referred to as. It explains the iterative process of going from concept to the final implementation of the game in Unity based on internal and external testing.

5.1 Game Criteria

This section outlines the requirements and criteria for the design of the game with focus on how budget planning and user-centred design based on the personas are incorporated into the game design. The requirements are used as guidelines for designing the game and are based on information gathered throughout Chapter 2.

The game was designed based on a concept of a three-fold system:

1. The first part of the system should automatically import information about the player's fixed expenses into the game. This should happen when the players signed into the game, thereby giving their consent for the game to access data from their bank.

2. The second part was the game itself. The game should implement the data as game elements, thereby presenting them with information about their bills throughout the game.

3. The third part of the system should show the overview of their budget through tables and graphs.

An overview of the system can be seen in Figure 5.1.

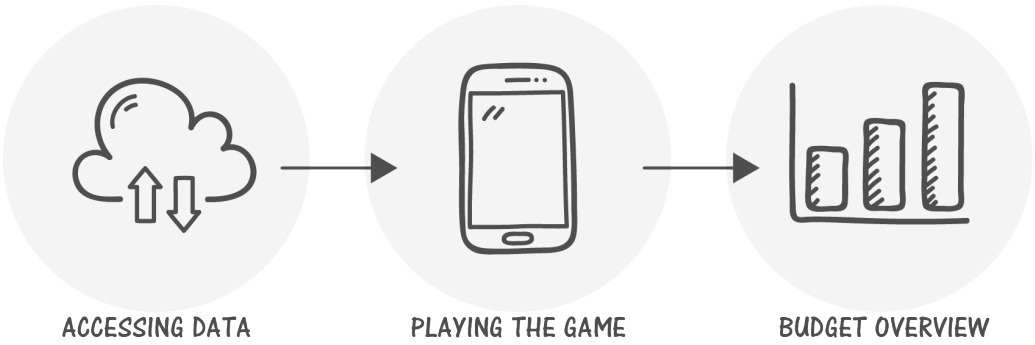


Figure 5.1: The concept of the three-fold system: The data imported into the game is used to give an overview of the budget.

Budget Information Criteria

Based on the theory of what a budget is and what it contains, as described in 2.2, it was possible to define what information related to budget planning should be in the game in order to cover the same information gathered through common budget planning methods. The information was:

1. The names of all the bills.
2. The cost of the bills, their frequency and in which month they have to be paid.
3. An overview of the average monthly cost for all of the bills.
4. An overview of the total yearly cost for all of the bills.

The game must be able to use this information to give the users an overview of their budget in the same detail as if they planned the budget through their netbank.

Persona Criteria

Besides the financial criteria for the game, the game should be designed with the personas in focus, which are described in Section 2.3. From the personas it was possible to define the following criteria for the game:

1. The game should automatically implement the players' financial data.
    (a) Allowing the players to create a budget based on their own data increases motivation and relevance of the game together with the automatisation of the budget planning process.
2. The game should provide a clear overview of the budget.
    (a) A clear overview helps the players understand the information they are presented with.

3. The game should not be time-consuming or difficult.

    (a) The game should provide a short play session and be a casual game without large difficulties to further motivate the players, as the personas find budget planning troublesome and time-consuming in their usually busy schedule.

4. The game should be available as a smartphone application.

    (a) The game should be available wherever the players are with their smartphone device as the personas use them daily and are more inclined to use their smartphone than other platforms.

Now it is possible to look into how the game can be designed to fulfil the game criteria.

5.2 Game Genre

A *Castle Wars* genre was chosen for the project and this section explains the functionalities of this game type and how it can be designed to fulfil the game criteria set up for this project.

Castle War Explanation

An example of an already existing game within the genre is Medieval by Brisk Mobile Inc. (2017). The objective of the game is for the players to shoot the enemy castle until it runs out of health, while keeping the enemy's army away from destroying the player's own castle. In the war between the castles, the players earn gold by shooting and damaging the enemy. The gold can be used to upgrade weapons, such as different and more powerful arrow shots. A cooldown is activated when a weapon is shot, such that they have to wait a few seconds in order for them to shoot that weapon again. The length of the cooldown is dependent on the strength of the weapon. The gameplay is divided into levels, where the player has to fight one enemy at a time until either is defeated. The levels increase in difficulty as the game progresses, making the amount of enemies, their strength and variations increase to be more difficult over time. An ingame screenshot of the game Medieval can be seen in Figure 5.2.

Potential for Budget Planning Game

The type of gameplay found in a castle wars genre can be linked to the requirements needed to fulfil the game criteria defined in 5.1. Both the graphical layout and the mechanics of the game gave a good basis for designing a game that incorporates all the relevant budget information.

The graphical layout of two castles placed in either side of the screenspace is commonly used within the game genre, such as in Medieval [2]l, Castle Storm - Free to Siege [55] and

Figure 5.2: The Medieval game with the enemy's castle on the left and the player's castle on the right. The enemy's army can be seen approaching the player's castle. In the bottom of the screen the weapon user interface (UI) can be seen, where the golden outline around the icon displays the cooldown [2].

Tower Crush - Defense & Attack [27]. The graphical layout and simple setup makes the game easy to understand and easy to get an overview of what is happening on the screen. This could be useful when fulfilling the budget information criteria, as the available space makes it possible to inform the player about relevant information.

The game mechanic of two castles fighting against each other can be used to represent how the personas have to fight their bills to plan their budget. This can help create context and relevance to the gameplay, as the player is not just playing against a game element, but against their own bills, represented by game elements. Games within the genre commonly utilise gameplay where the enemy attacks the players, thereby putting them in a defensive position. This structure of the gameplay can be reconsidered, as the aim of the project is to motivate players to engage in their budget. By making the bills attack the player it could possibly form a negative association to their fixed expenses, which may not be desired. Instead, the gameplay could be turned around, such that the players are the ones attacking their bills, thereby making defeating a bill an accomplishment instead of a means of survival.

Objective of the Game

The objective of the game is inspired by the castle war genre, where the players strive to defeat their enemies. Objectives in games are important and the best case scenario for a game would be that the objectives seem challenging, but achievable for the players [22].

Budget Attack takes inspiration from the game Medieval for its mechanics and rules, by using weapons and armies as the main interaction between the player and the enemy. The player interacts with the game by using different attacks, which are chosen by user interface buttons, an example of which can be seen in the bottom of the screen in Figure 5.2.

5.3 Character

To establish player engagement in Budget Attack, a graphical setting of fighting enemy castles was used. This dramatisation is intended to make the theme and objective of the game intuitive and relatable to the players. If this was not achieved, it could possible make it difficult for players to engage and understand the gameplay, as it could become abstract [22]. A character was designed with the intention of giving the player an identifiable figure for them to relate their actions, desires and feelings to [22]. The character was designed with the symbolisation in mind of the players "being the king of their finances", with the castle representing their finances. The king character can be seen in Figure 5.3.

Figure 5.3: The king character designed for the game.

The king created a narrative flow for the game as the players can relate to two kingdoms fighting against each other. Besides this, the character was used throughout the introduction of the game, where hints were used to introduce the objectives, mechanics and budget related information.

Hints

The game was explained using pop-up hints on the screen. The hints were used to introduce where important features were located on the game screen and when new features were introduced throughout the game. Examples of hints can be seen in Figure 5.4 and Figure 5.5. The game was introduced through simple hints to make sure that players did not miss important information that could otherwise create a confusing situation or be time-consuming for them to understand. This was in accordance with the persona criteria of the game, *The game should not be time-consuming or difficult*, where they are introduced to all the game elements to ensure a good flow when learning the game and its functionalities.

Figure 5.4: The hint introducing the game, Budget Attack.

Figure 5.5: Hint explaining the enemy base by pointing at it and explaining its features.

5.4 Level Screen

A level screen was designed to give the players an overview of their progress in the game and be able to select the level they wanted to play.

Level System

When designing the level system it was important to keep in mind that the amount of levels for the game would vary depending on the individual player. Commonly the level system in a game has a predefined amount of levels, chosen by the designers. However, the system in Budget Attack had to procedurally generate the level map based on how many bills the player had. This created requirements for how the levels should be displayed on the screen to make sure that players with many levels would have the same functionalities as players with few levels.

The level screen was the first screen displayed to the players when they started the game. The level system was created based on an approach, where the players had to complete a level to unlock the next one. When playing the game for the first time, only the first level was available for the players. Both locked and unlocked levels were shown on the screen to create an overview of the amount of levels the players had to complete. The levels were designed to increase in difficulty as the game progressed, which made it possible to keep a game flow throughout the game, where the players were still challenged even though their skills in the game increased.

Level Screen Graphics

The level screen was designed to be in context with the castle wars theme. The levels were visualised using small numbered castle-like towers. The levels were greyed out if they were locked to indicate that they could not be interacted with. The designed level screen with sample player data can be seen in Figure 5.6.
The completed levels were decorated with a banner to show the progress of the level system and indicate to the players how far they were in the game. The king was used to show which level was currently selected together with a start button, which would start the selected level. If the amount of generated levels exceeded the screen width the player could scroll horizontally through the levels.

The levels displayed the name and yearly cost of the bill above them to provide the players with an overview of the bills they had fought. The levels that were locked did not show this information. By providing information gradually to the player as the game progressed it gave a feeling of building up a budget and fighting the bills individually, which relates to how a budget is planned by plotting one bill at a time. To inform the players further about their bills, the top half of the screen displayed a large banner with information of the selected level. In this, the name, cost, frequency and yearly cost of the bill were displayed together with the months in which the bill was due.

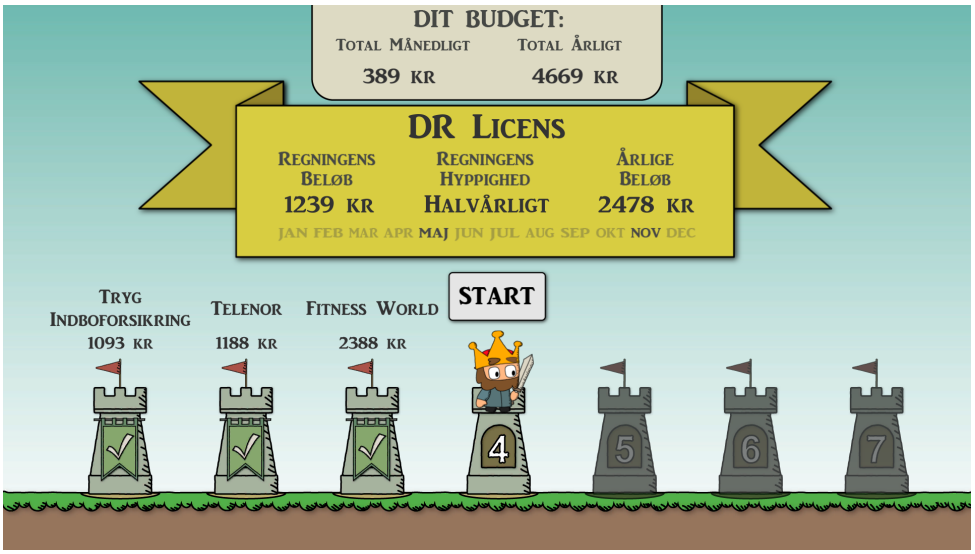


Figure 5.6: The level screen of the game with the levels in the bottom of the screen and the budget information in the top.

In the example seen in Figure 5.6 the selected level shows the information of a bill called DR Licens, with a cost of 1239 DKK. It is paid bi-annually, thereby having a yearly cost of 2478 DKK. The months underneath indicates that the bill is to be paid in May and November. This was indicated by greying out the other months.

In the top of the screen the players could see their current budget plan. The budget plan was gradually built as the players completed the levels. This meant that it accumulated the bills to show the total monthly and yearly costs. This overview was designed to provide a goal for the players and remind them of how bills affect their budget every time they complete an undefeated bill. When the player completed the last bill they received a hint that their budget was planned. They were able to interact with the budget plan by clicking it and slide it down to reveal more functionalities, as seen in Figure 5.7. These functionalities gave them information about their budget in the form of tables and graphs, which is explained further in Section 5.6

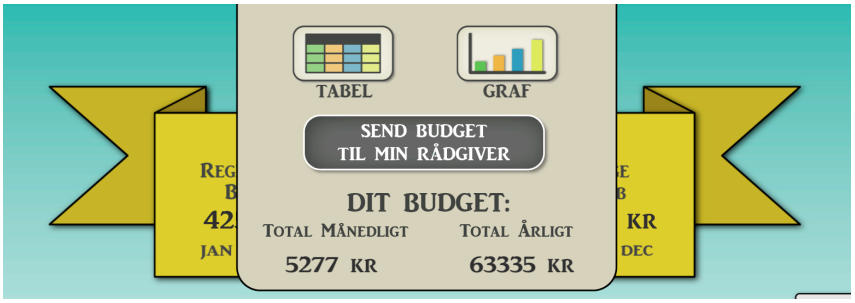


Figure 5.7: The budget plan overview after being clicked. It shows the total average monthly (left) and total yearly (right) cost of all the bills and budget information buttons.

5.5 Game Screen

This section explains how the game screen was designed, what features it included and how they worked.

The graphical layout of the game screen was inspired by other games in the genre, as explained in Section 5.2. The setup has two opponents that were placed in either side of the screen with an army going between the two castles and a weapon on one of the castles. This setup can be seen in Figure 5.8.

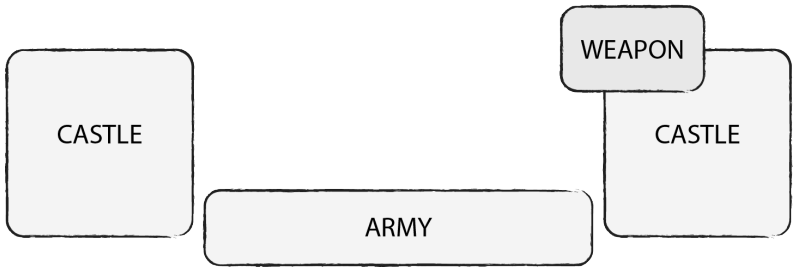


Figure 5.8: An outline of the main features on the game screen showing the two castles, the weapon and the area in which the army moves.

Budget Attack used the same layout but with the player's castle on the left and the enemy's castle on the right of the screen. In the example of the Medieval game, the player interacted with the game using a weapon placed on the castle, as marked in Figure 5.8, however, the interaction with weapons was redesigned for Budget Attack. Instead, the game designed the player to send an army towards the enemy castle and the enemy had to defend itself and shoot the player's army before it reached the castle. The reason for this design of the game mechanic was previously explained in Section 5.2. The final implementation of how the screen layout was designed can be seen in Figure 5.9.

Player Attacks

The players could attack using three different types: a coin, a piggy bank and a money safe. The players had to damage and defeat the enemy castle by sending their army attacks against it. If an attack from the army reached the enemy's castle it would explode and deal damage. The player's army was designed to visually relate to a money theme, which increased the context between the game and budget planning. The three types of attacks can be seen in Figure 5.10.

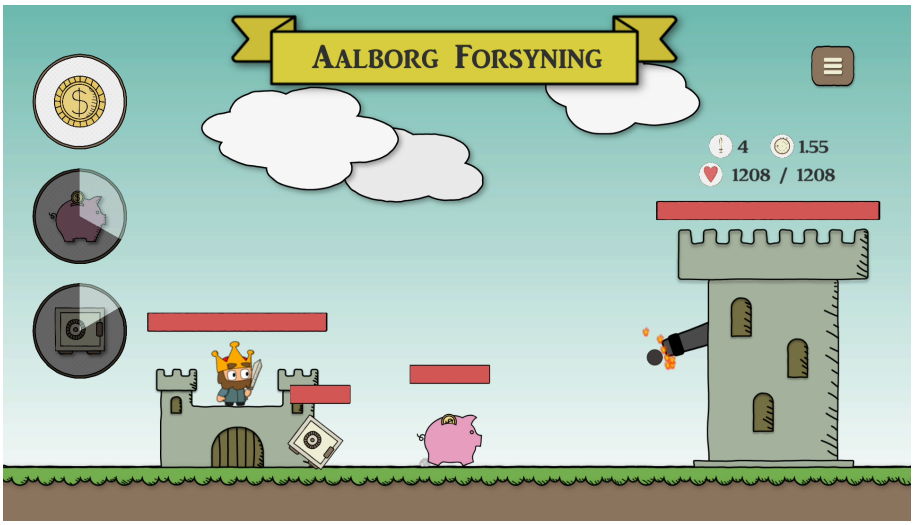


Figure 5.9: The final implementation of the game screen with the player attack icons on the far left, the player's castle next to it and the army approaching in the middle. On the right is the enemy castle and the shooting cannon.

Figure 5.10: The three different army attacks that the player can defeat the enemy with.

The three army attacks differed from each other based on their attributes. The attributes were *speed, health, damage and cooldown.*

- **The speed** decided how quickly the attack moved towards the enemy castle.
- **The health** decided how many points of damage the attack could withstand from the enemy's cannon before being stopped.
- **The damage** decided how much the attack damaged the enemy castle if it reached its destination.
- **The cooldown** decided how often an army attack could be sent. Using an attack invoked a cooldown on the attack, during which the attack could not be used.

The army attacks were the main interaction between the players and the game. Icons were designed for the players to launch their attacks against the enemy. The icons were

placed in the left screen space of the smartphone making it convenient for the players to press the buttons. When one of the army attacks were pressed, the cooldown would be displayed with a greyed out timer that would show how long was left of the cooldown by rotating in the clockwise. An example of the cooldown can be seen in Figure 5.11.

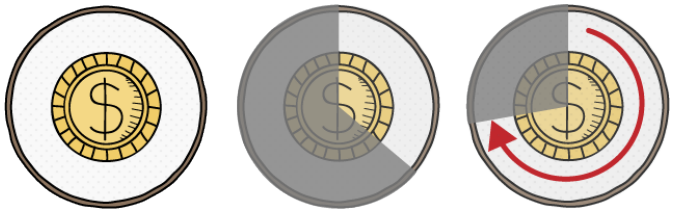


Figure 5.11: Three different stages of the player attacks icons for the coin. On the left the clickable button, the middle showing how much cooldown is left and the right visualising the motion of the cooldown.

The three army attacks had different characteristics and attribute settings related to their state in the game. The attribute design and descriptions of the attacks can be seen in Figure 5.12

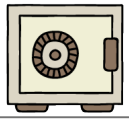
TYPE	SPEED	HEALTH	DAMAGE	COOLDOWN	CHARACTERISTICS
	FAST	LOW	LOW	LOW	FAST AND FRAGILE ATTACK, BUT CAN BE USED OFTEN.
	MEDIUM	MEDIUM	MEDIUM	MEDIUM	SLOW AND BOUNCY, BUT GOES OUT WITH A BANG.
	SLOW	HIGH	HIGH	HIGH	DURABLE AND DEADLY IF IT GETS THERE.

Figure 5.12: The three different attacks, their attributes and characterstics.

Player Upgrades

The army attacks were designed as unlockable features, which were made available to the players when completing a level. They were upgradeable throughout the game to create player choices, give rewards and make it possible for the player to defeat the increasing difficulty of the enemy. During the start of the game the players were introduced to their army attacks. When playing the first level, the only unlocked army attack was the coin. When defeating the next two levels they were able to unlock the two other attacks, the piggy bank and the money safe respectively. The upgrade system throughout the gameplay worked in such a way that the players were granted two upgrades after completing a new level. The amount of upgrades they were rewarded was balanced by

the increase in difficulty as the game progressed, as explained in Section 5.4. When upgrading the three attacks they were upgraded with either more health, more speed or lower cooldown. What they were upgraded with and how much was based on the type and characteristics of the attacks, as described in Figure 5.12. None of the attacks were upgraded in the amount of damage done to the enemy, as this attribute was predefined to deal damage based on a percentage of the enemy castle's health. The upgrade screen can be seen in Figure 5.13.

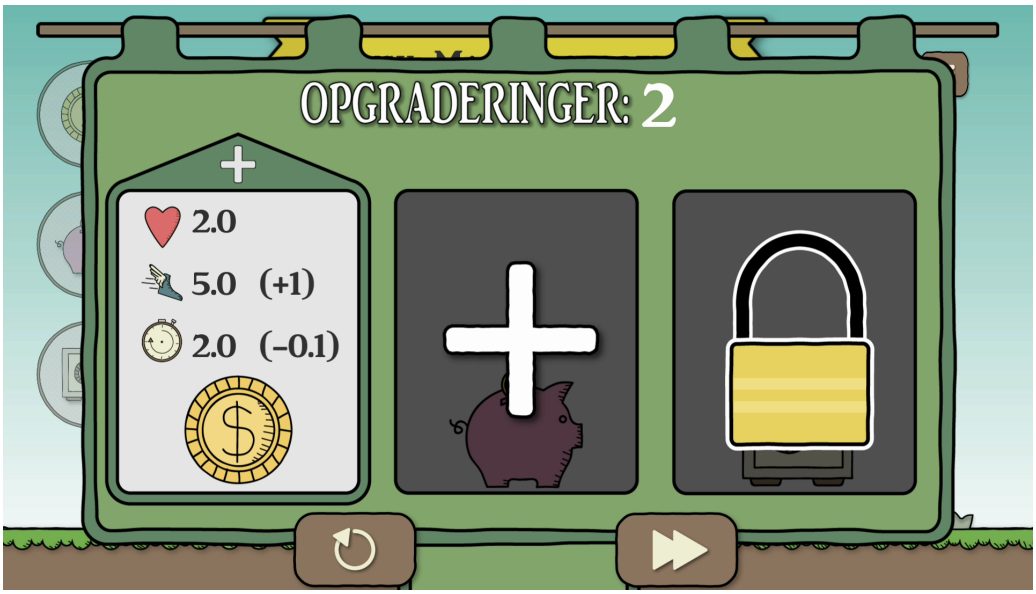


Figure 5.13: The upgrade screen showing that the players have two remaining upgrades. It shows that the piggy bank can be unlocked, while the money safe is still unavailable.

Enemy Castle

The enemy castle was designed to defend itself from the player's army. It was armed with a cannon, which was the main obstacle for the player in the game. The cannon was designed to shoot the approaching army, always aiming for the closest target to its proximity. The cannon was idle at the beginning of a level until the players sent their first attack. Once attacked, the cannon started shooting any approaching attacks and if none were approaching on the battlefield, the cannon would fire towards the player's castle. The cannon design was the main factor in increasing the level difficulty. It increased in strength as the levels progressed by increasing the damage it caused to the player's army and the firing frequency.

The enemy castle was designed to represent the bill the players were trying to defeat. This association was made clear by setting the health of the enemy castle as the yearly cost of the bill the players were fighting against. To further support the association between the cost of the bill and the enemy castle, the level progression was designed in such way that the higher the bill, the higher the difficulty of the enemy castle. This was done through

sorting the bills in order of their yearly cost, making the cheapest be the first level and the most expensive the last level. The design solution to balance the increase in difficulty was to not use the actual cost of the bill as the difficulty, but increase the difficulty based on the current level number, independent on what the bills' yearly cost were. The reason was that through initial testing it was found that many people had varying costs of their bills. Many had very small bills, such as a yearly cost of 100-4000 DKK, and suddenly their largest bill (often being the rent) was at e.g. 50000 DKK. This made it very difficult to balance the sudden increase in difficulty, if based on the bill's yearly cost, with how the upgrades of the player attacks worked.

Visual feedback was provided when either of the castles were damaged. Particle effects were used to show when damage was inflicted on a castle and several stages of each castle was used to show the progress of its damage. The progression of a castle's destruction can be seen in Figure 5.14 and Figure 5.15.

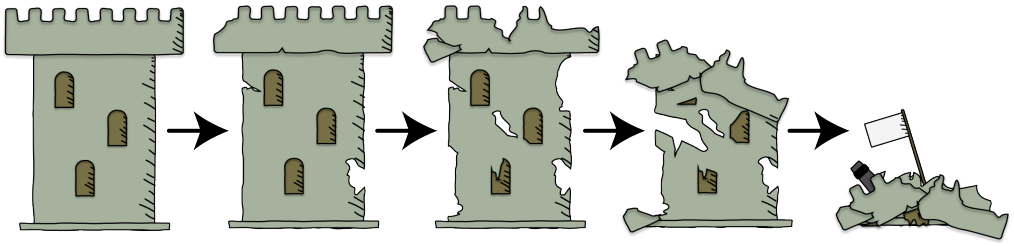


Figure 5.14: The different stages of the enemy castle going from full health to destruction.

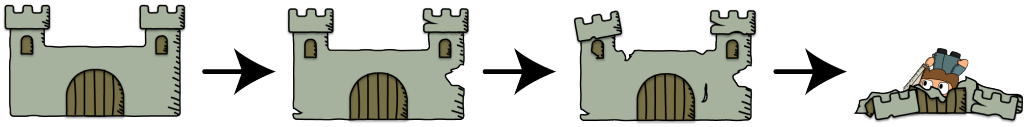


Figure 5.15: The different stages of the player's castle going from full health to destruction.

5.6 Game Budget Overview

When the game was completed, a budget overview was made available for the players, as described in Section 5.4. This section explains the functionalities that were available in the budget overview and how they were designed. The budget overview from the level screen can be seen in Figure 5.16.

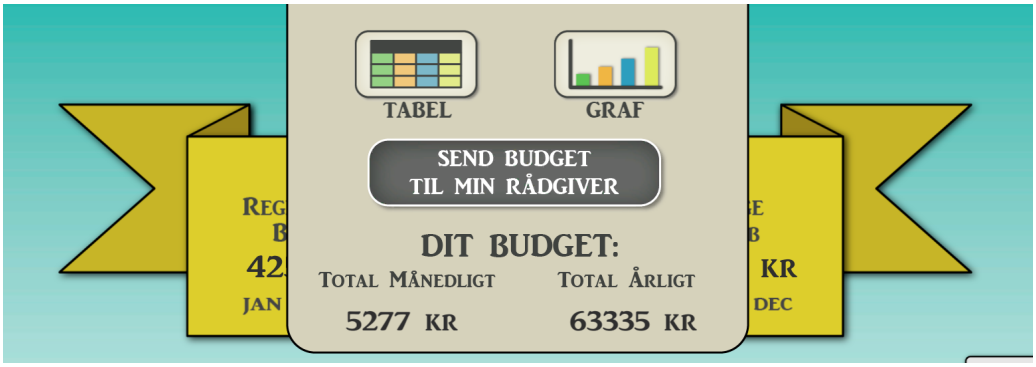


Figure 5.16: The budget overview after being clicked. It shows the total average monthly (left) and total yearly sum (right) cost of all the bills. Above is the functionalities of the budget overview.

Table Overview

To provide the players with information about their budget, a table was presented to them. The setup of the table was based on commonly used budget planning methods, as described in 2.2. The table can be seen in Figure 5.17.

NAVN	JAN	FEB	MAR	APR	MAJ	JUN	JUL	AUG	SEP	OKT	NOV	DEC	MÅNEDLIGT FORBRUG	ÅRLIGT FORBRUG
Husleje	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	2900	34800
Telia Danmark	199	199	199	199	199	199	199	199	199	199	199	199	199	2388
Fitness World A/S	158	158	158	158	158	158	158	158	158	158	158	158	158	1896
Natur-Energi A/S		476			476			476			476		159	1904
Aalborg Forsyning	302			302			302			302			101	1208
Dansk Magisterforening		66			66			66			66		22	264
Lærerstandens Brandforsikring								1151					96	1151
Lærerstandens Brandforsikring								700					58	700
Total	3559	3799	3257	3559	3799	3257	3559	5650	3257	3559	3799	3257	3693	44311

Figure 5.17: The table overview showing the name of the bills, their cost plotted into the budget form and a total overview of the monthly and yearly cost.

The table was made to procedurally list the bills of the players, depending on how many they had. If the list extended the view on the screen the players were able to scroll down the list. The first column of the table displayed the name, as they were imported from the fixed expenses data. The table plotted the data of the bills for each month in a year, giving an overview of when the bills were due and in which months the players could expect more bills than others. To the right of the table the monthly and yearly costs of the bills were shown and the bottom of the table sums the total of all the bills together. The monthly paid bills were listed first in the table, followed by the quarterly paid bills and so on. In addition to this, the bills were also listed from most expensive from top to bottom to provide a systematic listing of the bills, making it easier for the players to comprehend.

Graph Overview

A graph overview was designed to provide the users with another visual overview of their expenses. The graph showed the different months throughout a year with a visual accumulation of the bills. The bills were colored and listed with legends. The graph overview can be seen in Figure 5.18.

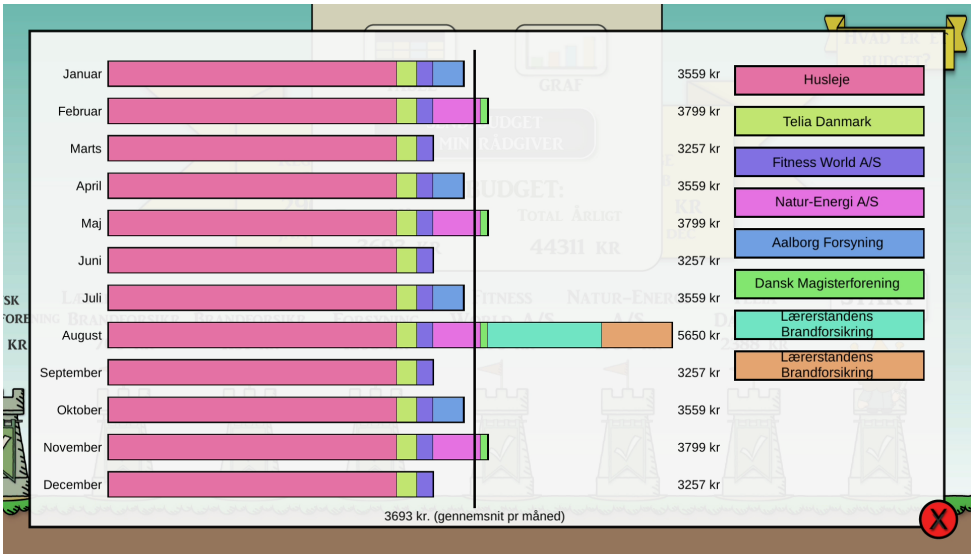


Figure 5.18: The graph overview showing the monthly costs, the monthly average and how much each bill amounts to for the total monthly cost. Legends were used to show the different bills and could be disabled and enabled depending on which bills the users wanted to include in the graph.

The players had the opportunity to interact with the legends in order to disable or enable a bill in the graph. This gave them the possibility to visualise their budget where they did not pay a certain bill, for example if they knew they were stopping a subscription they could see a forecast of how their budget would look by disabling it in the graph. The bills were listed in the same order in the graph as in the table overview with the most frequent and expensive bills listed first.

Further Contact Button

The last functionality of the budget overview is a "send to my bank advisor"-button. This button was not fully implemented into the final game and was placed in the game to display the intended functionality of the game. The concept was that the players could send the budget to their bank advisor for approval, who then would be able to help set up a budget bank account, contact them or discuss the budget with the player.

The button for sharing was intended to provide a text field where the players could comment on issues, questions or other matters they might have had with their budget before sending it to their advisor. This could for example be if they knew one of the bills should not be plotted into their budget or if they knew of a bill that was missing or incorrect.

5.7 Automatically Importing Bank Data

One of the important aspects of the game was to import the players' bank data automatically into the game and use as a part of the game elements. The setup of the game, its functionalities and all the design decisions were all made with the assumption that an Application Programming Interface (API) was able to be implemented into the game system. As a collaboration was made between the group and Spar Nord, it was designed specifically with their API in mind, which would give the group the possibility to import the data of their bank customers. Due to security constraints with Spar Nord, however, it was not possible to implement a connection between the game and their API for the final product. As a result, the data used in the game had to be manually imported using the data of the players.

5.8 Game Criteria Fulfilment

This section summarises how Budget Attack was designed to fulfil the game criteria defined in Section 5.1.

Fulfilment of Budget Information Criteria

The game must include the following budget information:

1. The names of all the bills.

    - Names of the bills were shown in both the level screen and game screen, in order to emphasise a relation between the bill the players are fighting and the information they are presented with.

2. The cost of the bills, their frequency and in which month they have to be paid.

    - The information about the bills was mainly shown to the players on the level screen, where they had all the relevant information gathered in one window. Furthermore, the yearly cost of the bill was described as the health of the enemy castle, thereby involving their fixed expenses in the gameplay. This design helped establish a connection between the players and planning their budget through the game.

3. An overview of the average monthly cost for all of the bills.

    - The average monthly cost of the bills was shown in the level screen which updated each time a new level was completed. This was to show that the amount the player had to pay each month increased, the more bills the player had defeated. The monthly cost was also shown in the budget overview in both the table and the graph. In the graph overview the average monthly cost was shown as a line through the length of the bills giving an indication as to which months were more expensive than others.

4. An overview of the total yearly cost for all of the bills.

    - The total yearly cost of all bills was shown in the level screen and accumulated each time a new level was completed. This was done to show a relation between defeating a bill and building the budget. In addition, this amount was shown in both of the budget overviews to provide an overview for the players of how much they spend on yearly basis on fixed expenses.

Fulfilment of Persona Criteria

The game must fulfil the following criteria based on the personas:

1. The game should automatically implement the players' financial data.

    - In the final implementation of the game, it was not possible to automatically implement the player's financial data. Instead, the game was as an alternative designed to import a data sheet, which contained the financial information. This meant that the automatic process was not implemented, however, the players could still play the game using their own data provided through a data sheet.

2. The game should provide a clear overview of the budget.

    - The budget overview was designed to give the personas a clear and understandable visualisation of their budget using both a tables and a graph. The choice of using both methods of displaying the budget was because the personas could prefer different ways of viewing their budget.

3. The game should not be time-consuming or difficult.

    - The gameplay was designed to be fast and casual. The balance between level difficulty and upgrades made it possible to create a challenging, yet achievable game with fast gameplay and short levels. The amount of levels in the game was equal to the number of bills the player had to pay. This meant that the completion time increased for each level in the game. This was not an issue, as the game was designed for personas who did not have a vast amount of bills to pay, which kept the completion time relatively low. This assumption was based on what expenses young people have when they live in apartments while studying.

4. The game should be available as a smartphone application.

    - The game was designed for smartphones by having all the icons and text on the screen easily discernible on the screen. Furthermore, both the game and the budget overview were available in the same application, suiting the needs of the personas by having information right at hand.

Chapter 6

Experiment

This chapter describes the procedure of the conducted experiment in order to evaluate the problem statement. The chapter includes information about the hypotheses, setup, population, data gathering methods and the results of the experiment.

6.1 Experiment Design

This section explains the methods for gathering data used in the experiment, the setup of the experiment and the tasks the respondents had to perform.

Data Gathering Methods

Two data gathering methods were used during the experiment. One of the methods was a questionnaire, since this method makes it possible to gather data with uniformity as each respondent is made sure to answer the exact same questions. A questionnaire allows for gathering quantitative data which is helpful for conducting statistical tests on the responses [53]. A 7-point Likert scale was used for the questions in the questionnaire with answers ranging from "strongly disagree" (1) to "strongly agree" (7), with a "neutral" (4) answer. 7 points were used to allow the respondents a precise measurement for the answers.

The questionnaire was used to evaluate the motivation of the users, in accordance with the problem statement. The questions were based on important motivational factors for the personas, such as their motivation to engage in a budget. This indicates the motivation to begin planning a budget, which is important in order to start playing a budget planning game. Another important motivational factor for beginning to plan a budget is the respondents' desire to get an overview of their budget. Both personas were interested in planning a budget, but were discouraged by being too busy or not knowing where to start. In order to evaluate these issues, the respondents were questioned on their willingness to invest time on planning a budget, which indicated their motivation to continue planning a budget after having started. Determining the respondents' willingness to continue also indicated whether they were discouraged by attempting to plan a budget. To measure the discouragement, questions were asked related to the difficulty of budget

planning. In addition, the respondents were asked how time-consuming budget planning felt in order to know whether it was tedious.
The second method of gathering data was a semi-structured interview, with a predefined list of questions. The semi-structured approach was used as this gave the interviewer the opportunity to ask follow-up questions and have the respondents elaborate on their answers [24]. The predefined questions were related to the tasks of the experiment, advantages and disadvantages of the performed methods and the respondents' preferences.

Experiment Setup

The experiment was performed using a laptop to plan the budget through the respondents' netbank and a smartphone to play the game, Budget Attack. The laptop was also used throughout the experiment for note-taking and answering the questionnaire. While the experiments was conducted, an interviewer would be present to oversee that the experiment procedure went according to plan and help in case the respondent would have any questions. One of the respondents playing the game can be seen in Figure 6.1.

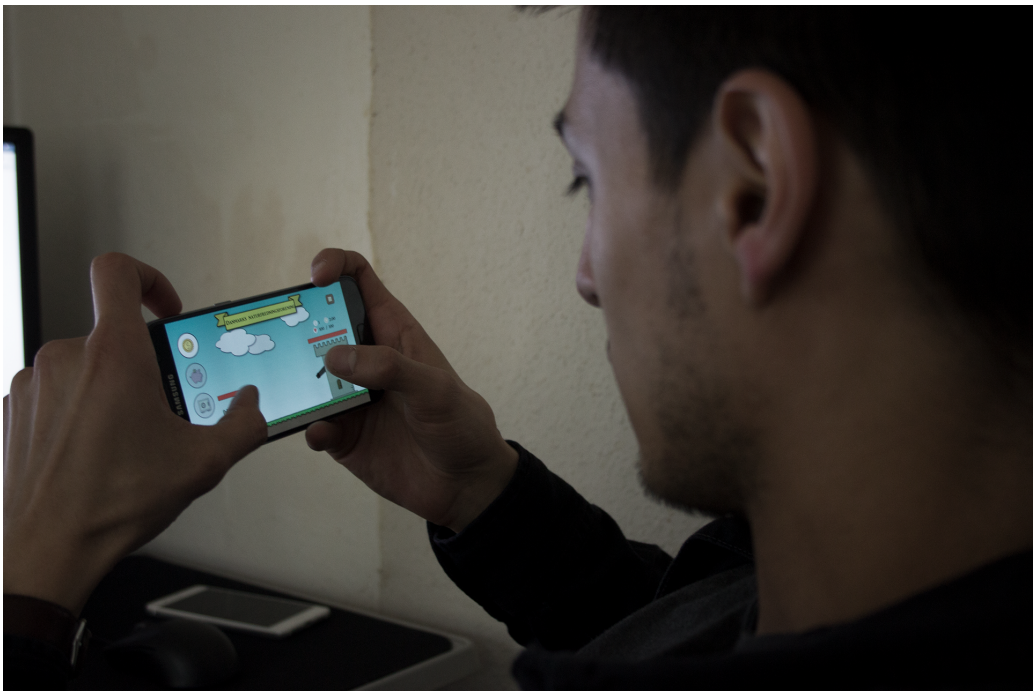


Figure 6.1: One of the respondents playing the game.

Tasks

Before the experiment began, the respondents were presented with a consent form for their data to be used in the report. The consent form can be seen in Appendix A. The experiment was conducted in four stages, which can also be seen in Figure 6.2:

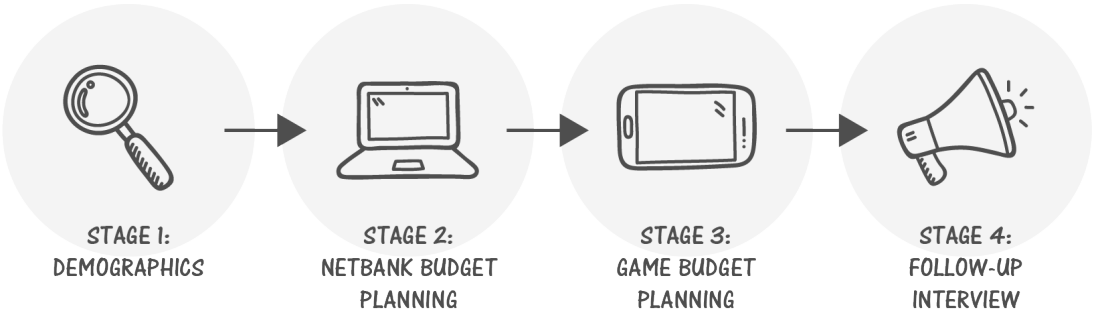


Figure 6.2: The four stages the respondent had to go through.

Stage One: The first stage of the experiment presented the respondents with a questionnaire to gather demographic information. The demographics gathered the respondents' age, gender, their bank and their habits concerning budget planning. This part of the questionnaire also included Likert scale statements about their motivation to plan a budget, to what degree they are willing to spend time on their budget, as well as their general knowledge of their personal finances. These statements were used as the baseline data and were the same questions asked in the following stages.

Stage Two: In the second stage of the experiment, the respondents were tasked to plan a budget through their own netbank. The task included gathering information about all their fixed expenses and entering them into a budget planning form, which can be seen in Figure 6.3. The budget planning form was a premade template made by the group from the research gathered in Section 2.2. The information the respondents had to gather was the name, the costs and the frequency of their bills. After completing the budget, the respondents answered Likert scale questions about the task in a questionnaire.

Name of Bill	Jan	Feb	Mar	Apr	Maj	Jun	Jul	Aug	Sep	Okt	Nov	Dec	Monthly Average	Yearly Cost
Bill name 1...													0	0
Bill name 2...													0	0
...													0	0
													0	0
													0	0
													0	0
													0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Figure 6.3: The template which the respondents were given to plan their budget.

Stage Three: In the third stage of the experiment the respondents were presented with the game, which implemented the budget data they gathered in stage two. The implementation of the data was done by the observer while the respondent was answering the questionnaire from the previous stage. After completing the game the respondents were presented with the last part of the questionnaire, which consisted of the same Likert scale questions as stage one and two.

Stage Four: In the last stage of the experiment the respondents were asked to compare the two different methods they had tried and outline their advantages and disadvantages. This was done through an interview, which also asked them to specify and explain which of the methods they preferred.

6.2 Population

The experiment was performed on twelve respondents, consisting of eight male and four female in the age range of 23 to 27. Two of the respondents were employed, four were students with a part-time job and six were students with no job.

Six of the twelve respondents had previously planned a budget, which in four of the cases were done by themselves without help. The remaining two were helped by their bank advisors. From the twelve respondents only three stated that they would seek financial advice from their bank advisor. The rest of the respondents stated that they would seek it from family, friends or do the research by themselves. These results support the claim that young adults do not contact their bank advisors for advice, as described in Section 2.1. The results are in compliance with the personas, where there was a tendency for one of them to seek advice from family, instead of bank advisors. All of the respondents had their bills partially or fully signed up for PBS which is in accordance with both of the personas and how they manage their fixed bills.

Only one of the twelve respondents stated they spend a lot of time on their personal finances and ten of the twelve respondents stated they knew how much they pay in bills each month. These answers can be seen in Figure 6.4 and 6.5.

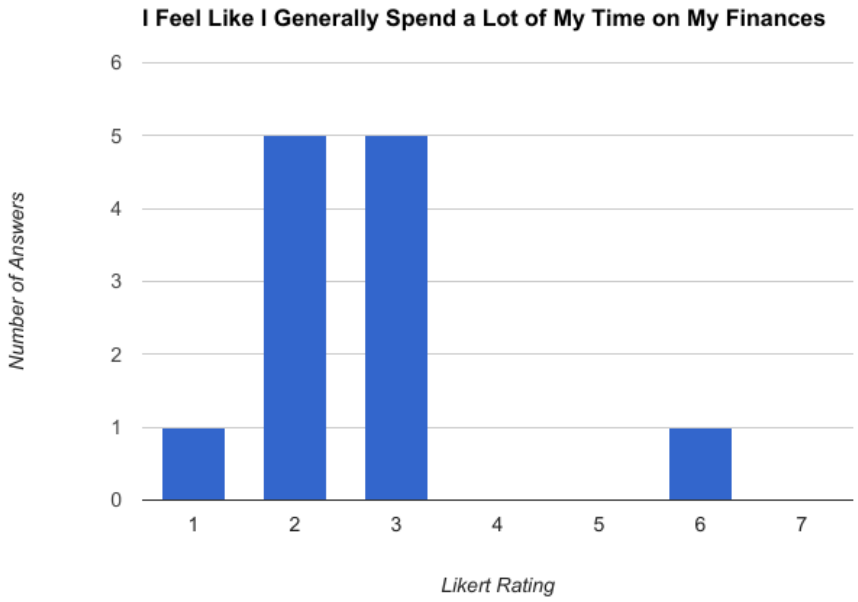


Figure 6.4: Distribution of answers to whether the respondents felt they spend a lot of time on their personal finances.

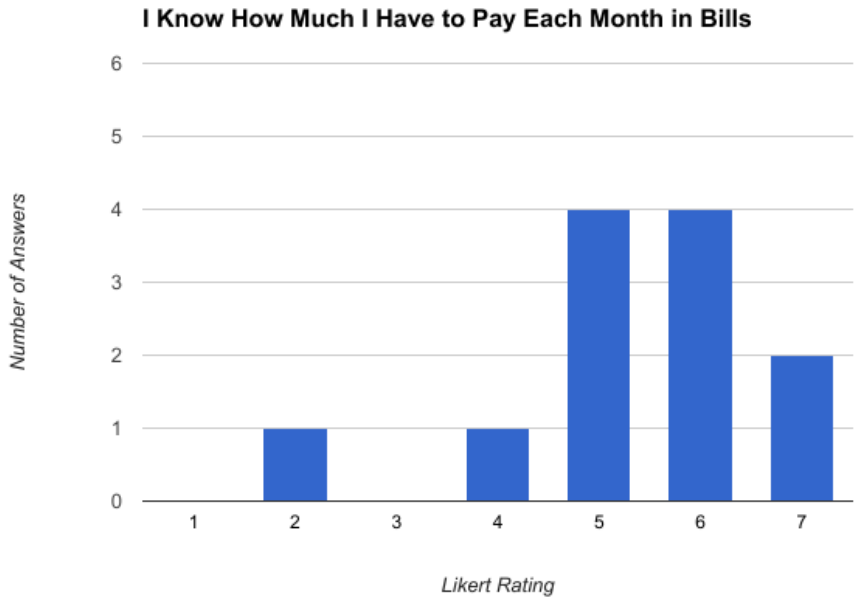


Figure 6.5: Distribution of answers to whether the respondents know how much they pay each month in bills.

6.3 Delimitation

This section describes known causes of bias in the experiment, what effect they might have had and how these could ideally be fixed.

The fixed order in which the experiment had to be conducted caused a known bias. Since the game could not implement the respondents' data automatically, as explained in Section 5.7, it meant that the respondents had to plan their budget through their netbank before playing the game in each experiment. This resulted in the respondents always trying the method of using the netbank first and not being able to randomise the order in the methods. To randomise the order is commonly used when comparing two methods with each other. It was not possible to reduce this bias throughout the experiment, however, a solution for future testing is to implement a fully working import of the financial data. The lack of randomisation meant that the Likert scale answers were based on previous experiences. This meant that in the first stage the respondents would answer the questions based on their prerequisites, which differs individually. In the second stage the respondents would then base and compare their answers with what they answered in the first stage and so forth. This meant, that since planning a budget through the game was always the last in the order, the answers would be affected by previous answers. One large issue with this was if the respondents in the first stage answered a Likert question with e.g. 7 (strongly agree) and they in the next stages actually wanted to give a higher rating, it was not possible for them to express this through the questionnaire.

Another bias caused by the fixed order of the experience was the respondent's conceptual understanding of the product.. As it was not possible to automatically import financial data into the game and since the participants were tasked to plan their own budget during the experiment, it caused bias to their understanding of the system's functionality and the automated process. This was tried explained throughout the experiment, where participants were explained the full concept of the system if it was completed.

6.4 Experiment Results

This section describes the results found in the conducted experiment through questionnaire and interview.

Questionnaire Results

A comparison was made between the answers to the questionnaire questions in stage one, two and three. A Friedman test was used to compare the three stages and a significance level of 0.05 was chosen for the statistical tests [52]. To reduce the chance of finding type I errors while testing a Bonferroni correction was applied. The Bonferroni correction changes the significance level by dividing it with the number of performed tests. Five tests were performed on the data, making the new significance level 0.01.

Motivation to Engage in Budget

The respondents were asked to rate to what degree they were motivated to engage in a budget. The questions in the questionnaires were phrased as:

- Stage One: I am motivated to engage in my budget.
- Stage Two: This method (netbank) has motivated me to engage in my budget.
- Stage Three: This method (game) has motivated me to engage in my budget.

The responses to these questions can be seen in Figure 6.6.

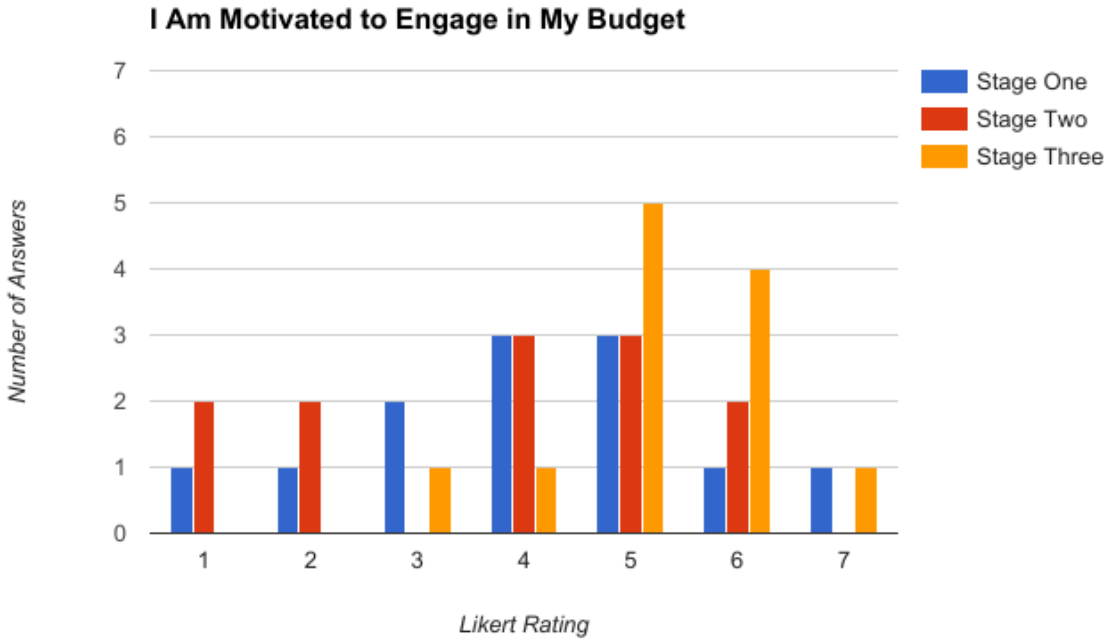


Figure 6.6: Distribution of answers to whether the respondents felt motivated to engage in their budget in stage one, two and three.

When looking at the distribution of the answers, 83 % agreed in stage three that the method motivated them to engage in their budget. In comparison, 42 % agreed in stage one and two. It is worth noting that 33 % of the participants disagreed to being motivated in stage two, indicating that this method had been a demotivating factor through the experiment. Using the Friedman test, a p-value of 0.1317 was found, which was not a statistically significant result.

Overview of Fixed Expenses

The respondents were asked about their overview of their fixed expenses before the test and then they compare it with after testing the two budget planning methods.

- Stage One: I have a clear overview of my fixed expenses.
- Stage Two: This method (netbank) gave me a clear overview of my fixed expenses.
- Stage Three: This method (game) gave me a clear overview of my fixed expenses.

The responses to these questions can be seen in Figure 6.7.

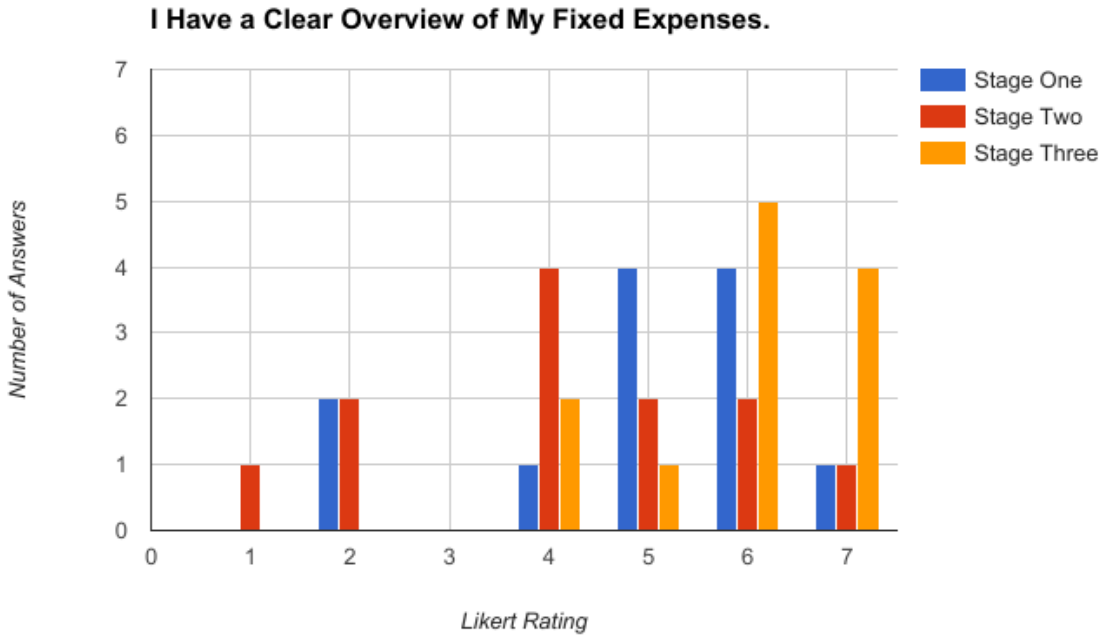


Figure 6.7: Distribution of answers to whether the respondents felt they had a clear overview or that the method gave a clear overview of their finances.

When studying the distribution of the Likert scale ratings for the overview of the fixed expenses, 83 % of the respondents agreed that stage three gave them a clear overview of their expenses. In comparison, 75 % agreed in stage one and 42 % agreed in stage two. This indicates that stage three gave a better overview than stage two. When a Friedman test was performed, a p-value of 0.0497 was found which was not a statistically significant value.

Throughout the experiment, six of the twelve respondents expressed surprise by some part of their fixed expenses, e.g. the cost of a bill being higher than remembered, an unexpected bill, a bill they thought removed, etc. However, ten respondents stated that they knew how much money they paid for bills each month, in stage one of the experiment. This shows that young people can benefit from planning a budget, even if they think it is not necessary.

Difficulty of Planning a Budget

The questions regarding how easy it was to create a budget were:

- Stage One: I feel that it is easy to create a budget.
- Stage Two: This method (netbank) made it easy to create a budget.
- Stage Three: This method (a game) made it easy to create a budget.

The responses to these questions can be seen in Figure 6.8.

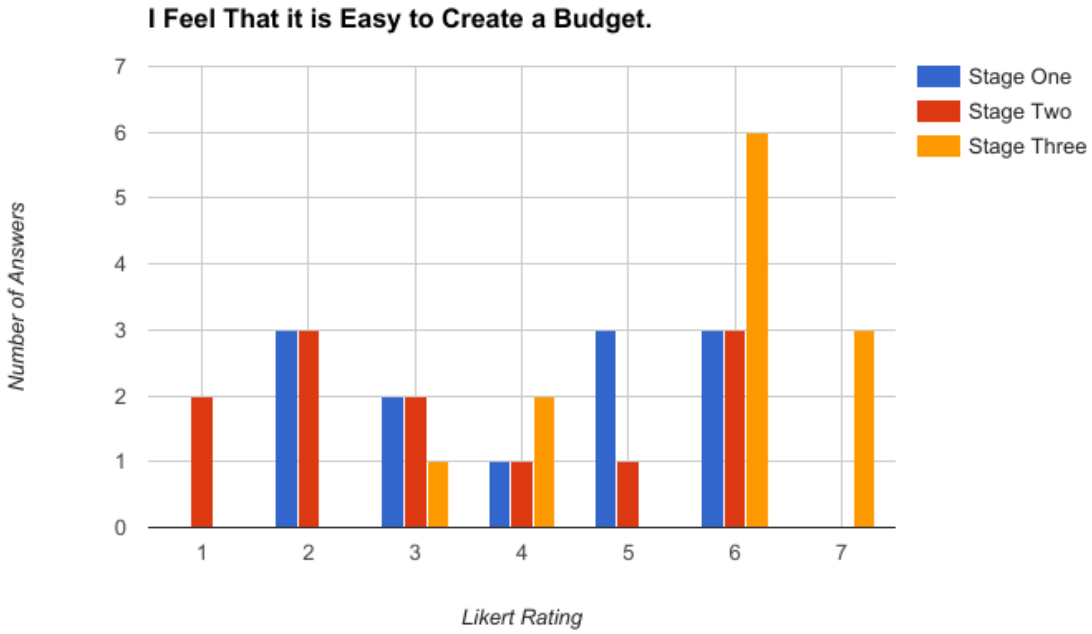


Figure 6.8: Distribution of answers to whether the respondents felt it easy to create a budget in stage one, two and three.

When studying the distribution of the Likert scale ratings for the difficulty of creating a budget, 75 % agreed that the budget planning method was easy in stage three. In comparison, 33 % agreed in stage one and 50 % agreed in stage two. This indicated a preference for the difficulty of stage three. A Friedman test revealed a p-value of 0.008, which is a statistically significant result. A post-hoc test revealed that the significant difference was between stage two and three.

Willing to Invest Time in My Budget

The respondents were asked about their willingness to invest time into their budget.

- Stage One: I am willing to invest time in my budget.
- Stage Two: This method (netbank) made me willing to invest time in my budget.
- Stage Three: This method (game) made me willing to invest time in my budget.

The responses to these questions can be seen in Figure 6.9.

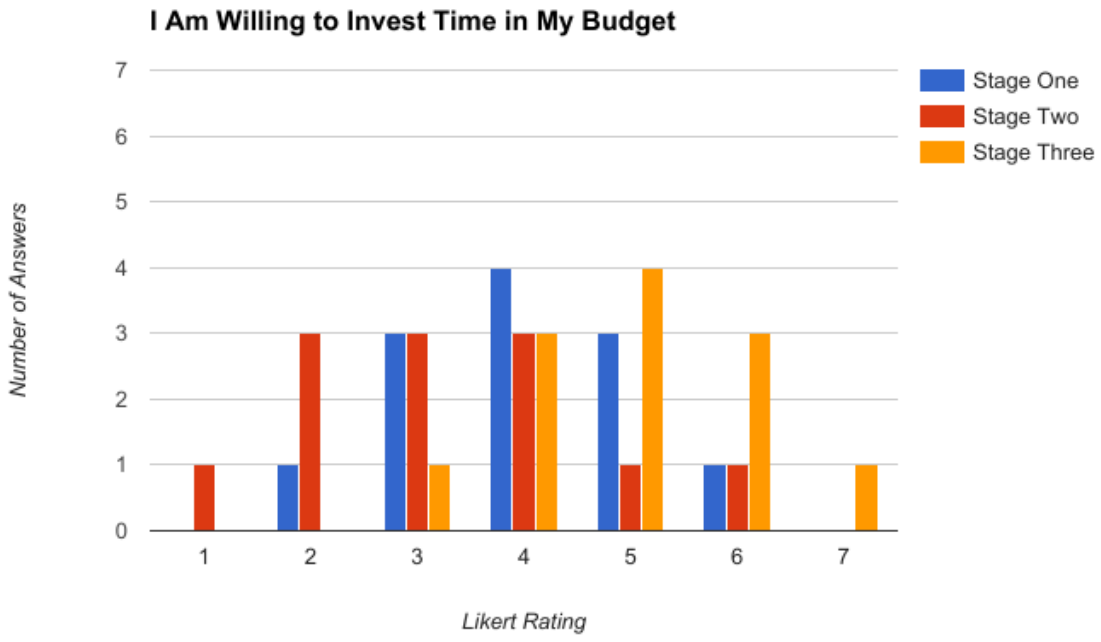


Figure 6.9: Distribution of answers to whether the respondents were willing to invest time in their budget in stage one, two and three.

When studying the distribution of the Likert scale ratings, 83 % agreed that stage three made them willing to invest time in their budget. In comparison, 33 % agreed in stage one and 17 % agreed in stage two. This indicated that stage three made them more willing to invest time in their budget. When performing a Friedman test on the values a p-value of 0.023 was found which was not statistically significant after the Bonferroni correction.

Time-Consumption

After stage two and three, the respondents were asked whether they agreed that the method took a long time to complete. This questions were made to compare between the two methods and did therefore not include a question for stage one. The questions were:

- Stage Two: This method (netbank) took a long time.
- Stage Three: This method (game) took a long time.

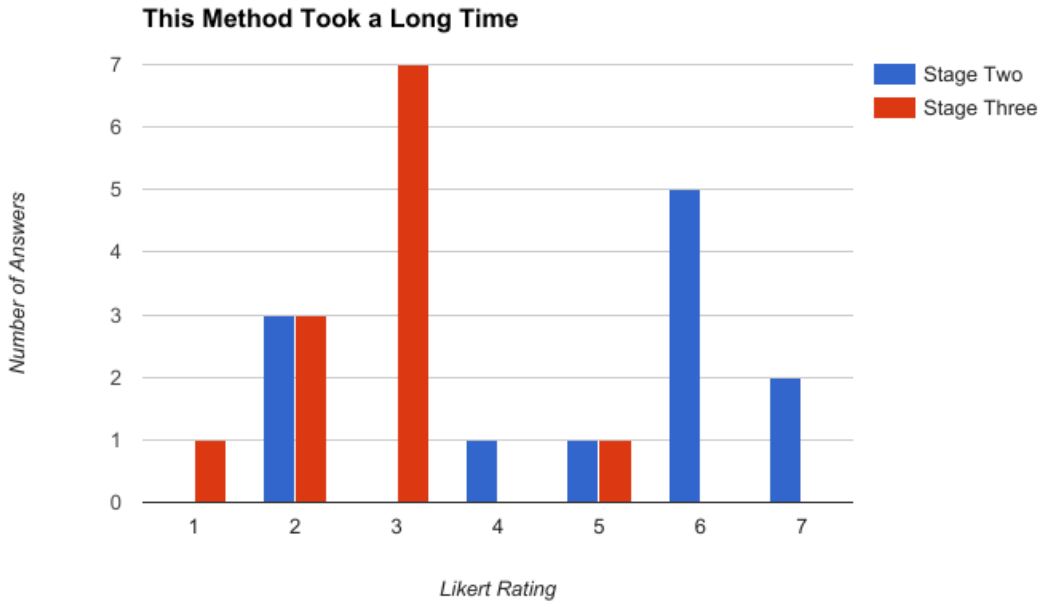


Figure 6.10: Distribution of the respondents' answers to whether they felt the stage two and three budget planning methods took a long time.

When looking at the distribution of the two stages, 67 % of the respondents agreed that stage two took a long time to complete and 8 % agreed in stage three. This indicated that stage three felt less time-consuming than stage two. A Wilcoxon signed rank test was performed and a p-value of 0.019 was found which was not statistically significant after the Bonferroni correction.

The time it took for the respondents to complete each method was noted down during the experiment in order to give an estimate on how long it took for the participants to complete each method. The time taken included respondents looking at their budget overview and the time taken also depended on the amount of bills they had. The average completion time for stage two was 609 seconds and was 661 seconds for stage three. A Student's paired t-test was performed and a p-value of 0.413 was found which was not statistically significant.

Trustworthy Game

In stage three the respondents were asked whether they felt a game was an untrustworthy solution for budget planning. 83 % of the respondents stated the game was trustworthy, indicating that this was not an issue for the respondents. The distribution of answers to this can be seen in Figure 6.11.

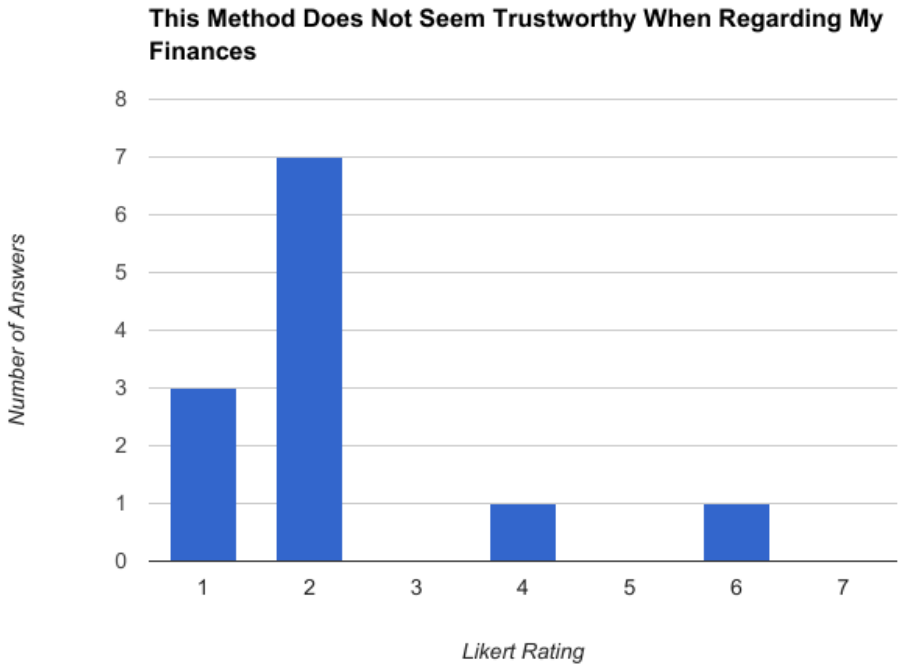


Figure 6.11: Distribution of the respondents' answers to whether they felt a game was an untrustworthy solution for budget planning.

Interview Results

An interview was conducted at the end of the experiment to ask the respondents about their preferences of budget planning methods. This sections explains the questions asked and summarises the answers gathered through the interview. The questions asked were:

- *Which of the two methods (netbank and game) do you prefer for budget planning?*
- *Which advantages and disadvantages can you see for planning a budget through the netbank?*
- *Which advantages and disadvantages can you see for planning a budget through the game?*
- *Would you play a budget planning game if your own bank released the game?*

Method Preference

75 % of the respondents preferred the game over the netbank for budget planning. The respondents commented that there was great potential in the automatic import of their data into the game, as this eased the entire process of budget planning. Furthermore, the game was described as bringing a fun aspect to budget planning, which could be a boring task. A few respondents raised some concerns about the game as a method, however, as they found the netbank to be more useful.

Advantages and Disadvantages of Netbank Method

One of the main advantages of the netbank, commented by the respondents, was the overview it provided of the expenses by having it all gathered in one place and that the respondents were familiar with it. Time-consuming and confusing was some of the most heavily commented disadvantages of the netbank and even though the respondents were familiar with their netbank, some still had troubles finding the overview they were looking for.

Advantages and Disadvantages of Game Method

When asked to name advantages and disadvantages of the game method, the respondents commented that one of the main advantages was the automatic implementation of the respondents' personal finances. This made the game a both faster and more entertaining solution, as the need to manually navigate to the bill information was removed. A few respondents mentioned a negative aspect of the automatic implementation, namely that when they were not part of finding the bills' information, they had to trust that the game did it correctly. Another disadvantage of the game was that it did not show an affiliation with a bank and could therefore be seen as a solution that is not entirely trustworthy.

Playing a Budget Planning Game

All respondents stated that if it was possible, they would try a budget planning game. The respondents said that the concept of the game was intriguing, as it was a different approach than they were familiar with. Some commented they would try it out to see what it was about and perhaps plan a budget through it. One respondent mentioned the functionality of the connection between the game and their own bank to be an essential factor for playing the game, as she had a great interest in being able to involve the bank directly into her budget planning or perhaps send the budget to herself for further use.

Comments From Collaborators

A short interview was held with Niklas Gedsted Andersen, who is one of the business developers from the innovation department of Spar Nord to get a comment from the collaborators of the project. This section contains the interview.

What do you think of the project?

> *I see a big potential in the project. Scandinavia can almost be described as a cashless society, which is why it can be difficult especially for the younger segment to understand and handle money. That is why this project touches a very relevant problem in regards to budget planning. The product itself is super cool, design and content wise - exceeded all expectations in regards to the speed we normally work with in the banking industry. The project group can pat themselves on the shoulders. Further gamification can naturally be implemented as new 'elements' in the game itself.*

Which relevance does the project have for Spar Nord's strategy?

> *Our newest strategy is to be a ''Personal bank in a digital world". A cornerstone of this is to have the right product for the right customer, which is why a budget game matches our younger target group and therefore has high relevance. It is essential for us to have relevant digital products available.*

Which advantages and disadvantages can you see with the project?

> *There are many advantages for Spar Nord as a bank, our brand, our product range, PR and so forth, and as mentioned the product is in line with our strategy. Additionally, the project has the advantage that it can save time for the bank advisors, as their customers can learn to plan a budget in this game. Furthermore, it is a cool feature for the bank advisor to provide. The disadvantages could be that the product itself does not have a business model in regards to selling it to more banks. As the target group is not a customer group the banks profit from, they can be critical in this regard because the game is seen as an expense (sadly caused by the banks' older inside-out look at product development).*

Chapter 7

Conclusion

This chapter concludes on the results of the proposed solution to the problem statement:

> *How is the user's motivation to plan a budget affected when comparing planning it through a netbank with planning it through a game, which automatically implements the user's fixed expenses?*

The results of the conducted experiment showed that using a game to plan the budget was significantly easier than when planning it through the netbank, which statements from the respondents revealed as an important advantage over the netbank. Comments from the respondents indicated that the main issues with the netbank method was the confusing layout and the time-consuming search for relevant information. There was a tendency for the respondents to feel that budget planning through the game took less time than through the netbank. However, the average completion time for both methods was almost identical, suggesting that the respondents were more engaged in the game. The respondents' willingness to invest time in their budget showed a tendency to be rated higher after playing the game, indicating that respondents were more motivated to spend time on a budget if planned through a game. This was supported by comments from the respondents about the netbank method being harder and more time-consuming than it should be. No statistically significant difference was found in the respondents' reported overview of their budget, however, comments from the interview revealed that defeating bills one at a time in the game gave a good and gradual understanding of them. The respondents' motivation to engage in a their budget was found not to be significantly different between the game, Budget Attack, and the netbank. The result did, however, indicate that the motivation to engage in their budget through the game was higher than the netbank. This was supported by the interview, where all respondents expressed a desire to play a budget planning game if their own bank provided the option, even if the respondent already had a budget. This showed that gamification had a positive effect on the motivation of users and that it can be beneficial for the banking industry to explore. This was supported by a representative of the innovation department of Spar Nord who commented that the project showed great potential for a gamified banking experience and touched the relevant problems they find in budget planning. The game was found to not only be a good service for Spar Nord to provide to their customers, but also to help save time for their bank advisors and customers.

Chapter 8

Discussion

End of the Game

When the user completed the game, three new options became available: A table overview of the bills, a bar chart of the bills and a button to send the budget to a bank advisor for it to be implemented in the user's account. Aside from this, the user was given no indication or explanation as to which choices were now available. The user was not told what to do with the budget that was created, nor that a small amount of money is normally added to the average monthly cost of the bills, in order to keep the budget account from going into negative. This information should be made clear to the user as soon as the game is completed, to ensure they know what to do next. This could for example be by giving them an option to change a bill if the information is wrong, or add or remove a bill if one is missing or one should no longer be paid.

Bills

A budget account is often made when creating a budget with the bank. This way, the fixed expenses are paid using this account and the person's main account therefore contains the disposable income. However, only the fixed expenses paid using Betalingsservice or payment slips can be withdrawn from a specific account. Some bills, such as mobile subscriptions, are often paid using a credit card and and for it to work with a budget account, the account would need to have a credit card associated with it. Therefore, a budget account does not necessarily contain all of one's fixed expenses. In addition, when creating a budget, the bills with a variable cost, such as electricity, water and heat, are chosen as a fixed amount for the budget. If the API had been implemented, the game should take this into account such that the value of such bills is chosen as a value slightly higher than the bill's average cost over a year.

Stars

The amount of stars given when completing a level was based on how much health the player's own base had left at the end of the level. This was not explained anywhere in the game and the amount you received was not shown anywhere afterwards. This resulted in several respondents asking what it meant, if it was possible to see anywhere and many expressed a desire to replay the game to get more stars. From a game design point of view this was positive feedback as it meant the game was interesting enough to inspire motivation to replay it. However, it also meant additional elements taking focus away from the important parts of the experiment, such as the budget being gradually created.

Replayability

The current version of the game was designed to be played once resulting in a budget being set up. It was also meant to give information to the user about how to set up a budget and what a budget is. This meant that if the user acquires a new bill, they would have to play through the entire game again, including the bills they had already set up in the budget. Completing the same game several times can get boring, and as such the game should inform the users how to keep their budget up to date by themselves. One way to make the game replayable would be to have the user play only the levels for bills that were not included in the budget already or have changed since last playthrough. This way the user avoids having to spend time on playing all the other levels again.

8.1 Future Works

As mentioned in Section 6.3, an API to automatically access the user's data was not implemented for this project. This meant that the conducted experiment compared manually finding the user's own data in their netbank with faking an automatic import of their data in a game. Future work should focus on comparing a budget planning game, which automatically imports the user's data, with a button that immediately creates a working budget for the user. This way, the accurate effect of gamification on the motivation of users can be measured.

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Appendix A

Consent Form

Samtykkeerklæring

Du skal i dette forsøg spille et smartphone spil som omhandler økonomi. I forsøget vil du blive spurgt om at udfylde et spørgeskema. Du vil under forsøget blive optaget og der vil muligvis blive taget billeder af dig til dokumentation for forsøget. Al information er anonym og vil kun blive brugt til projektet. Dine personlige data vil ikke blive gemt eller vist nogen steder. Du har altid mulighed for at afslutte eksperimentet og vi vil i det tilfælde ikke benytte det indsamlede data.

Jeg giver samtykke til (sæt cirkler omkring svar):

At blive filmet undervejs? Ja / Nej
At mine anonyme data bliver brugt i forbindelse med udgivelse af projektet Ja / Nej

Underskrift _____ Dato _____

Consent Form

In this experiment, you have to play a smartphone game about finance. In the experiment you will be asked to fill out a questionnaire. During the experiment you may be filmed and / or have pictures taken of you for documentation of the experiment. All information will be anonymous and will only be used for this project. Your personal data will not be saved or shown anywhere. You can at any point choose to end the experiment and in that case we will not use the collected data from you.

I consent to (circle your answer)

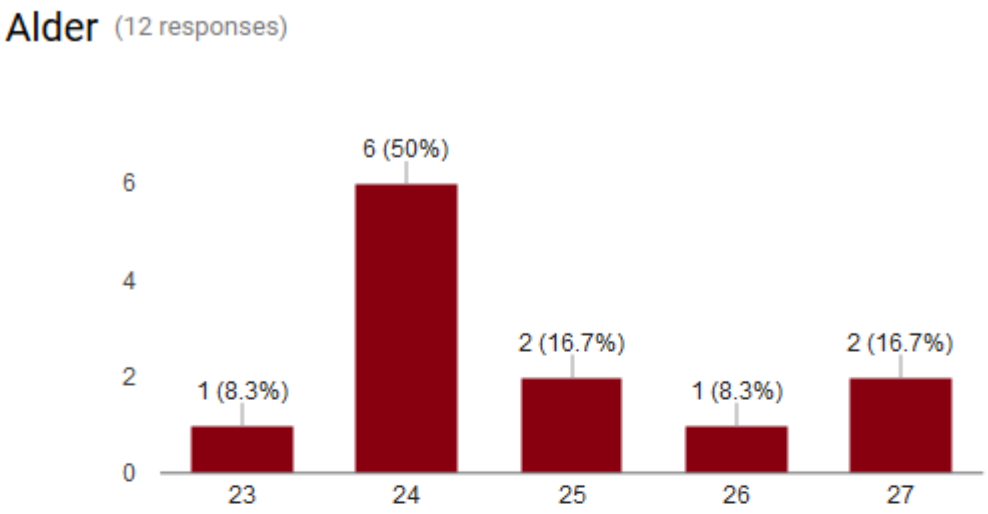
Being recorded during the experiment? Yes / No
My anonymous data being used when the project is published? Yes / No

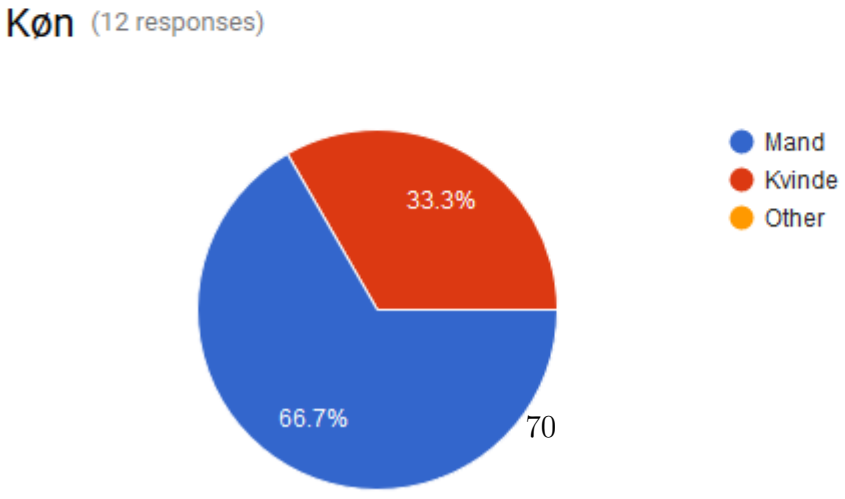
Signature _____ Date _____

Figure A.1: The consent form used in the experiement with a translated version below.

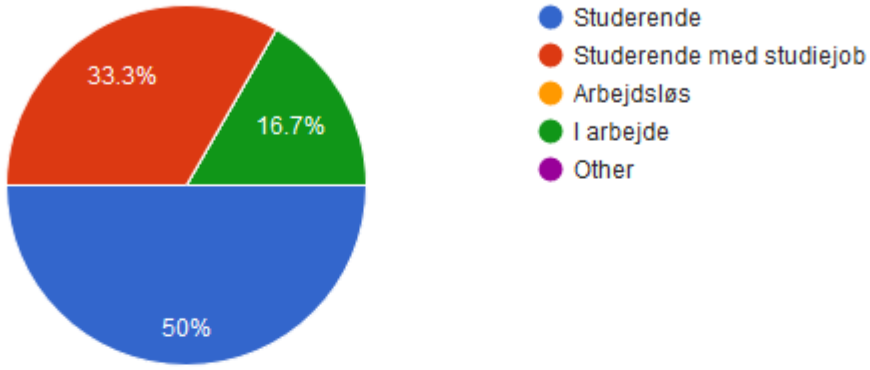
Appendix B

Questionnaire Responses

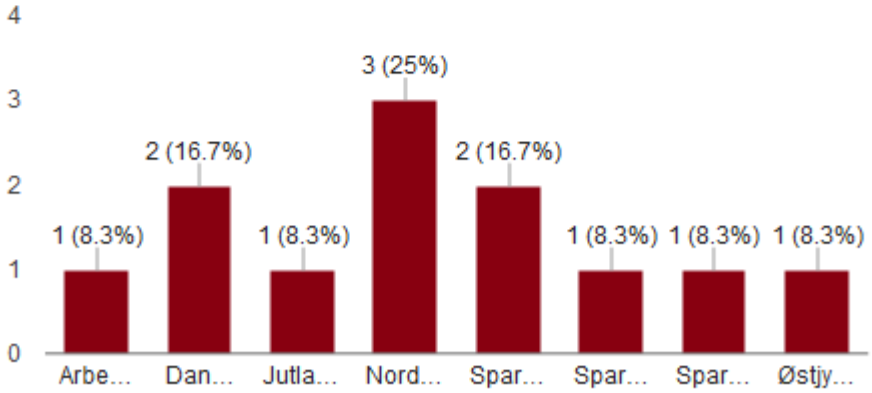




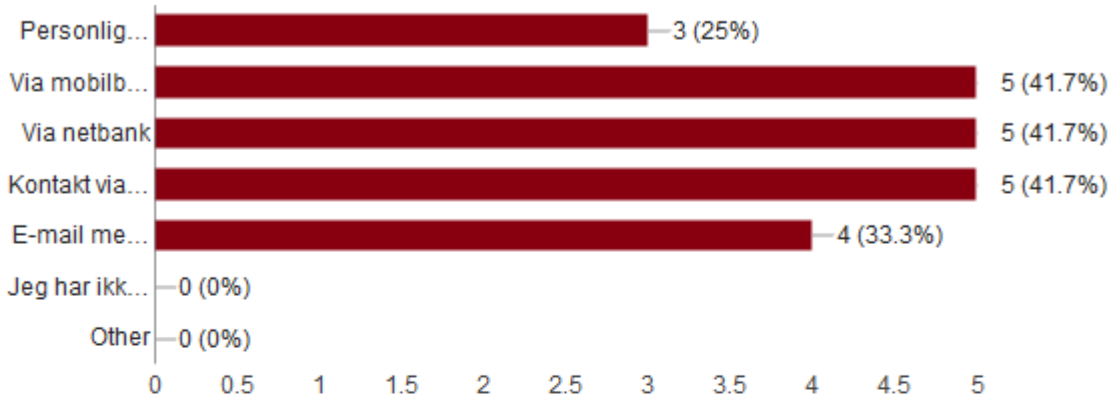
Nuværende beskæftigelse (12 responses)



Hvilken bank er du kunde i? (12 responses)

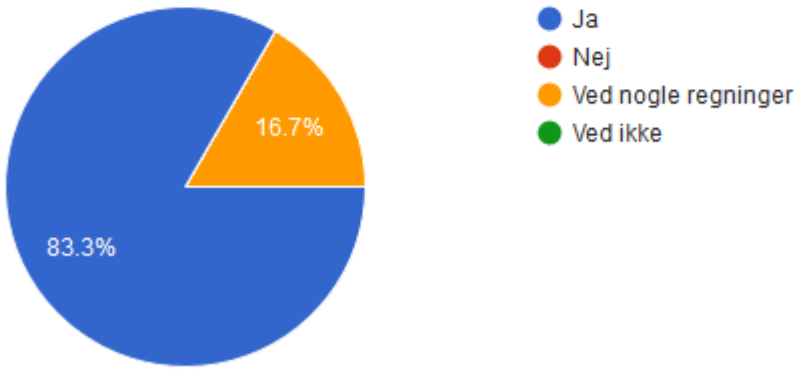


Hvordan kontakter du normalt din bank? (12 responses)



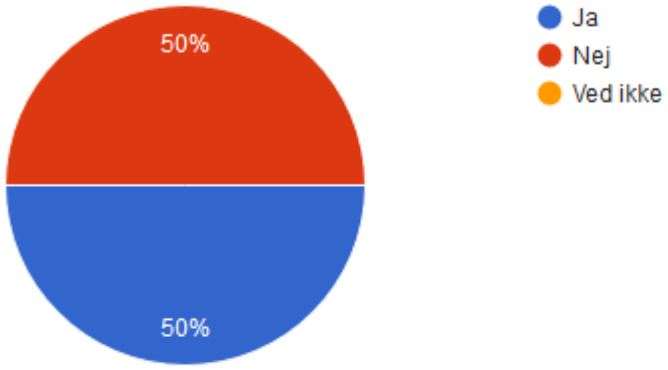
Benytter du Betalingsservice (PBS) til dine faste regninger?

(12 responses)



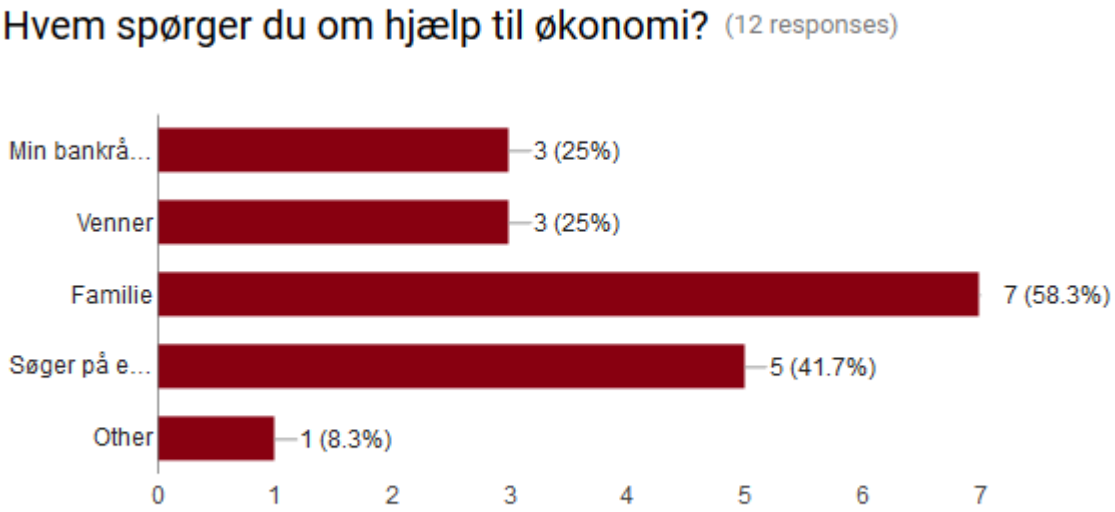
Har du tidligere lavet et budget over dine faste udgifter?

(12 responses)



Hvis ja, hvordan gjorde du dette? (6 responses)

exelark
Oversigt i Excel
Det gjorde jeg sammen med min rådgiver.
Via Mobilbank og budgetkonto
Stillede forventlig indkomst op imod faste udgifter, + "variable" men dog faste udgifter, så som dagligvare
Både ved samtale med min bankrådgiver og med hjælp fra en ven efterfølgende.



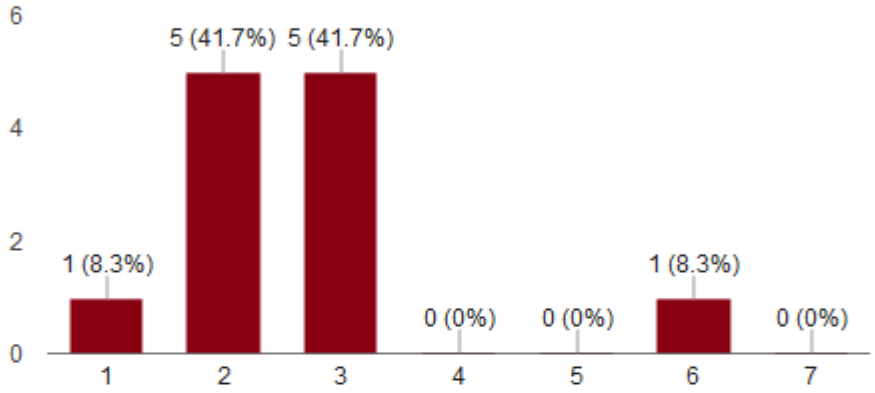
Jeg ved hvad der indgår i et budget(12 responses)

- Overblik over indtægt og forbrug
- Faste udgifter (husleje, el, varme, tv, mobil, netflix, forsikringer), udgifter til mad, udgifter til fornøjelse, evt. udgifter til en opsparing
- Udgifter såsom Husleje, TV/Internet, El, Telefonregning
- Alle penge der kommer ind på kontoten og ud igen
- Alle faste regninger
- Faste udgifter + øvrigt forbrug
- Månedlige faste udgifter, opsparing til årlige omkostninger eks. forsikringer/sygesikring mm.
- Faste omkostninger
- Jeg tænker bare, at det primære er, at tælle sine faste udgifter sammen og modregne dem med sin indkomst. Derefter har man sit rådighedsbeløb tilbage, som man så kan bruge som man nu lyster.
- Udgifter og indtægter. :-)
- Alle fast udgifter såsom: Husleje, TV, internet, mobil, el, vand, varme mm.
- Mine faste månedlige udgifter.

Tag stilling til følgende udsagn (1)

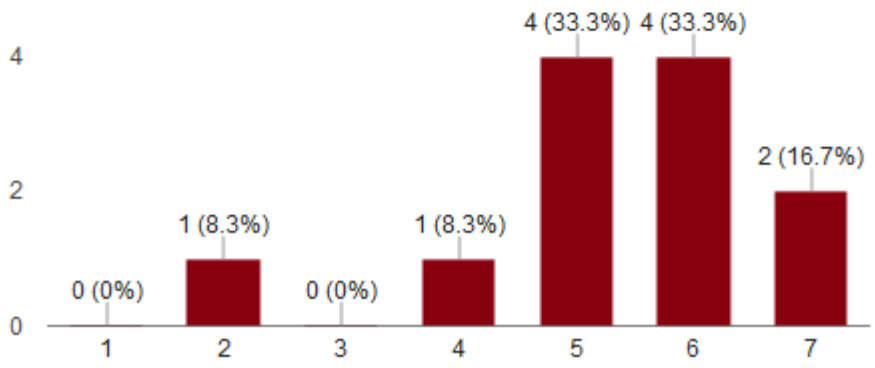
Jeg føler jeg bruger meget tid på min økonomi generelt

(12 responses)

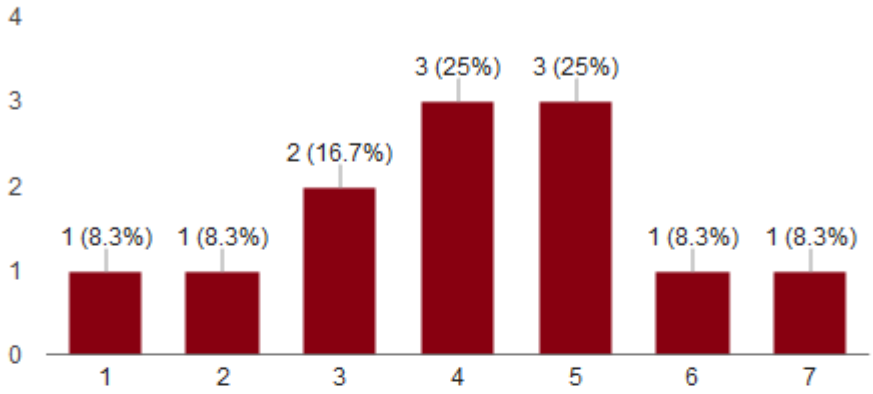


Jeg ved hvor meget jeg skal betale hver måned i regninger

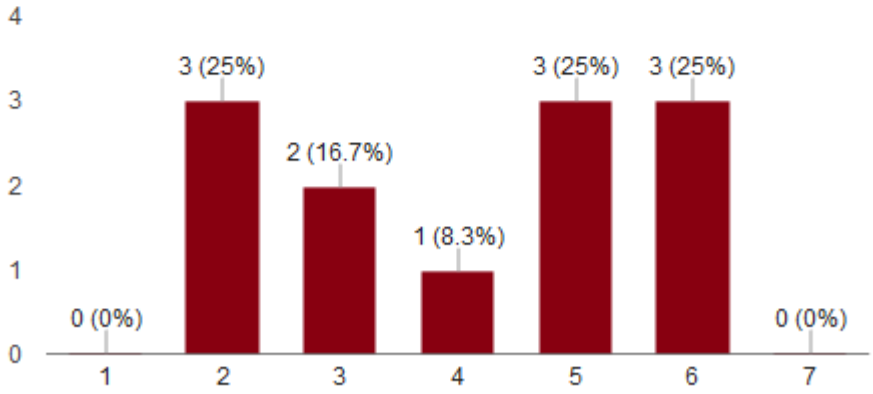
(12 responses)



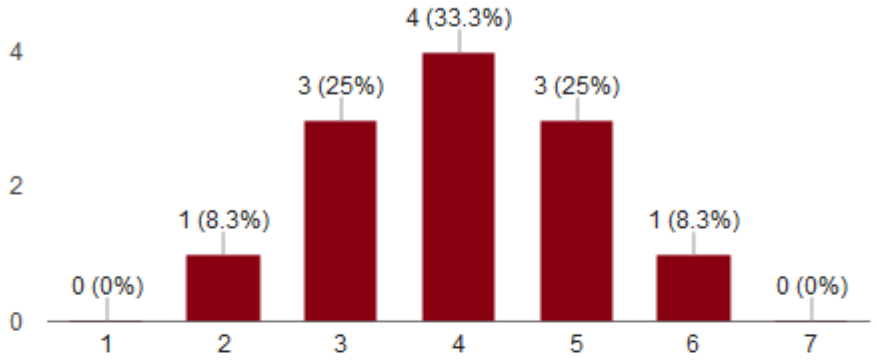
Jeg er motiveret til at sætte mig ind i mit budget (12 responses)



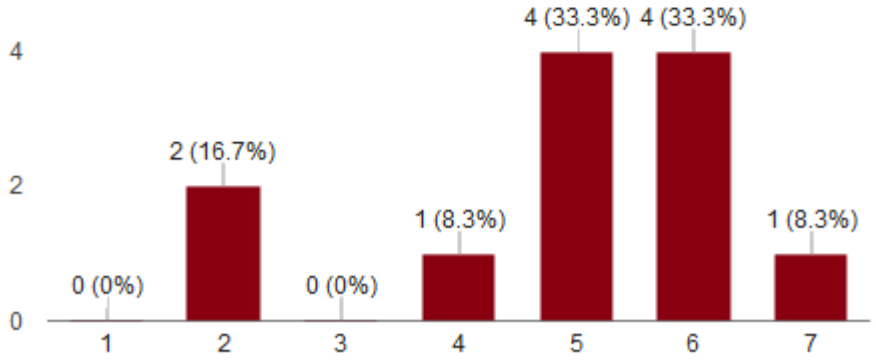
Jeg føler det er nemt at lave et budget (12 responses)



Jeg er villig til at investere tid i mit budget (12 responses)



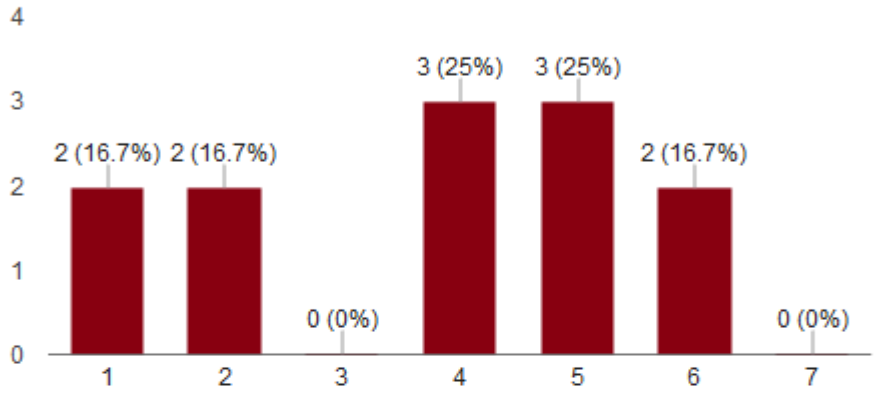
Jeg har et klart overblik over mine faste udgifter (12 responses)



Tag stilling til følgende udsagn (2)

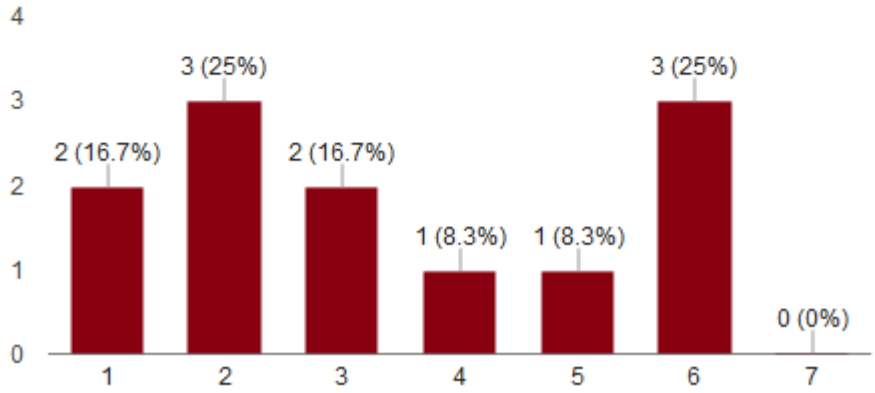
Denne metode (netbank) har motiveret mig til at sætte mig ind i mit budget

(12 responses)



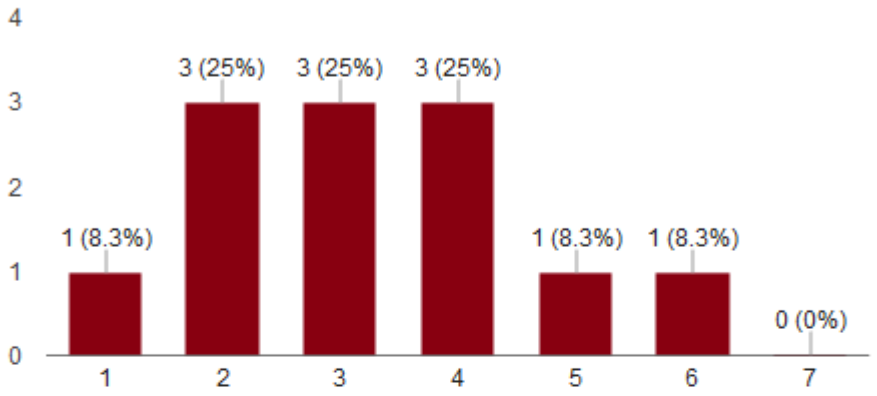
Denne metode (netbank) gjorde det nemt at lave et budget

(12 responses)



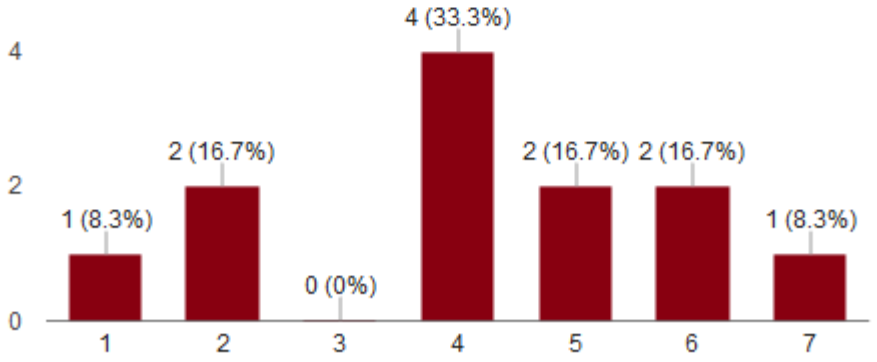
Denne metode (netbank) gjorde mig villig til at investere tid i mit budget

(12 responses)

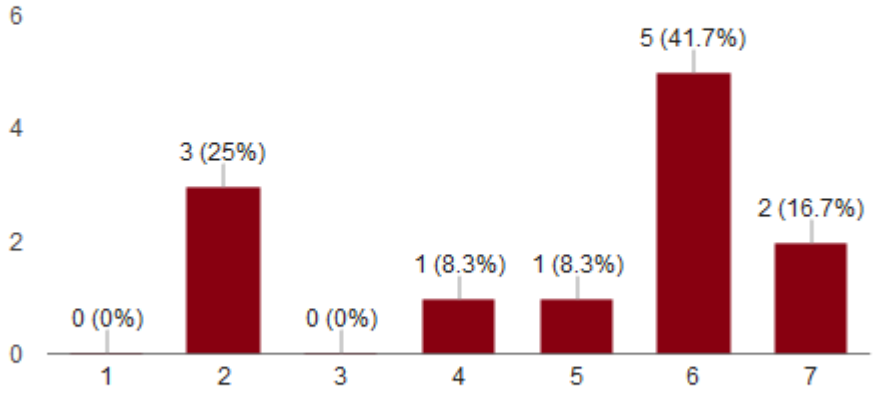


Denne metode (netbank) gav mig et klart overblik over mine faste udgifter

(12 responses)



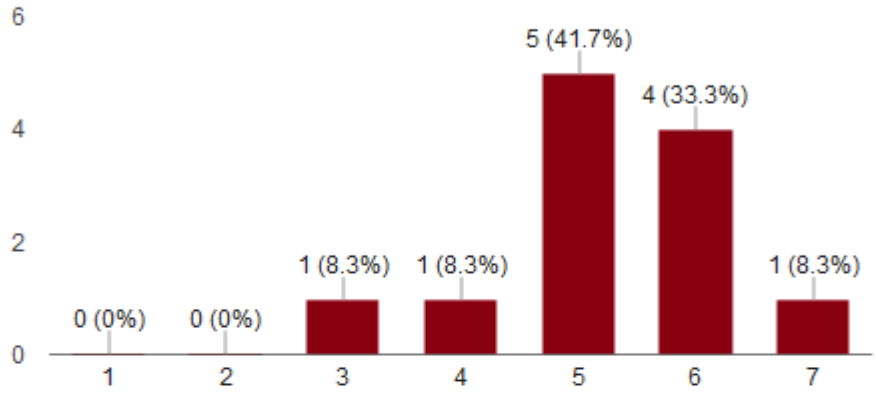
Denne metode (netbank) tog lang tid (12 responses)



Tag stilling til følgende udsagn (3)

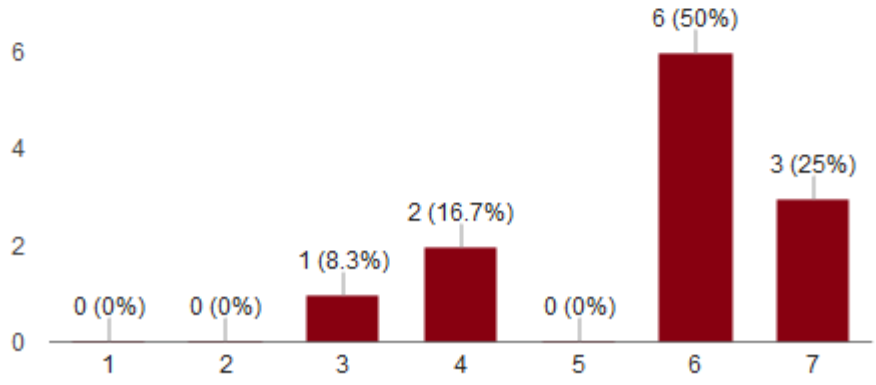
Denne metode (spil) har motiveret mig til at sætte mig ind i mit budget

(12 responses)



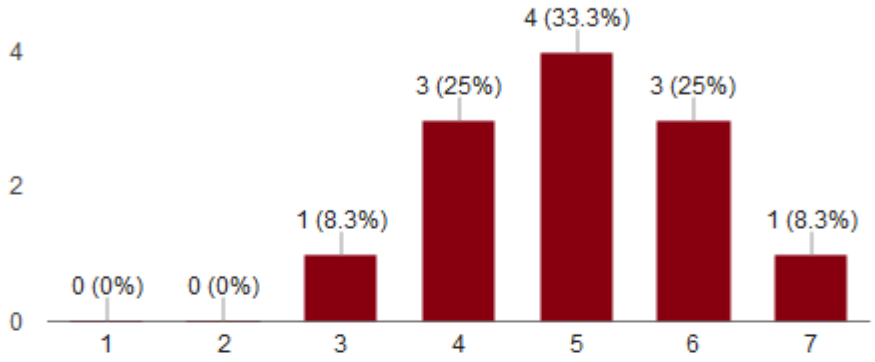
Denne metode (spil) gjorde det nemt at lave et budget

(12 responses)



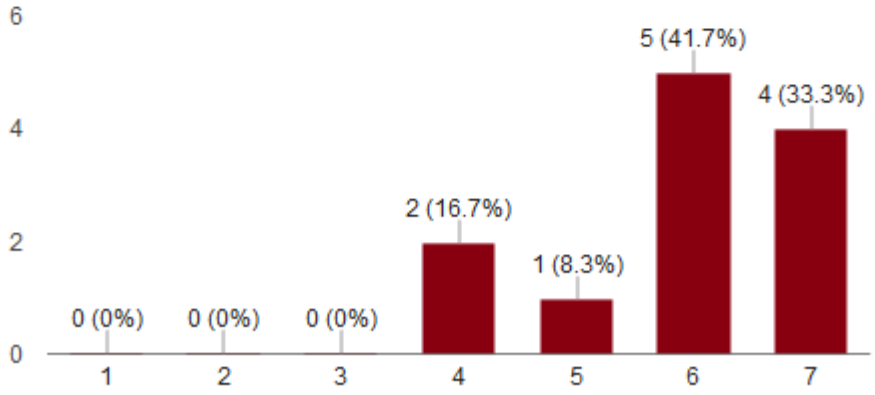
Denne metode (spil) gjorde mig villig til at investere tid i mit budget

(12 responses)

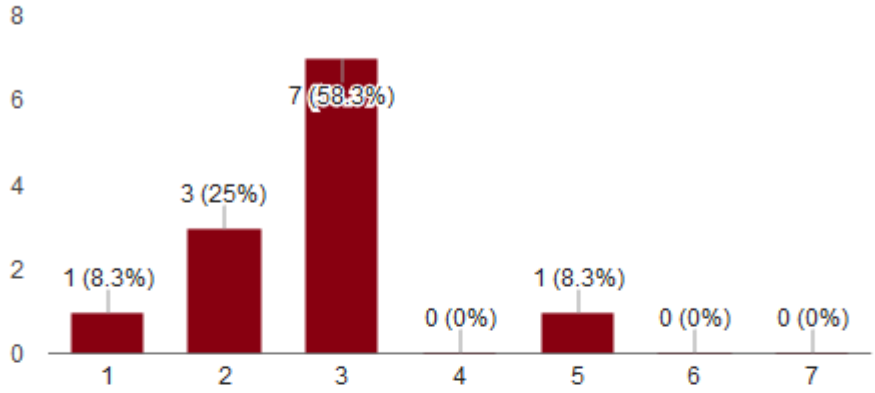


Denne metode (spil) gav mig et klart overblik over mine faste udgifter

(12 responses)

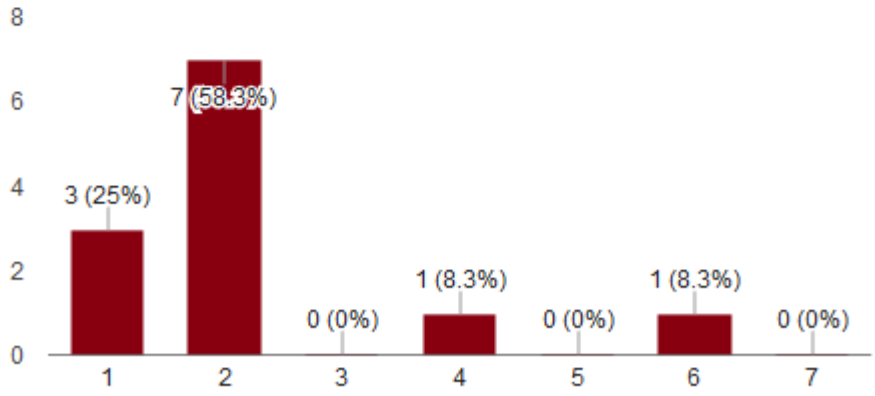


Denne metode (spil) tog lang tid (12 responses)



Denne metode (spil) virker ikke troværdig når det handler om min økonomi

(12 responses)



Afsluttende spørgsmål:
Hvilken af de to metoder (netbank og spil) foretrækker du i planlægning af budget? Forklar dit svar.

- Spillet. Den kan vise et nemmere overblik over alle månedens udgifter end man kunne se i netbank
- Netbank, spillet fanger ikke. Spiller slet ikke spil og det skal være meget intuitivt før jeg forstår det
- Spil - Jeg føler mig meget sikker ved at anvende mobilspillet, da jeg er sikker på at beløbene er korrekte, samtidig føler jeg det er meget mere tidsbesparende, i forhold til selv at lede efter regningerne og beløbene dertil.
- Spil så behøver han ikke selv gøre noget
- Nemhedsmæssigt vil det være gennem spil, men han føler han ville have mere styr over det hvis det er gennem netbank.
- Netbanken fungere fint. Kunne godt ønske at netbanken havde samme overblik som spillet havde til sidst Spil. Sjovere, hvis han ikek selv skal ind og finde sine data. kommer meget nemt
- Spillet, helt andet end at skulle sidde og rodderundt i netbank. Giver meget bedre tilpas mængde information gradvist så man får fornemmelse af sine omkostninger. Og sjovere. Hvis formålet kun er at lave bduget så kan man selvfølgelig godt gøre det på andre måder, men nu har man det sjovt samtidig.
- Spillet er lidt mere sjovt, hvor man siger at budgettet er lidt langhåret. Føler ikke selv han har noget problem med det, kan godt overskue sine udgifter, men set ud fra andre kunne han forestille sig at det ville være en hjælp med spillet. Især for yngre kunne han se det meget relevant, da de nok har lidt flere problemer med det.
- Spillet nok fordi det er lettere. Kommer an på hvor mange regninger han har, 14 baner i spil ville måske være for mange. Ville anbefale spillet til andre, meget brugervenligt for nye
- Som gamer ville jeg nok sige spillet. Jeg ville syntes det var en fed ide og interactive ting er dejligt for os der nemt mister overblikket. God visualisering. Tilhørsforhld!
- Hvis der var muligheden ville hun foretrække at spille et spil fremfor den lidt mere kedelige måde. Almindeligvis er det noget mega kedeligt at lave, så det at spille et spil gør at det er knapt så tørt.

Hvad kan du se af fordele og ulemper ved at opsætte budget gennem netbanken?

- Det er lidt mere intuitivt hvis man ændrer udgifter, men man kan ikke se alle måneder på samme tid
- Det kræver rigtig meget tid. Specielt gennem danske bank da de ikke har dette overblik. Kan ikke lige komme på en fordel gennem netbank. Kan godt lide at få det på et excel ark
- Fordelen er at man selv har siddet med det, hvis man kan stole nok på sig selv. Af ulemper er tiden det tager at finde regningerne og usikkerheden om hvorvidt alle regninger er talt med.
- Ulemper: bliver smidt ud af netbank, Gennem netbank stopper man jo aldrig, fordi så kan man lige lave madbudget og så kigge alle sine ting igennem, Skal bruge nemid Fordele: Man kan få mere information men man bruger det jo alligevel ikke så man får ikke noget ud af det.
- fordele: præcist overblik, ingen forstyrrelser. ulemper: Mega dårligt lavet, tager meget mere tid end det burde.
- Det er der hun har overblikket over sine udgifter Fordele: Har en oversigt over sine faste udgifter, man er sikker på at kunne se alle sine poster, kan godt være han har overset. Man kan altid se alle ens overførsler Ulemper: Man godt være man kan overse noget når man gør det selv gennem netbank fordi de er over det hele. Både faste overførsler, betalingsservices.
- Fordele: Ingen. Hvis nu man direkte gennem netbank kunne tage fat i rådgiver. Livechat på netbank med kundeservice/rådgiver ville være nice. Ulemper: Tidskrævende, kedeligt, svært at vide hvilke er opsagt og hvilke er aktive
- Lidt svært at få overblik over hvad man har af faste udgifter. Måske hans egen netbank giver et lidt dårligt overblik nævner han. Lidt svært at finde ud af hvilke udgifter på ens konto er faste og hvad der er andre udgifter. Fordele: at man har sin egen netbank, den kender man. I forhold til hvis man skal hente et spil kunne det være lidt et hassle. (kunne man komme udenom med hvis spillet var i netbanken, kan være lidt urealistisk at folk henter appen i sig selv hvis den ikke er associateret med deres bank)
- Fordele: Meget standard, man bliver ikke overrasket over måden at gøre det på Ulemper: Besværligt at finde ud af hvilken måned man skal finde informationen i, kan godt komme til at overse noget.
- Det er lidt mere prof outlook. Mere seriest og troværdigt. Det er nemt nok i netbank at få et overblik. Mangel på godt overblik. Der er rigtig mange udgifter så det er enmt at miste overblikket. Specielt dem der er faste udgifter

- Fordelen er at bankrådgiveren kan se det direkte og at dataene er der inde med PBS aftaler, det hele er samlet. Ulempe er at hun synes det er ret besværligt at finde rundt i, der er heller ikke noget sådan skabelon til hvordan man laver et budget.

Hvad kan du se af fordele og ulemper ved at opsætte budget gennem spillet?

- Fordel: Det giver et godt overblik over alle udgifter samelet Ulempe: tager ikke højde for indkomst

- Fordelen er at det er nemmere. Skal ikke til at bladre et helt år tilbage. Det er sjovere. Ulempe hvis man skulle spille spillet hver gang for at kunne se budget. Tidskrævende hvis man skulle det.

- Jeg ser en klar fordel i at få tilsendt sine regninger fra banken, således validiteten på budgettet stiger. Det er også tidsbesparende, og samtidig underholdende måde at imødekomme sit budget på. En ulempe er at man ikke selv er inde over - udover via et spil. Det kan godt frembringe en lille form for usikkerhed hos forbrugeren.

- Fordele: tidsmæssigt, føles også som kortere tid fordi det er underholdene. Ulemper: Hvis man har travlt gider man nok ikke til at spille et spil, så vil man gerne have resultatet med det samme.

- Fordele: Sjovt, hygger sig med det så det føles ikke som tidskrævende. Nemt. Ulemper: Forstyrrelser, taktik tager fokus fra budget. Kræver spar nord logo for troværdighed.

- Fordelen er at den gør det for hende. Hun føler ikke at hun har behov for spillet. Vil bare gerne have informationer.

- Fordele: Meget nemmere at danne overblik, havde sorteret efter hvad de enkelte poster var og man bliver faset igennem det (en af gangen). Meget sjovere, man bliver hurtigt grebet af det. Ulemper: Man kan ikke se alle de andre transaktioner der sker, kun de faste betalingsserices. Man skal stole på at den rent faktik finder alle ens poster. Den kan muligvis virke useriøst, det skal være klart at det er banken der har lavet spillet

- Fordele: Serveret gradvist, 1 aftale af gangen. Man kan se på månedsbasis og på årsbasis Ulemper: Man får først oversigten til sidst, vil gerne kunne se den når han har lyst. Hvis man ikke har lyst til at spille spillet ville det være nice bare at få oversigten. Kan godt se ideen med at det først kommer til sidst når det nu er et spil. Kommer an på målgruppen, hans far vlle nok ikke synes det var fedt.

- Kan ikke se så mange problemer, det eneste er nok problemet med at få folk til at blive på trygge med metoden, da det er noget folk ikke har oplevet før, så de skal vænne sig til det. Ellers kan man ikke se nogle problemer. Bankerne skal nok være gode til at markedsføre det hvis det skulle komme. Fordele: nemt og brugervenligt. Især for folk som ikke er helt skarpe, ville være overflødigt over for folk som har

godt styr på deres økonomi. Men det kunne være en god øjenåbner for dem med ikke godt styr på det, så de kan se hvad de egentlig bruger på faste udgifter.

- Fordele: Du er sikker på du har de ting du skal have med, fordi spillet klarer det for dig. Indlevelse i spillet Ulemper: Målgruppemæssigt, kan måske være svært at få folk til at bruge det

- At man får et tilhørsforhold til de penge der bliver lagt ud. Hvis det er automatisk ville det være meget nemmere hvis det var en automatisk process. God visualisering af penge som noget andet end tal. Kunne være svært at overskue hvis man har mange udgifter. Værdien af pengene er svært at vurdere om de stiger eller falder. Forholdet til penge kunne godt blive lavere hvis man laver det til spil men i og med at vi bruger penge til at angribe beholder man forholdet

- Fordel: at spillet henter alle PBS aftalerne, så man ikke selv behøver at skulle finde dem. Det gør også at man bliver overrasket. At det er en anderledes og sjovere måde at kigge på økonomi på, især for en der normalvis hader at se på økonomi. Ulemper: bliver måske lidt ensformigt og tænkte måske ikke så meget over hvad det var for nogle regninger, men mere bare at gennemføre banen. Det kunne fx have været sjovt hvis man kunne se på tårnene hvad for nogle slags regninger det var, fx fitness så havde der været en bodybuilder lignende type. Eller EL regning og så skød den med lyn.

Ville du spille et spil der hjælper med planlægning af dit budget hvis din egen bank tilbød muligheden?

- Ja, ville nok ikke spille det hver måned, men i forbindelse med at man skulle lære økonomien og at det er lige til kunne det godt bære brugtbart

- Ja det ville jeg. Stoler på at hvis ens bank satte det op ville det være godt at bruge

- Ja, det ville være en anderledes og underholdende måde at planlægge på.

- Vil nok i hvert fald starte det for at se hvrodan det vil fungere. Når man er i gang er det lettere at færdiggøre det i stedet for at lave budget forfra. Tror han ville få det brugt. Lidt en ulempe at skulle spille det igen hver gang man får ny PBS

- Ja hvis det er gratis. Hvis spillet så fedt ud og han ikke havde brug for budget ville han gerne prøve det alligevel.

- Ja. Det ville hun prøve hvis det var en mulighed. Hun prøver alt af inde på hendes netbank

- Hvis han allerede havde et budget ville han nok ikke, men måske tjekke det bare for at se hvad det gik ud på. Han fik jo lige genset hvad han brugte penge på. Han havde f.eks. en post han ikke skulle betale for lægnere.

- Ja, det er han ret sikker på. Det er meget unormalt, så det gør det lidt spændende. Han spiller ikke så meget på telefonen, men han kunne godt finde det interessant
- Ja, fordi det var meget sjovt. Det tror han at han ville, kommer meget an på hvordan de præsenterer det og han føler ikke det er noget han har et problem med økonomien, så det er ikke så målrettet i mod ham.
- Hvis det ser troværdigt ud, den nye spar nord netbank virker lidt skummel ellers. Det skal være let tilgængeligt, man skal ikke skrive nemid og alt muligt ind så gider han ikke
- Det tror jeg gerne. Rigtig gerne, men kommer an på hvilken slags spil. Vil i hvert fald gerne undersøge hilken slags spil det er.
- Ja, især i forhold til den funktion med at man kunne sende direkte til bankrådgiver og hente det direkte ned. Så selve koblingen med ens personlige bank - det kunne gøre det lidt nemmere.

Har du andre kommentarer til testen?

- Ville gerne have indkomst ind over
- Ikke rigtigt. (Vil gerne have at ens økonomi kommer ind over. Snakket om dette tidligere. Andet: Ville være en god ide hvis man kun skulle spille i mod de regninger der har ændret sig hvis man skulle spille igen.)
- En test der har givet overblik og vist forskellige metoder til at planlægge budget på. Som en der aldrig rigtigt har lavet budget før, er det noget som klar har motiveret mig til at begynde.
- Det var fint
- Det var en sød lille mand med et svær. Var overrasket over hvor meget hun skulle betale pr år og måned på trods af hun godt vidste at hun havde disse udgifter
- Fed test.
- Synes spillet virker flot grafisk og nemt at gå til. De små guides gør det nemt at forstå spillet. Godt præsenteret og virker som forventet og ønsket.
- Spil gik i stykker og viste ikke hans data til sidst. Tutorial forklarede ikke nok i spillet, der skulle være lidt mere information der forklarer hvorfor der f.eks. er 4 tårne osv.
- Det er en fin grafisk stil. Kan godt lide at være kongen af sit et budget. "det er mig der bestemmer over mit budget"
- Synes det er et relevant sted at idéudvikle, fordi der er mange der ikke gider tænke over deres budget og det kan virke meget uoverskueligt når man flytter hjemmefra. Det kunne have været en nice hjælp dengang man selv flyttede hjemmefra.