

**MASTER OF SCIENCE IN  
FINANCE**

**MASTERS FINAL WORK  
PROJECT**

FINANCE 4 ALL

CLÁUDIA SOFIA GONÇALVES VINHAS DE SOUSA

OCTOBER - 2015

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## **MASTERS FINAL WORK PROJECT**

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## Abstract

There are many studies that prove that playing games is often better than conventional methods for learning. Playing helps not only to develop knowledge on the theme but also the improvement of soft skills such as problem solving, strategic thinking or perseverance. The main idea of the project was to create a game that spiked the interest on the financial topic. A card based game with a playing board was chosen. The lack of financial literacy, a problem for all age groups, can be tackled by small incentives such as playing a related game. This project is an attempt to make finance in general fun and easy – saving, investing, risk and return and another concepts are very much the main part of the game. The prototype game was tested in a small group several times and got a positive response. As a future objective the prototype should be finished and proceed its development stage with more testing, packing and distribution.

Keywords: financial literacy, game-based learning, card game, deal widit



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## Resumo

O projecto Finance4All consiste na criação de materiais pedagógicos que fomentem a literacia financeira. Nesse sentido, foi desenvolvido o jogo de cartas Deal Widit inserido na temática de literacia financeira e aprendizagem baseada em jogos. Optou-se por um jogo de cartas, uma alternativa eficaz e com custos muito reduzidos em comparação com outros tipos de jogos. O jogo tem como base a compra de negócios com elementos de risco e recompensa, poupança, orçamentação e estratégia. Também tem uma componente de figuras corporativas que enriquecerão o valor da empresa. O jogo, ainda na fase de protótipo, foi testado num pequeno grupo do qual se obteve feedback, pretendendo atingir o público em geral acima dos 12 anos.

Palavras-Chave: Literacia Financeira, Aprendizagem baseada em jogos, Jogo de cartas, Dealwidit

## Table of Contents

1. Introduction.....	1
2. Literature Review .....	3
2.1. Portuguese Literature Review .....	3
2.2. International Literature Review .....	3
2.3. Game-Based Learning Literature Review .....	8
3. Methodology.....	10
3.1. Problem Formulation.....	10
3.1.1. 1st phase – Briefing & Game Mechanic .....	11
3.1.2. Game Mechanic.....	13
3.1.2.1. Businesses.....	13
3.1.2.2. Action Cards .....	16
3.1.2.3. Staff.....	20
3.1.2.4. Savings .....	23
3.1.2.5. Money.....	24
3.1.2.6. Business Angel .....	24
3.1.2.7. Winning the Game .....	25
3.1.2.8. Deck.....	26
3.1.3. 3rd phase – Playtesting .....	27
3.1.4. 4th phase – Components’ Design.....	30
3.1.5. 5th phase – Prototype .....	30
3.1.6. 6th phase – Rules Manual Creation .....	30
3.2. Sampling.....	30
3.2.1. Defining Targets.....	30
3.2.2. Apply Solutions .....	31
4. Analysis.....	31
4.1. Before & After.....	31
4.2. Suggestions & Recommendations .....	32
5. Conclusions.....	32

## List of Figures

Figure 1 - Dice sheet .....	14
Figure 2 - Low Risk Businesses.....	14
Figure 3 - “Not that high Income” Businesses.....	15
Figure 4- Medium Income Businesses .....	15
Figure 5- High Income Businesses .....	16
Figure 6 - Back side of business’s cards.....	16
Figure 7 - Action's cards part 1 .....	17
Figure 8 - Action's cards Part 2 .....	18
Figure 9 - Action's cards Part 3 .....	18
Figure 10 - Action's cards Part 4 - "Market Crash" .....	19
Figure 11 - Back side of action’s cards.....	20
Figure 12 - Staff's cards .....	21
Figure 13 - Savings area.....	24
Figure 14 - Money cards .....	24
Figure 15 - Back side of Money cards.....	24
Figure 16 - Player Sheet.....	25
Figure 17 - Deck resuming cards .....	27



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## 1. Introduction

Finance is a widespread field with several concepts that are only fully understood by a small part of the population. However finance plays a fundamental role in people's life due to its intimate relation with money in its broadest sense. Several examples may be given to confirm it: the legislation about consumerism protection, the impressive increase of new deposits and accounts at a global level in the 21<sup>st</sup> century (Ardic et al., 2012), and the increasing sophistication of financial markets and products offered to clients, just to name a few. In fact, individuals are exposed to an ever more complex financial environment and at the same time they need to be responsible for their future financial wellbeing and protection.

Moreover, the persistent economic difficulty situation and an unstable job market also means that families must plan for their immediate and long-term future, and in particular for unexpected events.

For the motives just documented, we believe that financial literacy is a very important and relevant area to study in finance and which should grow in the future. Nonetheless it is one of the least explored. A quick example was the 2008 financial crisis, and one of the main problems pointed at the time, was the lack of knowledge of the products, even among people working in the financial sector. With this being said the financial empowerment and the role of financial education should be addressed as quickly and widely as possible, covering all population. Works like OECD (2014), assess the financial literacy level and capacity of students to deal with financial demands of everyday life.

The objective of this work is to develop of educational materials that promote the understanding of the financial field.

A definition of financial literacy frequently referred in the literature is the “ability of an individual to make informed judgments and to take effective decisions regarding the use and management of money.” (Noctor et al., 1992). Related definitions are mentioned by other authors and international organizations. OECD (2014) refers to it as “Knowledge and comprehension of financial concepts; Competence, motivation and confidence to apply that knowledge to make decisions in several financial contexts and enhance its wellbeing and ultimately, have a better the society”. FINRA (2003) adds “the understanding ordinary investors have of market principles, instruments, organizations and regulations”.

We believe that the application of the content of this work will contribute to enhance the understanding of important financial concepts and improve financial literacy of the target group, according to the definitions presented above.

To address these concerns, and specially to low levels of financial literacy, some governments had already put in place national strategies – “Financial education as a policy response”. As shown in OCDE (2013) only 7 countries of the G20 have implemented a National Strategy: Australia, Brazil, Japan, South-Africa, Spain, United Kingdom and the United States of America. In Portugal, Banco de Portugal (2011) tried to assess the existing financial education of the population.

## 2. Literature Review

### *2.1. Portuguese Literature Review*

The literature about financial literacy among Portuguese population is still relatively scarce and only a limited number of studies have been made. The Banco de Portugal (2011) study addressed the financial inclusion, bank account management, expenses and saving planning, financial products choice and information sources and comprehension. Some results include 52% of the inquired stating they have saved money – for precaution reasons (58%), medium term expenses (15%), long term good (8%) and retiring savings (6%). Also, regarding financial comprehension, 57% answered correctly to the questions related to the relation between interest rate and inflation rate yet only 9% replied correctly to the concept of Euribor. By 2015 Banco de Portugal expects to have another population financial literacy assessment.

Other relevant Portuguese reports were done and published by Centro de Estudos Sociais (Frade et al. 2003 and Frade et al. 2008). Both studies report unemployment and inefficient household budget planning and management as the main reasons for Portuguese households experiencing financial distress and overspending. The over spenders from this study also reveal more vulnerability to unemployment or labor deterioration and a higher difficulty to have and maintain saving habits, and to reduce their consumer behavior.

### *2.2. International Literature Review*

This project focuses on the creation of pedagogical material that enhances financial literacy. The chosen material was a card based game with finance as its theme. It is

therefore exposed to two different areas of research, game-based learning and financial literacy. For the review of the latter it was decided that the spotlight was going to be big organizational studies, from OCDE for example. For the game-based learning the target was published research papers.

Financial literacy has been an important subject for many years, with governments and international organizations paving the way for its development. Probably the first milestone reference of the subject comes in the form of a 1787 letter from John Adams to Thomas Jefferson (two of United States of America founding fathers). In this letter we can find the following sentence: “All the perplexities, confusions, and distresses in America arise, not from defects in their constitution or confederation, not from a want of honor or virtue, so much as from downright ignorance of the nature of coin, credit, and circulation.” (John Adams, 1787). A brief historical milestone list on the way people understand money follows.

With the arrival of the 20th century came a greater concern on financial literacy. In 1914, in the US, the Smith-Lever act created the Cooperative Extension Service. Its objective was to provide learning experiences that would develop several skills for people, such as financial skills. (The Smith-Lever Act, United States Congress, 1914).

During the 1950s financial management, income and expenditure, security and retirement, housing, budgeting and saving were about half of the research made in the field of home economics, (Financial Corps, 2014). In the 1970's the National Youth Involvement Board was created in the USA by credit union volunteers, focusing on youth financial literacy. 1995 marked the beginning of the Jumpstart Coalition, a US non-profit

coalition of around 150 national partners that seeks to enhance the financial literacy of students from kindergarten to college. By 2000, Japan's Minister of Finance started meetings on the need of financial literacy due to the fast financial liberalization in Japan. In 2003 OECD began an inter-governmental project to enhance financial literacy by developing common financial literacy principles. By 2008 the same organization launched the International Gateway for Financial Education – a base camp for research, educational programs and information on the topic. Both the UK and the US, countries with very strong financial markets, (Liu et al., 2015), have national agencies focused on the subject: Financial Services Authority (which started its program on literacy in 2003) and Financial Literacy and Education Commission (established in 2003) respectively. Australia also played its part in the financial literacy milestone history. In 2004 the “Understanding Money” educational website was created by the Financial Literacy Foundation – part of the governmental agency National Consumer and Financial Literacy taskforce. Also in that year Citigroup, a multinational bank, announced a 10 year, \$200 million financial education commitment in the countries where it operated. A large, comprehensive international study was published by OECD in 2005 analyzing financial literacy. The Indian Reserve Bank launched Financial Literacy and Credit Counseling centers all over the country in 2007, in order to offer financial education freely. 2008 marked the Year of Financial Education in Indonesia, a governmental goal to improve financial literacy. In the same year, Russia and the World Bank announced a program to support the same issue. The Financial Consumer Agency of Canada established the Financial Literacy Month in November 2009.

Part of the Dodd-Frank Act passed in 2010 created the Consumer Financial Protection Bureau, promoters of financial education.

National literacy programs were launched in Azerbaijan, Sri Lanka and Pakistan, in 2011, bringing even more financial awareness to consumers, students and citizens in general. 2012 marked the launch of MoneySENSE by Singapore Polytechnic Institute for Financial Literacy.

In 2013 the OECD and Russia's G20 Presidency, issued a report on Advancing National Strategies for Financial Education, reporting the breakthroughs of all major countries with national strategies.

More recently, in 2014, the United Kingdom's Department for Education made financial education compulsory in schools.

Regarding studies on financial literacy of younger generations, several stand out for their dimension and results. OCDE (2014) assessment that shows the financial literacy skills for students, has some important evidences. Firstly, performance in financial literacy is strongly correlated with the performance in mathematics and reading. This study also shows that non-cognitive attributes are important in financial decisions, such as ability to manage emotional and physical factors. Evidence that there is a positive relation between financial literacy and holding a bank account reinforces the idea of financial education by parents. The study concludes that without policy intervention disadvantaged students may suffer disparities in financial literacy related to socio-economic status, and their implications for social and economic inclusion, will be reproduced and possibly reinforced in to the next generation.

The largest and most rigorous impact assessment to date was recently conducted in Brazil, (Bruhn et al., 2013). This study used a randomized control trial to evaluate the impact of a pilot program of financial education in high schools. Some of 891 schools and 26.000 students in 6 states participated in the evaluation. The average level of financial proficiency was statistical significantly higher among students who had participated on the classes. The program led to a 1.4 percent-point in students reporting that they save for purchase, and a greater likelihood to engage in financial planning. The level of financial autonomy and attitudes towards savings also improved. There was also a positive effect on parents: the evaluation found an increase in financial knowledge among parents, more discussion of financial matters within families and a larger number of families that drafted a household budget.

The success of the pilot hinged on several factors, including developing high-quality resources and teaching practices (materials were rigorously tested, and teachers were trained through workshops, DVD's and guidebooks).

As shown before, private banks also played a part in the development of studies about financial literacy. Dutch based ING (Private Bank) elaborated two international surveys in order to test how financially savvy consumers are: "International Consumer Resourcefulness study" and "Overview of ING International Survey results on Financial Competence". The former was done online in 2010 and approached Savings, Investments, Financial Future and in & around the House. The latter, done in 2012, focused on Interest Rates, Inflation, Bonds, Mortgages and Risk & Return.

Some significant results on global financial literacy include 63% of the population only having basic financial knowledge, Asia being the most financial literate region and younger people being significantly more literate. Also one third on worldwide consumers don't have an emergency fund and 70% of consumers that were rated excellent on the resourcefulness study are currently saving money. 59% of the inquired are not currently saving for their retirement.

The financial competence study showed that interest rates and inflation were widely understood but the relation between bonds and interest rates only known by 25% of the inquired. Important evidence also demonstrates that young people received more financial education although one third claimed receiving none. The results also revealed that Europeans have a strong preference for financial education to be taught in schools.

### *2.3. Game-Based Learning Literature Review*

Game based learning is a well-studied topic, with over 70 research studies published in 7 big Social Sciences Citation Index journals between 2001 and 2010 (Hwang et al., 2012). These 70 studies were made in Thailand, United States of America and the United Kingdom. During more recent years video games have taken their part in the research on educational games. But human interactions still hold a huge impact on learning – contrary to video games, card games (or other non-digital games) “expose people to human expressions, physical action, and verbal tones” (Billinghurst & Kato, 2002). This means that using a card game for learning purposes could improve direct interpersonal interaction between players.

Papastergiou (2009) research has shown that game-based learning affects the interest of students positively. This is achieved by allowing a greater impact of the learned subject compared with conventional methods. Yien, Hung, Hwang, & Lin (2011) came to the same conclusion, creating a game for a nutrition course.

Educational card games have also demonstrated that they promote positive attitudes towards this type of learning and, more importantly, improve students' scientific knowledge (Chen et al., 2012). Kirikkaya, Iseri, and Vurkaya (2010) monopoly like board game about space is yet another good example of the positive effects of learning by gaming.

Another good case for games and their effect on learning can be made by a famous example. It involves one the most famous architects of all time, Frank Loyd-Wright. In his autobiography he says "For several years I sat at the little Kindergarten table-top ... and played ... with the cube, the sphere and the triangle—these smooth wooden maple blocks ... All are in my fingers to this day ...". Frank Loyd-Wright was describing the famous Froebel Blocks, a 19th century set of educational blocks created by Friedrich Froebel. "Many of his buildings are notable for their geometrical clarity" (Alofsin, 1993). There is even speculation that the lack of play during childhood, namely number games, might be a factor for the lack of mathematical skills (Siegler and Ramani, 2008). Actually their results show that cheap card games can compete with high price digital games in terms of learning effectiveness. Games promote emotional, mental and even physical advancement (Egemen et al., 2004).

Financial literacy is a very important life skill with still a long way to go, both in terms of getting into educational systems in the world as well as becoming an area of greater interest for the general population. Game-based learning has proven to be successful and effective in many cases and can become a positive, easy and inexpensive way to insert new topics into student's curriculum.

### 3. Methodology

#### *3.1. Problem Formulation*

The project objectives reside on creating a game that can improve the financial literacy of the players who play it. The created game should be fun and exciting so that there can be a positive reaction. The game should have pedagogical goals exploring the identified issues and create dynamics where knowledge can be used as strategy.

To do so, we should get a list of main goals to address:

- Give stimulus and positive attitudes towards saving
- Understand risk and reward concept
- Understand financial language and concepts: difference between saving and investing
- Positive attitudes towards learning, as perseverance and openness to problem-solving – strategic thinking
- Budget planning and management

Therefore, the game should enhance and promote at least these basic objectives in real life:

- Promote acts of savings, investment and responsible spending
- Promote a good wealth management and regular visits to account balance  
(revisiting strategies)
- Promote situations of problem solving and learning

The final objective is to enhance and promote financial awareness.

The game type chosen is CARD-BASED STRATEGY since it can be cheaply produced and drafted into a specific mechanic or an element of character or base building where players use cards to gain abilities or bonuses. The random element of card drawing also makes it more appealing.

After the decision of creating a card game the creation process follows:

- 1st phase – define briefing
- 2nd phase – create game mechanic
- 3rd phase – playtesting
- 4th phase – components’ design
- 5th phase – prototype
- 6th phase – create rules manual

#### 3.1.1. 1st phase – Briefing & Game Mechanic

The turn based card game will revolve around each player trying to close a given set of businesses while making the maximum amount of money – until the playing cards end.

Preferably there will be 4 players arranged individually or in pairs and the game should last less than 1 hour.

The mechanic should be the following:

- Preparation:

Place the 5 deals in the center of the table, and put the business pile aside.

Shuffle the action cards and give 5 to each player. Put the rest of the others actions cards in the middle of the game.

- Give the money to each player 150.000. Choose one person to be the bank figure. The money cards have values of: 5.000€, 10.000€, 50.000€, 100.000€ and 500.000€.
- Roll the dice to check who starts first; the higher dice will start and the game continues clock wise.

For every turn:

- Draw 2 cards from the action's pile.
- Choose your play:
  - o One or two business deals
  - o Or a combination of the following:
    - A business deal, a saving deal, a staff deal, a business angel deal
- Action card – follow instruction written in the card; you can play all the action cards you want (except the ones that imply another move in business or staff).
- Be sure you only have 5 actions cards in your hand; if not please discard them to the middle.

Players are free to negotiate and collaborate with each other any time, and can do “gentlemen peace agreements” between them.

The objective is to complete all (four) businesses on the player board. If the action cards pile ends without anyone achieving this the wealthiest player wins. The game is strictly turn-based, with no rounds or phases.

### 3.1.2. Game Mechanic

#### 3.1.2.1. Businesses

There are 4 types of businesses: the low, the “not that high income”, the medium income, and high income.

To enter a business first you should choose the business you want, remove it from the business line and place a new business in that slot. Then, you must pay the value state in the card and clearly state to all players the risk level you want to go. After that, roll the dice to check you won the deal or not. If you win the deal, put the business card in one of your company slots; if not discard it to the business pile.

For low risk you only have 1/6 of failing; medium 50%/50%, and high only 1/6 success.

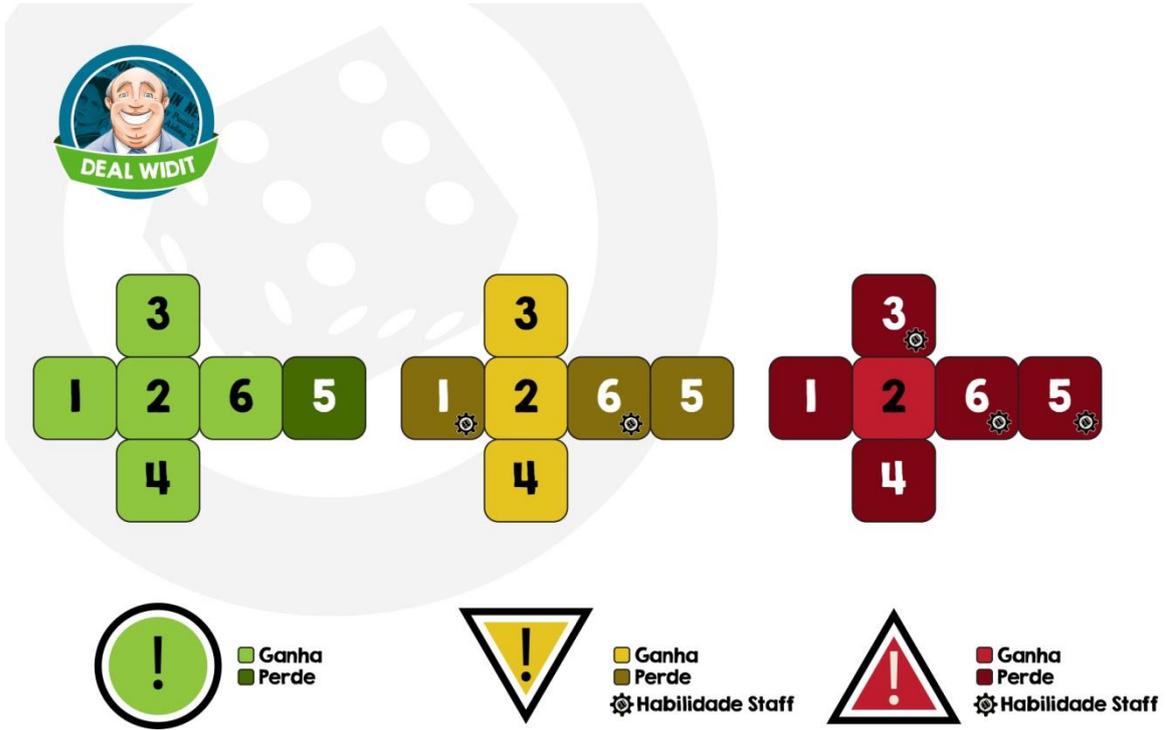


Figure 1 - Dice sheet



Figure 2 - Low Risk Businesses

For the low income we have 4 types of deals, coffee, sugar, corn and soybean. They cost 20.000€ each to get into the deal, yet they provide low income. For the low risk hypothesis the earnings are only 10.000€. Medium risk you'll earn 40.000€ and for high risk you'll earn 180.000€.

You complete one business when you have 3 of the same kind. After closing a business, this is protected against other player's actions (e.g. "Hostile Takeover").



Figure 3 - "Not that high Income" Businesses

For the "not that high income" we have 2 types of deals: copper and silver. They are complete with 4 of the same kind. The earnings are at low risk 15.000€, at medium risk 60.000€ and at high risk 270.000€.



Figure 4- Medium Income Businesses

For the medium income we have 2 types of deals: gold and platinum. They are complete with 5 of the same kind. The earnings are, at low risk 20.000€, at medium risk 80.000€ and at high risk 360.000€.



Figure 5- High Income Businesses

For the high income deals we have 2 possibilities: oil and precious stones. They are complete with 6 of the same kind. The earnings are, at low risk 30.000€, at medium risk 120.000€ and at high risk 540.00€.



Figure 6 - Back side of business's cards

Players can exchange freely their business with other players in the condition they agree.

Players cannot sell or mortgage businesses to the bank.

#### 3.1.2.2. Action Cards

From the actions cards players can do actions like, collect ROI, or force a deal with other, or say no, or a random of other choices that can promote financial literacy.

Action cards don't have monetary value and they cannot be given, sold or exchange.

There is the simple action card that you can play in your turn, as many as you want. All

the cards have their actions printed. Some make more sense to play when you have businesses, like ROI, others when you lack money, like excess return. They are:



Figure 7 - Action's cards part 1

**Pay Taxes** – force a player to pay for each type of business to the bank.

**Corporate Intelligence** – remove randomly one card from another player's hand.

**Insider Trading** – allows you to remove one card from the discard action's pile.

**ROI (Return on Investment)** – Receive the amount invested selecting just one business.

**Sure Win** – Win the purchase of a business without playing the dice.

**Open Market** – remove from the action pile 1 card per player, then, by turn, each player removes the one they want.

**Excess Return** – earn 50.000€ per business in your company.

**Corporate Research** – Withdraw 2 action cards from the action's pile.



Figure 8 - Action's cards Part 2

Actions cards can be also used with the dice roll. Others are to use after the action (use for you or to other players).

**Teambuilding** – after rolling the dice and winning/ losing the deal, you can enable surge ability from a staff figure in your company.

**High Stakes** – after rolling the dice, choose the dice position.

**Second Chance** – after rolling the dice, enables you to roll dice again.

**Hmmm, No** – nullify any action.



Figure 9 - Action's cards Part 3

There are action cards that assume business or staff deals. If they are succeed they will count has a business or staff deal, if not, player can carry on with their turn.

**Hostile Takeover** – enables the purchase of a business in another player's company. It's mandatory to go in medium risk without earnings associated. If you succeed, it counts as a deal move and you pay to the other player. If not, it does not count as a deal move and the other player keeps his deal.

**Mature Deals** – use this card to go the business's discarded pile. It's always deal move whether you have won the deal or not.

**Headhunting** – remove a staff figure from another player's company paying 2 times the value to the bank.

**Downsize** – Fire one staff figure from the company (the other player will choose whom to fire). This will count as a staff move. If you play in your own company, earn an extra staff move.



Figure 10 - Action's cards Part 4 - "Market Crash"

**Market crash** – this card is the most powerful in the game and supersedes to the Hmm, No card. Who plays this card have the final word for good or bad. No Market crash cards should be used over one played.



Figure 11 - Back side of action's cards

### 3.1.2.3. Staff

Staff is one type of deals you can have. They will create a better company, giving special features and multiplying net worth. There are 4 colors types and 4 slots for each color. For each color there are two figures and they cannot be both at the same time in your company (except trainee, where you can have four (limit) at the same time).



Figure 12 - Staff's cards

To have the Staff figure in your company you have to pay the amount displayed at the card. The staff is only valid in the next turn and not from the moment you play it. All have two special features: one active – that happens in each turn, and one passive – only when the dices show the lightning icon. The trainee card can be used on to other players in order to occupy the slot preventing the multiplier. These cards cannot be purchased, sold or lend. Yet they can be headhunted by an action card “headhunting” or protected from the head hunters by a HR director.

For each set of colors there are always a more defensive figure and a more risky one:

- Trainee: open card, mostly to use against other players in order to avoid the multipliers at the end.
  
- Stockbroker:
  - Main feature (always active): it allows using all deals, the ones in the table (for everybody) and the ones already discarded.
  - Surge feature (only when dice shows): allows all deals to be removed from the table to the discarded business pile.
  
- Corporate Spy:
  - Main feature (always active): it protects you from cards like Hmm, No, or others answer cards (Second Chance e.g.).
  - Surge feature (only when dice shows): it allows you remove randomly a card from another player's hand.
  
- Sales Manager:
  - Main feature (always active): earn 50.000€ per turn.
  - Surge feature (only when dice shows): charge 50.000€ to all other players.
  
- HR Director:
  - Main feature (always active): prevent headhunting in your company
  - Surge feature (only when dice shows): pick up any staff figure from the discard pile.
  
- CFO:
  - Main feature (always active): it doubles the savings earned.

Surge feature (only when dice shows): it allows doing a ROI in one of your businesses.

- VP:

Main feature (always active): it protects you from downsizings.

Surge feature (only when dice shows): allows you to do a downsizing in your own company.

- CRO:

Main feature (always active): it reduces the risk level keeping the earnings (e.g. you go to high risk: you keep the earning from the high risk level, but play with the medium risk level).

Surge feature (only when dice shows): charge 25.000€ for each staff figure to one player.

- CEO:

Main feature (always active): give you an extra move each turn.

Surge feature (only when dice shows): enables you to do a takeover to another player (you choose the business).

#### 3.1.2.4. Savings

You can save only one money card, each time, using a savings move. When you put the money in the savings, you will have to wait 3 turns until you can withdraw your money with no interest - win only what you have saved. But if you wait 4 turns, you'll double your investment. To withdraw your saving you don't spend any move. A Staff figure like a CFO will double all of your savings, so you can combo up your earnings.

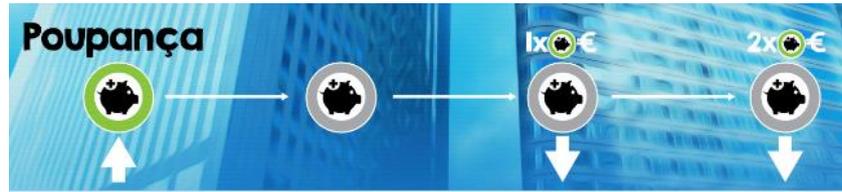


Figure 13 - Savings area

### 3.1.2.5. Money

As previously said there will be 5 types of money cards: 5.000€, 10.000€, 50.000€, 100.000€ and 500.000€.



Figure 14 - Money cards



Figure 15 - Back side of Money cards

### 3.1.2.6. Business Angel

This can be used just one time per turn. There is no counter offer to this, just an extra 30.000€ of income.

Player board or game zone will have this layout:



Figure 16 - Player Sheet

### 3.1.2.7. Winning the Game

To win the game you should be the first player who finishes all the 4 types of deals. Or, in case of the action cards end, the wealthiest player wins.

In case of the action cards end, the following math should be applied:

- How much do you have in your hand (including savings): e.g. 1.000€
- How much do you have in each business, and if so, apply the multiplier of completing the all business:
  - o e.g. corn closed = (each values 20.000€ x 3 to finish the business) x 2 = 120.000€

- e.g. gold closed = (each values 40.000€ x 5 to finish the business) x 4 = 800.000€
- e.g. silver not closed = (each values 30.000€ x 2 businesses) x 1 (no multiplier applied since the business is not closed) = 60.000€
- e.g. oil not closed = (each values 50.000€ x 3 businesses) x 1 (no multiplier applied since the business is not closed)= 150.000€

Therefore the total amount from the businesses is =  
 $120.000€ + 800.000€ + 60.000€ + 150.000€ = 1.130.000€$

- The staff value by itself: e.g. 1 stock broker (25.000€) + 1 HR (50.000€) = 75.000€
- And finally the staff multipliers = [the company was worth in 1.130.000€ + 1.000€ (money) + 75.000€ (staff))] x 2 (since only had 2 staffs) = 2.412.000€

Then just compare with the other players and check if you are the winner!

### 3.1.2.8. Deck

The deck is set with 346 cards to play, including a dice, dice sheet, player sheet and set of rules.

Cards	Number	Cards	Number
Cards resuming the rules	4	Sure Win	4
Business cards:	42	High Stakes	4
Green deals:		Second Chances	8
corn	3	Hmmm, No	12
coffee	3	Market Crash	4
sugar	3	Red Staff:	
soybeans	3	CEO	4
Yellow deals:		CRO	4
silver	4	Orange Staff:	
copper	4	VP	4
Orange deals:		CFO	4
platinum	5	Yellow Staff:	
gold	5	HR director	4
Red deals:		Sales Manager	4
precious stones	6	Green Staff:	
oil	6	Corporate Spy	4
Action's cards:	128	Stockbroker	4
Open Market	8	Grey Staff:	
Headhunting	4	Trainee	8
Teambuilding	4	Money cards:	
Downsize	4	5,000.00 €	50
Hostile Takeover	4	10,000.00 €	50
Mature Deals	4	50,000.00 €	40
Corporate Intelligence	4	10,000.00 €	25
Corporate Research	8	500,000.00 €	5
Insider Trading	4	Dice	1
Pay Taxes	4	Player's sheets	4
ROI	4	Dice sheet	6
Excess Return	4		

Figure 17 - Deck resuming cards

### 3.1.3. 3rd phase – Playtesting

After the creation of the game's mechanic, playtesting helped to set up and correct anything in the game. This phase lasted 3 weeks, with 3 games played and discussed with friends and family volunteers. During this phase also feedback was asked.

The feedback is divided in two parts. The first begins with a questionnaire, where the questions are based in the current financial knowledge of each player.

The second part comprehends the same questionnaire but now to check the differences (improvements) in financial concepts and a more practical questionnaire where the assessment of the fun and difficulty with space for recommendations.

The goal is to gain a greater understanding of everything that happened during the playtesting. The scale should be to 1 to 5 (less to more), multiple choice or open answers.

The group was composed by 8 persons, 5 males and 3 females. The age range was comprehended between 24 and 33 years old. Education was mostly undergraduate. The income level of the group was mainly between 500€ and 1.000€. The entire group was Portuguese.

The first question was “Do you have knowledge about financial concepts”, 5 answered yes and 3 no. The second question was to grade, from 0 to 5, the personal financial level of knowledge – the majority answered 4 but no one answered 0 or 5. The third question was a direct financial question “Do you know what a hostile takeover is?”. Most answered yes. The fourth question was about the corporative jobs inside a company structure (human resources, CEO, etc.). All answered yes. The fifth question was on the importance of saving and budgeting, 7 responded positively. The sixth question asked was if they have short, medium and long term objectives in life. All answered yes. The seventh question was “Do you believe that finance has a more individualist perspective that other sectors (education, healthcare, etc.)?” – half responded yes and the other

half no. The eighth and final question was if you find finance boring. Again the answers were 4 yes's and 4 no's.

After the game was played the first question was if playing the game helped to understand financial concepts. The answers were split with 4 saying yes and 4 saying no. The second question was if people still graded themselves (financial knowledge) the same way. Six responded positively. The third question was "Did you understand what is a hostile takeover just by playing?" Three responded yes. The fourth question was "are you more aware of corporate jobs?" The majority, six, answered yes. The fifth question was "Do you still believe that saving and investing are important life concepts?" Seven answered yes. The sixth question "Can you relate the strategies defined in the game to the strategies applied in real life, short, medium and long term?" All answered yes. The seventh question was if the individual perspective of the players on finance being individualistic changed. Mainly the answer was yes. The final question was if the players still thought finance boring. Six answered they don't.

Open feedback about the game itself can be found in Appendix "questionnaire".

The name of the game was discussed during the sessions. The name should reflect the nature of the game and therefore deals or exchanging business and setting a company was essential. Many names were on the table but just one seemed to fit the purpose: Deal Widadit. Moreover, during the game, by several times, players were saying to each other's "deal with it" due to the very intense action card dispute occurring!



#### 3.1.4. 4th phase – Components' Design

The components are already showed above are in the final art ready to print the prototype.

#### 3.1.5. 5th phase – Prototype

Prototype should be ready to show and exhibit at the presentation of this project.

#### 3.1.6. 6th phase – Rules Manual Creation

The rules manual is one of the last things to be created due to its specificities. The game should be tested and rules show also be tested alongside, by all volunteers. Therefore, the last printable item is the rules manual.

## 3.2.Sampling

### 3.2.1. *Defining Targets*

For children of 12 years old and older, the game was developed as a prototype. All the figures below are still under revision to final art until production.

### *3.2.2. Apply Solutions*

This project can be extended to add characters with their own set of actions, or an extra board of a different financial product, like bonds or other staff figures.

## **4. Analysis**

### *4.1. Before & After*

Even with a small introduction of the game and the rules the first game experience was hard for the players. Most of them asked what each card did and the combinations possible between them. This led to a slower game pace – one hour and a half duration. In the second game the players were much more comfortable with the cards and the strategies and each one changed their playing style – the game was only 45 minutes. All of the players showed a very positive response to the game and it was interesting to see that some people began alliances and cooperation between them. The players left out of these agreements, were normally winning at the time.

The highlights from the questionnaire are the comparison between before and after in the second question, if the players still grade themselves in the same way. Although most players answered yes after the game two of them improved their own grade. Also the sixth question was stunning. All of them agreed that the strategies applied in the game can be applied in real life. Strategies as alliances, budgeting or saving can be practiced in the game and then used in their own lives. The seventh and eighth question were split before the game and shifted completely. After playing the majority of the

players agreed with the individualistic perspective of finance. Most of the players also responded that finance was not boring after the game. With the exception of science games and monopoly style games, there was nothing similar to compare. This type of games can be further and further explored, by banks or financial companies, or by families and even schools.

#### *4.2. Suggestions & Recommendations*

Financial literacy is a real issue, with an amazing impact in adulthood. It makes sense to educate children and hope for the spill-over effect over the parents. In Portugal, BdP should be focusing on implementing a national strategy for financial education and maybe revisit Brazil's experience by adding finance in school curriculums. Also entrepreneurship should be encouraged from youth. Fairs, garage sales and voluntary work should be promoted in schools.

Criticism for the questionnaire is the very small sample of the group and the resemblance between the players. Age, education, income was very close between the eight players.

This game is an attempt of raising the attention for the issue: Financial Literacy is poor in Portugal.

## **5. Conclusions**

It was notorious that the created card game was a very fun experience in the small testing phase. The response to the playability was great and the questionnaire also showed positive responses to finance as a topic and on the players individual

perspective of themselves. A bigger sample is required to attain more information. I suggest that, after the game is finished, it should be tested amongst other age groups, mainly younger players. As this project objective is about financial literacy the game should be tested in schools - Youngsters are keen to learn, especially from games and simple actions. The vocabulary is expanded and they become financially aware. This leads to more freedom through a good financial planning. The production of the card game is also very inexpensive compared to other learning experiences. I would like to distribute this game firstly through my employer with their endorsement. The emulation this project in a continuous class should allow to measure the effects and give a really good idea of the improvement amongst students.

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