

Gamification: The using of user discussion groups in the software development in e-banking.

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ABSTRACT

The development of the new software game gave emphasis and importance to the role played by the user discussion group during the development phase; they were sometimes called upon to participate in testing and they contributed to changes that improved the overall software's. Some more concrete methods include discussion groups to stimulate the emergence of new ideas and evaluate the gamification concepts. According to this approach, the web designers of two gamification software projects in e-banking using Mutual Funds and Warrants were encouraged to build the first playable version of the gamified business software. After a live introduction to a group of users, it was requested their opinion in an open questionnaire with six questions, permitting them to identify without restrictions the needs, modifications and opinions. The method has identified a wide range of games characteristics and web design changes, as was expected by both business and customers. In conclusion, the use of the discussion group and open questionnaires were effective methods for the project team, to check preview the perceptions and customer acceptance in adopting the software gamified. In this study, we identified the users' perceptions, resumed in a diagram "the most relevant factors in an e-business game". Our practical contribution is for the web designers and project managers who with this methodology, may check if their software will have good adoption.

Categories and Subject Descriptors

D.2.1 [Requirements/Specifications]: Methodologies and Tools; D.2.2 [Design Tools and Techniques]: User interfaces and Testing tools; D.2.10 [Design]; K.6.1 [Project and People Management]: Life cycle and Systems development; K.8.0 [General]: Games.

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General Terms

Management, Measurement, Design, Economics, Experimentation, Human Factors, Standardization, Verification.

Keywords: e-banking, Gamification, Serious Games, Game Design, Software Development Methodology, Software Testing.

1. INTRODUCTION

The development of innovative business software has created conditions for the emergence user's discussion groups to generate requirements or identify changes to suit the customers' needs when using the software with games characteristics. Thus, developing new ideas we may identify modifications in the traditional design procedures in order to dilute the complexity of using the software and increase the overall competitiveness in the e-business. The participation of users and customers in the process of developing business software's in e-banking is a key to the success. That reason justifies the need to carry out a discussion group methodology, considering the goal of introducing game features in serious e-banking software's with real investments financial products.

The collaboration of users in the development process is of outstanding importance to the quality and final adoption of software's. Being our study within a highly regulated sector legal authorities, care to develop a business software with features of the game which is recognized has a serious game and at the same time respecting the rules, is challenging mainly in this recent and innovative area of gamification in e-banking.

The detection of defects or the identification of new features in computer projects, can be achieved through analytical techniques of written or spoken texts, however, requires that the questions should be reduced as much as possible to their fundamentals. With the tending of natural speech, processing software and semantic classification can be parsed and extracted relevant data to detect contexts, isolating themes and identifying important references that may help to increase software quality especially when applied at the beginning of software growth.

In this study, we analysed the involvement and participation of users in the development process of two e-banking software that were gamified, the Mutual Funds and Warrants.

2. OBJECTIVES

The aim of this study is to present a methodology through the event of software gamification user discussion groups identifying what are the perceptions and the most important features recognized by users in business software's gamified. This research focuses on e-banking software testing using a discussion group's methodology and the analysis of the responses to the open questionnaire techniques. This approach stimulated ideas and proposals that ensure the authenticity, integrity, privacy and non-renunciation of the software gamified. During this study we will analyse the different users' perception during the demo presentation of the business software to trade Warrants and purchase and sell Mutual Funds, to determine if the characteristics of the new software are in the right way to be recognized by the users as gamified and what changes should be performed before the launch to production.

3. MOTIVATION

In conformity with the aims of developing business software's gamified and since it is a research field in which the experience of the project team is nonetheless deficient. It is necessary more requirements to define the design supplies of the game and the elements and characteristics necessary to meet the users. Therefore, we organized user discussion groups and an open questionnaire to help complete the requirements and to validate whether the development would correspond to the users expectations. For being a less formal method, inexpensive and quick where the results are easily interpretable is an excellent way to generate hypotheses, particularly when the problem is poorly known, as is the case in the present study, the reason why this method of discussion groups and open questionnaires will be applied in this research. During the development phase of the game were developed several tests interspersed and created a discussion group to remove prior information about the reaction and lack of users to the game. In addition, we collected other data that could help us understand the level of acceptance and what changes to make to improve the adoption and use of the gamified software by the customers. The use of Tropes software can allow a quick and accurate linguistic analysis of the text of responses from users to detect the perceptions, feelings and emotions that were expressed during the experience of the use of the game. As well as identifying gaps or weaknesses vis-à-vis the goals and expectations of the intention to use the game that could be more difficult to detect without recourse to such software.

4. THEORETICAL BACKGROUND

The web design of a software game can be split up into discrete phases. The descriptions of the web design process have small differences, but in general, it can be around the following phases: Design concept, preproduction, production and post-production [3, 6]. The development model of the software game emphasized the role played by the players, during the development phase, whom we're sometimes called upon to participate in testing, contribute to some changes in the software. [14] indicate that the

game designers may qualify technically the software and contribute to obtain a final product better accepted by users - if they participate on all the four different stages of game evolution. Some more concrete methods include discussion group and unit tests, to stimulate fresh ideas to evaluate game concepts and study the most appreciated perceptions in order to use the acceptance game [13].

[11] argue in favour of the method of iterative development of the project, which is based on participation and invitation to formulate opinions of players since the beginning of the project. As part of this approach, the designers are encouraged to construct the first playable version of the game and immediately afterwards a short introduction to a group of users, request their opinion for new ideas or changes [4]. [11] suggests that iterative development approach of the game is a great concern, because it is not possible to predict in advance all the features and functionality of the game.

The user discussion groups facilitate to express the problem addressed, getting out the perceptions, references, expressions and opinions of the users, without formalities, and allow understanding the spontaneous perceptions, emotions and feelings, before the rationalizations, transformations and deformations that usually come after a long contemplation, is thus closer to the mundane reality. Discussion groups can support ideas for the elaboration of proposals for a new concept of productivity. Furthermore, they help users in the analysis of problems of their own, identifying characteristics and procedures that must be interchanged in the system under study and substantiate the development to facilitate its implementation and consolidation with other systems [9, 10, 12].

5. RESEARCH APPROACH

The user discussion groups often bring ideas and spontaneous reactions, and the moderator follows a script previously studied as the shape and the way the topics are introduced in order to find out what people think of the topic. In that respect is frequently a large variance between what people say and what they do, so the moderator's role is central in social observation and analysis of the participants involved. Provoke user discussion groups to share ideas and generates highly motivated teams that have facilitated communication and knowledge management through the socialization of real-time information, which contributes to individual and group learning and, consequently, creates knowledge that will influence in the process of participatory decision-making [5]. The combination of discussion groups with questionnaires allows the members of the group not only to provide the design and characteristics of appropriate software for the users, but also perform a pretest of a preliminary version of a system [8].

Call for open questions rather than closed questions with answers are a secure way to obtain dependable results in the group discussions. An open question is one that does not require a specific answer. Is a question that is designed to get the groupthink. The only time a closed issue must be conjured up is whether the group has specific info that they require to take. Open-ended questions are significant because they let other group members to consider it. If the matter is linked up to a problem, members may come up with a bit of different answers. During the

group meeting, all the ideas should be considered. The group discussions are significant consequences that permit people to discuss ideas or solutions to troubles.

The procedure adopt on this study was the following (Figure 1):

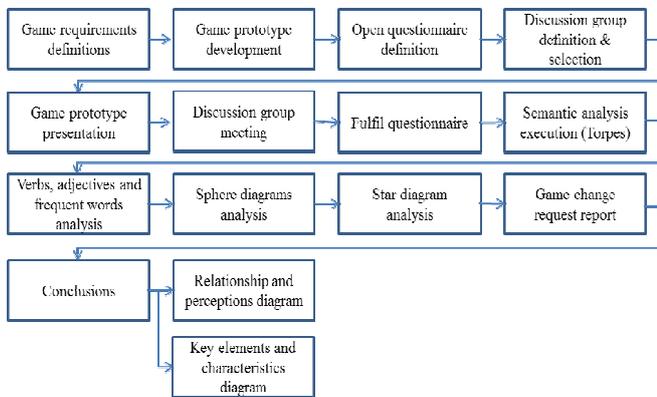


Figure 1: Procedure for the user discussion groups

At the beginning, it was performed a general introduction of the goals of the new business software gamified, and then a live presentation of a "beta" version. After the presentations, a discussion was started between users and web design development team. Finally was requested by all users a summary based on the questionnaire with six open questions.

- How did you feel?
- What did you like best?
- The least liked?
- What is missing or should be removed from the game?
- What amendment do you propose in the game?
- Other suggestions to the game?

After the presentations, an open discussion about the software characteristics have got in place and an open questionnaire was asked to carry out by the users of each treatment group session. Tropes v8.0 software was utilized for the treatment and linguistic analysis of the textbook of the replies from the set of open-ended questions, conducted during the development phase of the game software. A trope is a self-extracting parser that uses the syntactic-semantic criteria established in 1994 in its first version it had the ability to analyse literary works like romance. According to [2] the market offers automatic indexing software that promises to perform the extraction of terms relevant to the representation of the informational content, based on criteria similar to those used by humans. Tropes could be utilized as a creative tool that entail the placement of words in paradoxical relationships, analyses the most references, verbs, adjectives and substantives that could help our investigating to decide the user influence in using a certain software with games characteristic. Also provides data that could help to highlight the user's perceptions and thoughts that will be difficult identified without software like Tropes.

6. EMPIRICAL STUDY

We compare the user perceptions of two software development for e-banking with game features by analysing their perceptions and reaction throughout a user discussion group sessions. The preparation work with Tropes software products on a summarized text from the word written on the questionnaires performed by the user discussion groups can be broken down into four previous steps:

- Step 1: Tropes performed a semantic classification of the references used. The vantage of this categorization is the possibility to target the relevant language.
- Step 2: Among these "used references", many of them are non-relevant. Therefore, a selective sorting carried out on the previous selection of words provides a new set of the more relevant words.
- Step 3: From this new circle of words, pruning is done manually. At the end of this step, for one text, 10 to 20 terms of used references are (game, idea, interest, innovation, information, interactivity, enthusiasm, client, awards, etc.). A set of synonyms corresponding to each identified concept is designed.
- Step 4: The classification obtained from the previous steps is refined by means of the knowledge obtain from the literature review on the game studies (e.g. VIIC from [15]). If necessary, the concepts are renamed or taken away. After this step further text analysis can be done.

We outline the two studies here, summarizing the results and conclusions. Both were conducted after developed a played version of each software, and asked the same six open questions.

6.1. Mutual Fund software gamified

6.1.1. Introduction

This software utilizes the complex financial products of the type of Mutual Funds represented as football players through a graphic interface based on an animation of a football game. The game seeks to a digital analogy of a football champion league between teams (among customers) with weekly football fixtures, in which the score is the evaluation of the portfolio week-to-week and where weekly is the categorization of customers. The version of the software of the Mutual Funds submitted to the user discussion group took in the following web design (Figure 2).



Figure 2. Mutual Funds presentation to the discussion group.

The financial product gamified in this financial software is Mutual Fund that is an investment security type that enables investors to pool their money together into one professionally managed investment. Mutual Funds can invest in stocks, bonds, cash and/or

other assets. These underlying security types, called holdings combine to form one common fund, also called a portfolio.

6.1.2. Objectives

The goal of this project is the development of a software that established an analogy between a football game and a portfolio of Mutual Funds where they are represented by football players and distributed on the football field in accordance with the risk rating assigned to each specific Mutual Fund.

The development of this software designated as Mutual Funds had as its main objective:

- To inform and train customers about this character of complex financial products (Mutual Funds).
- Increase the access to the website.
- Increase customer loyalty to the bank.

Important was also the definition of the relationship or association between the serious business, financial product and the game, in this case the following:

- Managing a football team associated with a portfolio of Mutual Funds.
- A football player is a Mutual Fund.
- The goals are the positive valuations of week-by-week Mutual Funds.

6.1.3 Sample data analysis and profiling

Three user discussion groups were created, with an average of 8 to 10 people each, to analyse and test the new mutual funds software. The population under study was 28 users represented by 16 employees of the bank, 8 customers and 4 financial advisors. Male were 79% and 11% were female, with the age between 25 and 40 years were 71% and 29% had more than 40 years. Regarding the education all had a bachelor's degree or higher.

The answers to the questionnaire were analysed and we stress the comments that we consider most relevant to the assessment of the acceptance of the players and the impact of changes to make before implementation and availability of the game to customers.

6.2 Warrants console software gamified

6.2.1 Introduction

This software offers customers a pleasant and very simple way of buying financial products of type Warrants online (which has subjacent the financial product of type action) through an analogy to a card game. The software provides information of developments in the stock market and the prices of assets in order to follow the evolution of the Warrants markets. The aim of the software intends to transform a complex process of buying a financial product in a process very simple using elements of the game and a graphical interface, with game elements, and interactive.

The purpose of the game is the customer to invest a certain amount in the rise or fall of the underlying asset, winning when investing in stock price rising action and she climbs or when you invest on the descent of the quotation of the action and this goes down.

The software offers a wide range of graphic information in order to facilitate the decision-making easy process of buying or selling in order to increase customer confidence for investing in this type of product.

The version of the software of the game Warrants submitted to the discussion group had the following web design (Figure 3).



Figure 3: The software version of the game Warrants submitted to the discussion group.

The financial product gamified in this financial software is Warrants that are securities issued by a company (often an investment trust) which give their owners the right to purchase shares in the company at a specific price at a future date. Warrants are tradable in their own right, and their value will go up and down as the price of the shares to which they relate goes up and down.

6.2.2 Objectives

The goal of this project is the development of a software that established an analogy between a card game and a warrant investment where the warrant are represented by cards and a Put / Call option are a hide card.

The development of this software called game of Warrants had as a main objective of business:

- Create an analogy between a card game and the investment in Warrants on which these products depend on a second unknown element, which is the variation of the quotation of the underlying action.
- Assist customers through analogy to infer the manner of functioning of this complex product and experience awareness of risks in the financial market volatility.
- Increase customer loyalty to the Bank.

Important was also the definition of the relationship or tie between the serious business or product and the game, in this case the following:

- The Warrants are represented by a suit from a deck of cards in which the variance of the quotation and the trend in the price of the underlying asset to the Warrants (share) are the cards of that suit.
- Through a table of ratings, clients can see their spot in the rankings of the best investors.
- Customers according to their performance in the game earn stars that indicate the level of profitability that have reached in their investments in this type of product.

6.2.3 Sample data analysis and profiling

Three user discussion groups were created by an average of 8 to 10 people each, to analyse and test the new Warrants software. The population under study was 25 users represented by 15 employees of the bank, 7 customers and 3 financial advisors. Male were 92% and 8% were female, with the age between 25 and 40 years were 60% and 40% had more than 40 years. Regarding the education all had a bachelor's degree or higher.

The answers to the questionnaire were analysed and we stress the comments that we consider most relevant to the assessment of the acceptance of the players and the impact of changes to make before implementation and availability of the game to customers.

7. RESULTS

Comparing the Tropes results of the bough user discussion groups the analysis of verbs, adjectives and frequent references we identify the common references (Table 1).

Table 1: Comparative Tropes references.

Tropes	Mutual Funds	Warrants	Match
Verbs	To Be (10), Power (6), Have (5), Like (5), Duty (4), Do (3).	To Be (16), Buy (12), Have (11), Do (6), Change (6), Show (5), Like (4).	To be, Have, Like, Do.
Adjectives	Small (5), Short (4), Great (4), Confused, Male and Good (3).	Simple (5), Short (5), Historical, Graphic, Good, Available and Interesting (3).	Good, Short.
Frequent references	Game (18), Financial Product (15), Idea and Discovery/Innovation (14), Time, (13), Interest/Curiosity (9), Team/Association (9), Investment (7), Enthusiasm (6), Interactivity, Customer and Information (6), Design (5), Awards (4) and Animation (3).	Financial Product (24), Game (20), Information and Application (18), Colour (17), Charts (13), Put/Call (12), Ranking (11), Interest (10), Animation, Variation, Customer and Idea (9), Quote (8), Simplicity and Importance (6), Design and, Appealing (5).	Game, Financial Product, Information, Idea, Interest, Customer, Appealing, Animation, Design.

By comparing the reactions of two questionnaires, we identify the what references have matched (Table 2).

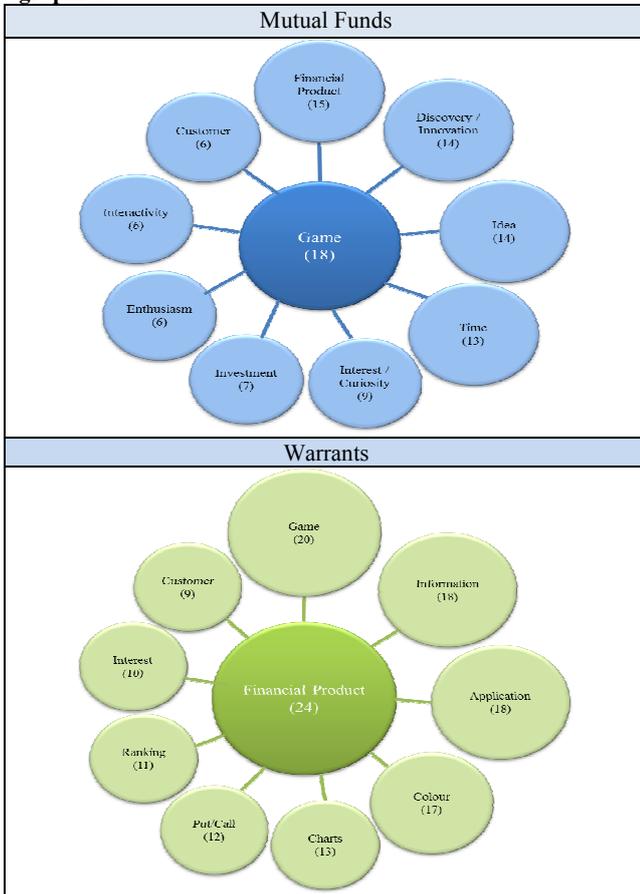
Table 2. Comparability of the open questionnaire by individual question.

Questionnaire	Mutual Funds	Warrants	Match
What did you feel?	Interest (8), Enthusiasm and Discovery (6), Idea (5), Appealing and Fun (3).	Interest (10), Application (7), Game, Election and Use (3).	Interest.
What did you like best?	Idea (9), Discovery and Game (7), Interactivity (5), Design (4), Football, Extension and Customer (3).	Simplicity, Design and, Rating (4), Interactivity, Information and Put/Call (3).	Interactivity Design.
The least liked?	Game (3).	Graphic, Information, and Colour (5), Game, and Put/Call (4), Quote and Idea (3).	Game
What is missing or should be removed from the game?	(Nothing to report)	Absence (6), Game (4), Quote and Application (3).	
What amendment do you propose in the game?	Design, Extension and non-customers (4), no-real investment (3).	Variation (5), Graphic, Importance, Application and Colour (4), Game (3).	
Other suggestions to the game?	Extension/continuity (5).	Information and Colour (4).	

Analysing and interpreting the answers to the questions of the discussion groups, we used the ball graphic, representing each frequency reference by a sphere whose surface is proportional to the number of words contained in the responses to the questionnaire conducted in the discussion group (Table 3).

important because allows the analysed of the relations between the reference considered most relevant in this study “game” (Table 5).

Table 3. Comparison of the frequency reference through a ball graphics.



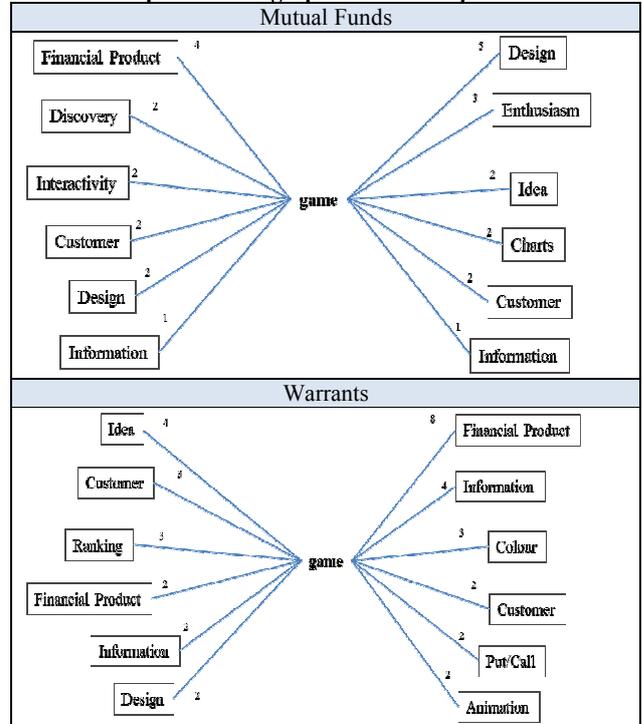
The start graph displays the relations between references or between a word category and a reference. The relations between the references that are oriented: the references on the left of the central reference are its predecessors, those on the right its successors. This information is important because allows the analysed of the strong relationship and associations (Table 4).

Table 4. Comparison associations and relationships

Mutual Funds	Warrants
Game(18)→Financial Product(15)	Game(20)→Financial Product(24)
Game(18)→Enthusiasm(6)	Interest (10)→Appealing(5)
Interest/Curiosity(9)→Idea(14)	Idea(9)→ Game(20)
Enthusiasm(6)→Interest/Curiosity(9)	Design(14)→Information(18)

Using the graph star, we studied the relations between the reference game, that shown the number of relations (co-occurrence frequency) existing between the various references. The reference on the left of the central reference are its predecessors, those on the right its successors. This information is

Table 5. Comparison star graphic relationships with “Game”



Humans process better intuitive information, to see and interact with data and exploring patterns and relationships. The view improves the understanding because the human brain is able to process images and better recognize patterns. The Visual effects and interactivity of the game cause reactions in customers that must occur within certain time limits.

According to [15] the principles of the best experience of the players of games start with VIIC: Visual, Interactive, Immediate and Contextual. As a way to validate that the games sets standards in accordance with the principles of the best experience of the customers we can check out from the answers collected in the discussion groups, that there is recognition of the key features (Table 6).

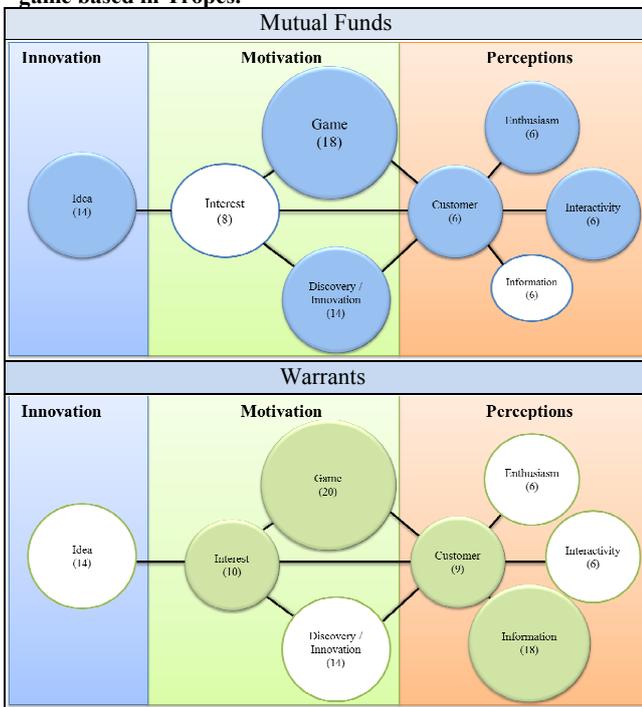
Table 6. Match references according to VIIC.

Game	V-Visual	I-Interactive	I-Immediate	C-Contextual
Mutual Funds	Shape and Image (5), Appealing (4), Animation (3).	Discovery / Innovation (14), Enthusiasm and Interactivity (6), Animation (3).	Time (13)	Game (18), Financial Product (15), Information and Customer (6), Financial Advisor (4).
Warrants	Colour (17), Charts (13).	Put/Call (12),	Extension (5).	Financial Product (24),

	Effects (9), Layout and Appealing (5).	Ranking (11), Interest (10), Animation (9).		Game (20), Information and Application (18), Customer (9).
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Based on the information collected and the processing of the data, we can organize the most used references and sort the reactions of participants, by the weight of each reference (number of times repeated) and set a diagram of the relationships of the relevant factors of the game as shown in Figure 7. We conclude that the "Idea" of the project, caused "Interest" in the participants, for the "discovery" of the "game", where the "client" shows "Enthusiasm" for "Interactivity" and "information" which is available in computer software.

Table 7. Compare diagram of the most relevant factors in a game based in Tropes.



8. LIMITATIONS AND FUTURE RESEARCH

Given the social importance of the games and being an activity that involves hundreds of millions of players around the world, the lack of studies and researches on the characteristics and contents of the games influence the players are still insufficient [6]. Therefore, hopefully with the experience and results of this study can somehow give up other studies and research in the field of serious games or gamification in e-banking.

We cannot expect a software has an excellent acceptance of the users when the requirements are insufficient and incompletely described without any predictions of effort needed to complete a project. In the unstable development environment, project team members are faced with the lack of experience of similar projects leading often to withdrawal and cancellation in the middle of the

project. These conditions are often present in many software projects and consequently, knowledge about the uncertainty of the requirements and how much effort will be required to complete the software development is important to the success of the project.

For our purposes, in this application, we have use mechanics and other various actions, behaviors, and control mechanisms that are used to "gamify" an activity — the aspects that, taken together, create a compelling, engaging user experience. The compelling, motivational nature of the user experience is, in turn, the result of desires and motivations that is called game dynamics [3]. The culture of the country and levels of membership to the internet and e-banking in general may make the users/players in their reactions and perceptions social slopes included in technology [1].

Other studies regarding the use of discussion groups for the creation of ideas about business software's gamified must be formed with different moderators and different people. Because the discussion and conclusions tend to become influenced by one or two people in the group and the dominant role of the moderator who plays an essential role dealing with the situation, if the moderator is not experienced enough, it is very easy for the whole discussion to be dominated by some people. In addition, the subject of the software, the geography and the profile of users can influence the results and conclusions of the discussion groups.

9. CONCLUSIONS

According to the results of these cases of gamification, we can conclude that the result of the discussion groups conducted, vis-à-vis observations, allowed the development team to adapt the game software and change the game on the following fundamental aspects:

- At the level of the computer game software development, improving the overall web design, content quality and search engine tools.
- At the level of the reactions and emotions of the participants of the discussion groups, with the help of Tropes on the treatment and analysis of all answers, we can conclude that the game, has been recognized has innovated and generate user motivation that cause perceptions that could indicate a good acceptance by the users.

Based on the information collected and the processing of the data, we can organize the most used references and order the reactions of users, by the weight of each reference (number of times repeated). The relationship Diagram of the factors more relevant in a game (Figure 4) concludes that the "Idea" of e-banking gamified project, should spark "interest" in "discovering" the "game", where the "client" shows "enthusiasm" for "interactivity" and "information" which must be available on software gamified.

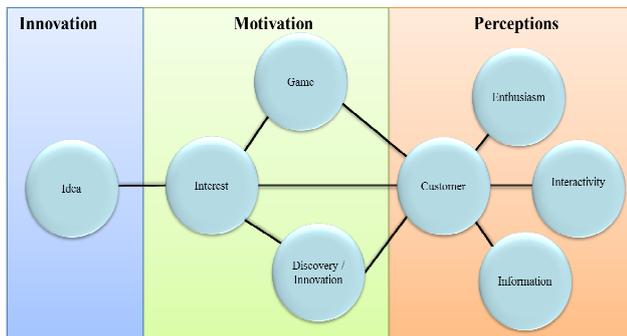


Figure 4. Diagram of the most relevant factors in an e-business game.

In conclusion, the Mutual Funds game awakened and had a better reaction and acceptance of newsgroups than the game Warrants. The Mutual Funds game was recognized as innovative, interactive and enthusiastic and the suggestions and ideas arising from the discussion group have been implemented contributing to the improvement of software. The Warrants game had a more critical acceptance has not been sufficiently recognized as a game and as such had to be completely redesigned at the request of user groups as the collected comments and even by parsing and semantics of the diagrams of relationships and reactions produced on the basis of previous experience of Mutual Funds.

Discussion groups, the open questionnaire, semantic analysis of responses and the analysis of comments and suggestions to revert a great importance to improve, change and cancel the development of software's with innovative features like the gamification of business software's where the uses of this methodology can help to prepare and predicted the adoption of e-banking gamified financial products software.

10. REFERENCES

- [1] Adams, R.B., Ambady, N., Macrae, C.N., and Kleck, R.E. 2006. Emotional expressions forecast approach-avoidance behavior. *Motivation and Emotion*, 30(2), 177–86.
- [2] Bruzinga, G.S., Maculan, B.C., and Lima, G.A. 2007. Indexação automática e semântica: estudo da análise do conteúdo de teses e dissertações. VIII ENANCIB–Encontro Nacional de Pesquisa em Ciência da Informação.
- [3] Bunchball, 2010. gamification 101: An introduction to the use of game dynamics to influence behavior. Bunchball, Inc.
- [4] Fullerton, T., Chen, J., Santiago, K., Nelson, E. Diamante, V., Meyers, A., Song, G., and DeWeese, J. 2006. That Cloud Game: Dreaming (and Doing) Innovative Game Design. *Sandbox Symposium*, Boston, Massachusetts, July 29–30, 51-59.
- [5] Gates, B. and Hemingway, C. 1999. *Business @ the Speed of Thought*. Grand Central Publishing. New York.
- [6] King, D., Delfabbro, P., and Griffiths, M. 2010. The Role of Structural Characteristics in Problem Video Game Playing: A Review. *Cyberpsychology, Journal of Psychosocial Research on Cyberspace*, 4(1).
- [7] Macaulay, L. A. 1996. *Requirements Engineering* (1st ed.). Springer, London.
- [8] Morgan, D. L. 1988. *Focus groups as qualitative research*. Newbury Park, CA: Sage
- [9] Nielsen, J. 1997. The use and misuse of focus groups. *Software, IEEE*, 14(1), 94–95.
- [10] Paetsch, F., Eberlein, A., Maurer, F., & Mannheim, F. 2003. *Requirements Engineering and Agile software Development*.
- [11] Salen, K. and Zimmerman E. 2003. *Rules of Play: Game Design Fundamentals*. MIT Press, Cambridge, MA.
- [12] Shams-Ul-Arif, Khan, Qadeem, Gahyyr, S.A.K. 2009. *Requirements Engineering Processes, Tools/Technologies, & Methodologies. International Journal of Reviews in Computing*.
- [13] Sotamaa, O. 2007. *Perceptions of Player in Game Design*. DI GRA 2007. University of Tampere, Finland.
- [14] Sykes, J. and Federoff, M. 2006. *Player-Centred Game Design*. CHI Extended Abstracts 2006, 1731-1734.
- [15] Tibco Spotfire. *Games that Matter: User Experience that Leads to Insights*. Retrieved January 15, 2013 from <http://spotfire.tibco.com/~-/media/content-center/whitepapers/user-experience.ashx>. Tibco Software Inc. 2009.