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SUBJECT AREA: MARKETING

Factors Affecting Satisfaction in Online Financial Transactions: a study of Brazilian home brokers

Fatores que Afetam a Satisfação em Transações Financeiras Online: um estudo sobre o investidor de corretoras de valores mobiliários virtuais

Factores que influyen en la satisfacción de las transacciones financieras por internet: un estudio sobre inversores de agencias inmobiliarias virtuales

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ABSTRACT

This paper evaluated consumers' perceptions of Brazilian Home Broker services in the online environment. Based on the model suggested by Balasubramanian, Konana and Menon (2003), the effects of relevant online consumer behavior constructs on customer satisfaction with the service were analyzed. Constructs such as perceived operational competence, willingness to trust and perceived environmental security were employed, in a model fully mediated by trust. A questionnaire with scales previously

used in literature was employed to measure the relevant constructs and structural equations applied to analyze the relationships found. Results show a strong relationship between perceived environment security and perceived operational competence, indicating that trust formation precedes satisfaction in online financial services transactions within the Brazilian context.

Keywords: Home broker. Trust. Satisfaction. Online investor. Financial services.

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RESUMO

Este trabalho tem como objeto de estudo a percepção de consumidores com relação a serviços *online* de corretoras de valores (*home brokers*). Com base no modelo proposto por Balasubramanian, Konana e Menon (2003), foram analisados os efeitos que diversos construtos relevantes para o consumo de serviços financeiros *online* (confiança, competência operacional, disposição para a confiança e segurança ambiental percebida) possuem sobre a satisfação dos consumidores ao utilizarem serviços de *home broker*. Foi elaborado um questionário com escalas existentes na literatura para medir os construtos propostos e analisadas suas relações no contexto brasileiro via equações estruturais. Os resultados apontam forte relação entre a segurança e a competência operacional percebidas, indicando também que a confiança impacta significativamente o grau de satisfação de consumidores brasileiros quando utilizam serviços financeiros *online*.

Palavras chave: *Home broker*. Confiança. Satisfação. Investidor *online*. Serviços financeiros.

RESUMEN

Este trabajo tiene como objetivo estudiar la percepción de los consumidores sobre los servicios de Agencias Inmobiliarias *online* (*home brokers*). Con base en el modelo propuesto por Balasubramanian et al. (2003), se analizaron los efectos que varias variables relacionadas con el uso de servicios financieros *online* (confianza, competencia operativa, la disposición a confiar y la percepción de seguridad ambiental) tienen sobre la satisfacción del consumidor al utilizar servicios de *home broker*. Se elaboró un cuestionario con escalas existentes en la literatura para medir los constructos propuestos y sus relaciones se analizaron en el contexto brasileño a través de ecuaciones estructurales. Los resultados muestran una fuerte relación entre la percepción de seguridad y la percepción de la competencia operativa, indicando además que la confianza influye significativamente en la satisfacción de los

consumidores brasileños cuando utilizan servicios financieros *online*.

Palabras clave: Agencia Inmobiliaria. Confianza. Satisfacción. Inversores *online*. Servicios financieros.

I INTRODUCTION

In Brazil, the market for securities brokers has gone through a number of changes in recent years. The stabilization of the economy, the development of information and communication technologies and the entry of international *players*, among other factors, have contributed to professionalize companies in the industry, turning this market more and more competitive and efficient, and bringing it to maturity. Accompanying these changes, consumers are also evolving, becoming more and more demanding. The outcome of these changes is a more experienced well informed and critical generation of consumers, who hold higher and higher expectations of the goods and services they use.

One of the aspects that draw attention in these changes is the migration of investors to the virtual environment. With the rise of online brokerages, called *home brokers*, access to the stock market has become simpler, especially for small individual investors. The great success of this system is reflected in a growing number of service users. It is found that the number of online *do-it-yourself* investors has grown at a remarkable pace since the first online broker opened its virtual doors in 1994 (KONANA, MENON, BALASUBRAMANIAN, 2000). In Brazil, the *home broker* system was implemented in March 1999 by the São Paulo Stock Exchange (Bovespa) and is similar to *home banking* services offered by the banking network.

In this type of long-term relationship, as it is the case of the relationship with the *home brokers*, it is necessary, however, that consumers feel satisfied (MORGAN, HUNT, 1994). A dissatisfied customer usually seeks to replace

the vendor with another alternative, if available, particularly in environments in which the cost of change is low (SANTOS FERNANDES, 2008). The reverse is also intuitive: satisfied customers are generally more inclined to stay in the relationship (PEPPERS, ROGERS, 2010).

Although it is accepted that there is a positive relationship between customer satisfaction and loyalty, the relationship between customer satisfaction and the duration of the relationship is more complex. We must then understand what factors affect customer satisfaction to ensure that it is maintained at satisfactory levels for the customer to continue transactions with the company. In online investment environments, issues such as security and operational competence are factors that may influence the final customer satisfaction (BALASUBRAMANIAN, KONANA, MENON, 2003). Harrison (2003) identified that, in financial services, trust is one of the most important issues. Morgan and Hunt (1994) argue that, to gain the trust of users, companies are more likely to increase their commitment to the company, which would increase the chance of retaining them for the next businesses, thereby increasing customer value throughout the relationship (PEPPERS, ROGERS, 2010).

According to Parasuraman, Zeithaml and Berry (1988), in traditional environments, trust and guarantees are typically generated by observations of consumers in relation to employee knowledge and responsibility; consumers evaluate the trust separately from other dimensions of service quality. However, in online environments, given the absence of interaction between individuals, trust grows as the services are used repeatedly, leading to increased customer interaction with the service provider (BALASUBRAMANIAN, KONANA, MENON, 2003). These interactions help the customer have more accurate perceptions of the service characteristics, such as reliable information, *web site* availability and efficiency in performing transactions.

In order to gain consumer trust, we must, however, understand how it is formed. In this sense, aspects such as security dimension play a crucial role in its construction. Kim et al.

(2010) propose a conceptual model that sets the determinants of both the perceived security and trust perceived by consumers in using electronic payment systems. Already Kim, Chung and Lee (2011) suggest that perceived security has a significantly positive effect on trust, whereas Balasubramanian, Konana and Menon (2003) suggest that customers appreciate the security provided by the regulatory institutions and it directly affects the trust they have in a virtual environment for investment. Thus, one can infer that a heavily regulated environment, in which the regulator is active, contributes to greater security of market *players*, and this generates greater trust among users of online home broker systems. In Brazil, the capital market in which brokers are inserted is highly regulated, with intense involvement of agencies such as the Brazilian Securities and Exchange Commission (CVM) and Bovespa, which could justify a sense security perceived by investors, thereby facilitating the investor's purchase decision in the virtual environment.

Given the increasing importance of this service to the financial industry in Brazil and because there is a gap of studies on this topic in the Brazilian context, we started with the following research question: *What factors influence the satisfaction of the investor in the transaction process in the environment of a virtual securities broker?* This is intended to study the effect that various constructs relevant to the use of online financial services have on customer satisfaction when using the online broker services. Based on an adaptation of the study by Balasubramanian, Konana and Menon (2003), an empirical model is proposed to validate the relationship between various factors and consumer satisfaction with services provided by Brazilian stock exchanges.

As this study focus on the context of online home broker services, and with data collected from Brazilian online investors, the relationships between various characteristics of the services offered, such as security and operational competence, leading consumers to trust the service provider and how these dimensions affect consumer satisfaction were analyzed.

2 LITERATURE REVIEW

2.1 Virtual environments

Because of the changes in the competitive environment, the traditional paradigms of strategic management have been questioned about their suitability before new organizational arrangements such as virtual environments (GULATI, NOHRIA, ZAHEER, 2000). Some authors even point out that, because the virtuality allows concurrency and integration of functions, there is an explosion or implosion of the value chain (VENKATRAMAN, HENDERSON, 1998). Others challenge the idea that the implications of these new communication and information technologies turn into qualitative changes (PORTER, 1999). Thus, virtual environments pose new managerial and strategic challenges, bringing the need to identify the critical factors for successful management of companies operating in virtual networks.

One of the main characteristics of virtual environments is that there is no direct human interaction, and the customer is “served” by the online interface of the service provider. In such cases, several conventional quality dimensions, such as physical appearance of facilities and employees, niceness and proactivity are little or not at all significant in these environments (ZEITHAML, PARASURAMAN, MALHOTRA, 2000). According to Balasubramanian, Konana and Menon (2003), the system interface and its efficiency through repeated interactions is what will measure consumer satisfaction.

Rossi (2003) describes interactivity as the most meaningful element to online consumers, saying it depends on the ease of navigation and response time of the portal to a request made by the user. The author also concludes that the ease of navigating the web *site*, the reduction of the uncertainty in the purchase on and adaptation of the web *site* to user characteristics are critical elements for the formation of preferences for *websites*. Finally, the author shows that the factors

considered extremely significant for customer loyalty are related to trust (guaranteed delivery of goods / service; privacy of personal data; reliable delivery, order confirmation by email after purchase; safe forms of payment) and convenience (search engines, finding information, navigability, ease of purchasing).

In this context, one of the segments that are appropriating the potential of the virtual environment is the industry of securities brokers, called home brokers. According to the CVM, in its document *Online Negotiation* (CVM, [20--]), the home broker, introduced in Brazil in March 1999, is a system that enables the investor to submit orders to buy and sell shares and options on the Internet, by means of brokers accredited by Bovespa for such purpose, in a do-it-yourself system. It is a communication system that acts as a channel between investors and brokers in order to facilitate and simplify the activity of buying and selling shares, allowing for greater participation of individual investors in the securities market. Some of the advantages of using the home broker are low initial investment, access to real-time quotes, agility and quickness in orders, greater transparency and access to free analyses by brokerage firms (ANDERSEN, 2006).

2.2 Satisfaction

Satisfaction can be described as the result of a combination of the expected level of expectation and disconfirmation (or confirmation) of these expectations throughout the interactions of transactions between the individual and the service provider (OLIVER, 1980).

Severt (2002) defines satisfaction as an affective consumer condition, resulting in an overall assessment of all aspects that make up the consumer relationship. Geyskens, Steenkamp and Kumar (1999), on the other hand, suggest that satisfaction can be divided into two different perspectives. The first perspective considers satisfaction as an affective predisposition sustained by economic conditions, the volume of sales or

profit margins obtained. This is an economic satisfaction, since it is related to economic performance. The second perspective does not take the economic aspect into account, and considers more psychological factors, such as compliance by the partner with a promise or ease of relationship with the aforementioned partner.

From a transactional point of view, the satisfaction will depend on each transaction occurred, but from the relationship point of view, such as in the relationship with securities brokers, the process is different. With each new consumer-company exchange, an individual's perception is fueled by new information that serves as fuel to determine the level of satisfaction at a given time. Thus, this study focuses on the psychological perspective of satisfaction. From this point of view, satisfaction is considered as an overall evaluation or attitude of the consumer on the company behavior resulting from interactions between both parties in the relationship. Therefore, customer satisfaction is not the result of a specific operation, but an overall assessment of the history of relationship between the parties (SHANKAR, SMITH, RANGASWAMY, 2003).

2.3 Trust

An important aspect in long-term relationships is trust, and how it establishes the relationship between organization and consumer. This construct has been a central theme in studies based on long-term relationships (SIRDESHMUKH, SINGH, SABOL, 2002; TALEGHANI, CHOOBEH, MOUSAVIAN, 2011), as in the case of the relationship of the subject matter of this study. Morgan and Hunt (1994) point out that, to maintain a long-term relationship with a company, the customer must have earned its trust and feel that the organization is committed to their interests and needs, offering them greater value. Thus, maintaining the relationship is directly related to the organization's ability to fulfill their promises, aspect which is directly related to trust, which emerges from the moment in which one party

believes the other (MOORMAN, DESHPANDE, ZALTMAN, 1993). Trust then plays the role of the glue that holds the relationship between the customer and the company.

Due to the numerous studies from different fields of knowledge, the conceptualization of the trust construct ends up generating varied definitions (SINGH, SIRDESHMUKH, 2000). To overcome this issue, Rousseau et al. (1998, p. 395) proposed a consensus definition of trust as "a psychological state comprising the intention to accept one based on positive expectations of the intentions or behavior of another vulnerability." This definition has two distinct parts: (1) In the first part, trust is related to the trade partner, accepting the contextual vulnerability. This definition is related to behavioral trust, and refers to the tendency of action of a party in relation to the other. (2) In the second part, trust is related to (positive) expectations about the intentions and/or behaviors of the trade partner. It is focused on the belief of one party that the other will act in a responsible manner, demonstrating integrity, and will harm the other party (ROUSSEAU et al., 1998). That is, the construct is separated into two dimensions: (1) trust as a psychological state and (2) a choice of behavior (SIRDESHMUKH, SINGH, SABOL, 2002).

In turn, Smith and Barclay (1997) indicate two dominant aspects related to trust: as a cognitive expectation and as a risk-taking behavior. These features complement the idea Moorman, Deshpande and Zaltman (1993) that trust involves vulnerability and uncertainty and that the actions of reliability of a party increases the vulnerability of the other. For the authors, uncertainty is a necessary dimension to trust, as trusting partners of which one is fully aware and holds control over their actions would be unnecessary for trade to be completed.

Similarly, Johnson and Grayson (2005) describe that interpersonal trust have cognitive and affective dimensions. Cognitive trust would be based on the belief or knowledge that a customer has about the competence and

reliability of a service provider. Affective trust, on the other hand, would be characterized by perceived security and existing strengths in a relationship of trust placed on a partner based on feelings generated by the level of care and concern they show. According Johnson and Grayson (2005), cognitive trust is objective, whereas the affective trust is a subjective evaluation process. Furthermore, Morrow, Hansen and Pearson (2004) suggest that affective trust have a positive effect on non-financial indicators of the cognitive performance, whereas the cognitive trust can have a positive effect on the financial performance.

Other factors that directly and indirectly affect satisfaction in transactions in the online environment, as well as the hypotheses of this study, are as follows.

2.4 Factors affecting satisfaction in purchasing home broker services: a model to assess the satisfaction of the online investor

The construction of satisfaction can be affected by several factors (CASALO, FLAVIAN, GUINALIU, 2007; GEYSKENS, STEENKAMP, KUMAR, 1999). In financial services, a factor appointed as determinant of consumer satisfaction is trust (HARRISON, 2003). Since financial service companies have a responsibility in managing the funds of their customers, trust becomes a critical factor in the customer-company relationship. However, to understand how it is constructed, it is important to point out other factors that influence its construction and its relationship with satisfaction in situations of recurring transactions, as in the case of transactions in home brokers. The following describes the factors that may affect its construction and presents the assumptions of the model being tested.

Based on relationships established in the literature, this study proposes a parsimonious model for understanding the formation of

trust and how it relates to investor satisfaction with providers of home broker services. Based on an adaptation of Balasubramanian, Konana and Menon (2003) model, we considered the positive direct effect of trust on satisfaction and the indirect effects of security, operational competence and willingness of customer trust.

In adapting the model to the Brazilian case, we did not take into account the influence of price, because, since the service occurs recurrently in the case of the sample used for this study, we only evaluated the interaction of customers with the same broker. Thus, one can infer that the price charged for the service provided is not relevant to influence the satisfaction factor, as the consumer, if unhappy, could switch brokers, since the switching costs would be low. This argument is in line with Santos and Fernandes (2008), who identified, in the Brazilian context of financial services and airline industry, that switching costs have low influence on repurchase intentions, indicating that the creation of mechanisms that make it more difficult for customers to leave is not enough to keep them. Thus, the price factor in this particular case can be considered irrelevant to affect the individual's satisfaction, since the broker may be changed without major costs involved.

The proposed model (Figure 1), adapted from Balasubramanian, Konana and Menon (2003), postulates that the predisposition to trust directly and positively affects the perceived operational competence (H1) and the consumer's perception regarding the security of the investment environment (H2). In turn, the security of the investment environment positively affects the perceived operational competence (H3). With regard to the overall satisfaction with the home broker service provider, it is directly influenced by trust (H6) and indirectly by perceived operational competence, which positively influences trust (H5), and the security of the investment environment, which also positively influences trust (H4).

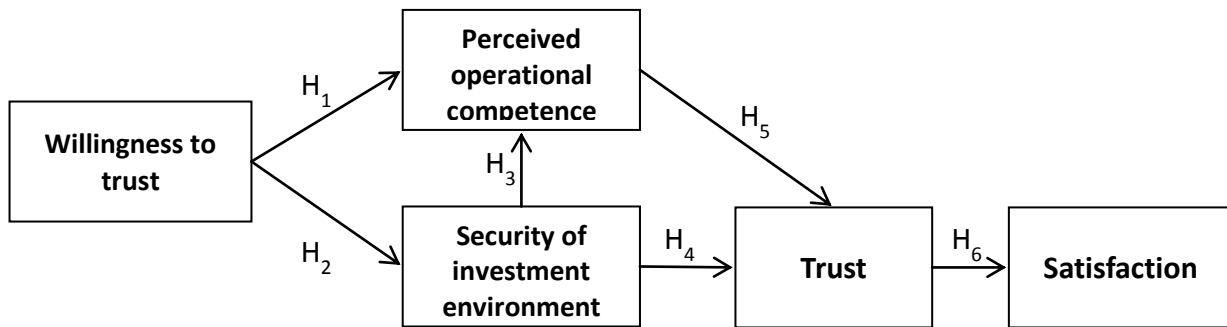


FIGURE 1 – Proposed model

Source: Adapted from Balasubramanian, Konana and Menon (2003)

Each construct is discussed, and explanations for each model relationship are provided below.

2.4.1 Willingness to trust and perceived operational competence

A little understood aspect in the literature is the willingness to trust. According to Balasubramanian, Konana and Menon (2003), willingness or inclination to trust is the result of personality traits and points of view of the individual, which provide them with a general tendency to trust others. Trust is an endogenous variable in the model, since creating it in the individual depends on actions by the company, whereas willingness to trust is an external variable, as it is a characteristic of each individual, and thus is not subject to management action.

As for operational competence, it can be defined as the consumer's perception about the ability of a virtual company to present high levels of operational performance on a daily basis (KONANA, MENON, BALASUBRAMANIAN, 2000). According to Balasubramanian, Konana and Menon (2003), perceptions of operational competence are particularly relevant when the trust is formed through repeated interactions. It is established among behavior researchers that individuals act according to a "confirmatory bias" that leads them to select, interpret and remember information that is consistent with their attitudes (TAYLOR,

BROWN, 1988). When some aspect is difficult to observe, making it subjective is common. In such cases, evidence seems to indicate that previously established beliefs are more valuable than the need for scrutiny of reality (LORD, LEPPER, ROSS, 1979). High willingness to trust can help form positive attitudes towards the trusted object, leading to more generous assessments of competence. Conversely, low willingness to trust can lead to lower evaluations of operational performance and the elimination of more positive signs of performance (BALASUBRAMANIAN, KONANA, MENON, 2003). Thus, we propose the first hypothesis of the model:

Hypothesis 1: A consumer's willingness to trust has direct and positive effect on operational competence perceived by them in relation to the use of the online broker services.

2.4.2 Willingness to trust and perceived security of the environment

Investors who are naturally willing to believe in honesty of society in general will more likely believe in the security provided by control systems defined by regulatory bodies (MCKNIGHT, CUMMINGS, CHERVANY, 1998), such as the CVM and the Bovespa. Hence, within a regulated environment, the perceived security of the environment can be conceptualized as the consumer's perception of

security in carrying out transactions with a given company inserted in institutionally or socially regulated industries (BALASUBRAMANIAN, KONANA, MENON, 2003).

The importance of guarantees and institutional structures that regulate economic activity grows in the absence of personal relationships between service providers and customers (SHAPIRO, 1987). According to McKnight, Cummings and Chervany (1998), trust based on institutional structure derives from two components: situational normality and structural certainty. The first is the belief of the individual that everything is “right,” i.e., appearances, behaviors and environment are in line with expectations in that situation, and the second arises from the imposition by the legal and socially sanctioned institutions of procedures and integrity standards. By creating regulations, guarantees and means for legal resources, these institutions define standards. In the Brazilian market, these institutions are represented by the CVM, Bovespa and CBLIC. In the context of online investment, structural certainty is of great importance because it allows the monitoring of the service quality and transparency in the market.

Thus, considering the virtual environment as a channel between the service provider and the consumer, it is expected that a greater willingness to trust the service offered positively affects security perceived by the consumer in the system. Thus, we propose the second hypothesis of the model:

Hypothesis 2: A consumer’s willingness to trust has direct and positive effect on security perceived by them in relation to the use of the online broker services.

2.4.3 *Perceived security of the environment and operational competence*

Guarantees and institutional structures that regulate activities can work towards providing guidance to organizations on how

they should operate (SHAPIRO, 1998), outlining responsibilities, as well as defining how they should behave in operational terms. In Brazil, CVM has issued several rules on how brokers should behave in operational terms with respect to the ability of systems, scales, contingency planning (in case of systems failure), business opportunity, quality of reporting, online discussion forums, and privacy. Thus, based on these arguments, we propose Hypothesis 3:

Hypothesis 3: The security of the investment environment perceived by the consumer in relation to the Home Broker system provided by a broker will have direct and positive effect on operational competence perceived by them in relation to the use of home broker services.

2.4.4 *Perceived security in the environment and trust*

In the online environment, trust can be defined as the acceptance of a state of psychological risk by the Internet user, based on positive expectations of the intentions or behaviors of virtual the service provider, and a critical aspect for online transactions (GEFEN, 2000; YOON, 2002). Chiung-Ju and Hui-Ju (2009) define trust in the virtual environment as a belief that the consumer has about the reliability, benevolence and integrity of the online service provider.

As already stated, structural and institutional guarantees exist when social or legally sanctioned institutions impose standards of performance and integrity to economic agents. Such structural guarantees increase perceived security in the trading environment, which reflects the belief that regulatory institutions safeguard the interests of investors (BALASUBRAMANIAN, KONANA, MENON, 2003), and ensure standardization of transactions for the sector. Structural guarantees are important for the virtual environment, as they can monitor the

quality of service provided by brokers on behalf of investors. Moreover, regulatory agencies act to ensure greater transparency in the sector and can implement guidelines that force companies to ensure minimum levels of security (BARBER, ODEAM, 2000). In parallel, as the market itself acts on the security, brokers that cannot be trusted or that provide bad services quickly become known to the public and run the risk of being avoided. Balasubramanian, Konana and Menon (2003) also claim that when security is perceived as high, investors tend to deposit more trust in the broker, even in the absence of personal contact. In this context, we then propose the following hypothesis:

Hypothesis 4: The security of the investment environment perceived by the consumer in relation to the Home Broker system provided by a broker will have direct and positive effect on the trust perceived by them in relation to the use of home broker services.

2.4.5 *Perceived operational competence and trust*

To investigate the trust of investors in online financial services, Shih-Ming, Hsiu-Li and Hui-Min (2012) confirmed that trust in the service provider is an important factor in their decision to continue with the intention of using the services. If customers trust the online service provider and believe in the reliability and integrity of the service provider, they will probably feel more comfortable when carrying out transactions and disclosing their personal information online.

In the online environment, perceptions of operational competence are particularly relevant when the trust is formed through repeated interactions (BALASUBRAMANIAN, KONANA, MENON, 2003). When using the home broker tool, several factors are taken into consideration when defining the operational competence of the services offered, such as execution time of transactions and prices related

to them, quality of research results, and quality/promptness assistance (KONANA, MENON, BALASUBRAMANIAN, 2000). Thus, it is expected that the operational competence perceived by the consumer in a virtual broker positively affects the trust they feel in relation to it.

This means that the trust is established by means of perception of the competence of the brokerage agent, responsible for implementing the structure and processes of operation and trading. According to Giffen (1967), three dimensions influence the trustworthiness of sources: (1) skill or expertise, which captures the amount of relevant information available; (2) trust/security of the origin of information, which captures consistency; and (3) intent of the source towards the stakeholders. The first two dimensions are relevant for analysis of operational competence of brokers. On the other hand, one can also infer that, in such environments, the trading interface may seem quick and convenient, but one cannot say that processes in the background are fully known, such as the flow of orders, price discovery and the execution of orders (KONANA, MENON, BALASUBRAMANIAN, 2000). Thus, the perception of operational competence can generate trust, because of the interactive nature of the online investor. Thus, we propose the following hypothesis:

Hypothesis 5: The operational competence perceived by the consumer in relation to the Home Broker system provided by a broker will have direct and positive effect on the trust perceived by them in relation to the use of home broker services.

2.4.6 *Trust and satisfaction*

In a traditional setting, the notion that satisfaction precedes trust is already well established in the literature (GEYSKENS STEENKAMP, KUMAR, 1998; TAM, 2012), as trust is an aggregated assessment at some higher

level (SELNES, 1998), whereas satisfaction is an immediate post-purchase response that reflects the degree to which a service met customers' expectations. Thus, satisfaction serves as a reliable source. A rewarding experience by customers in relation to a service provider can enhance the reliability and perceived integrity by the customer (SINGH, SIRDESHMUKH, 2000). Singh and Sirdeshmukh (2000) proposed a circular relationship between trust and satisfaction. According to these authors, in a pre-purchase situation, it is necessary that the customer feels confident doing the transaction.

Similarly, in online transactions, consumers need to trust before purchasing. However, unlike the offline environment, research indicates that in the virtual environment that relationship happens in reverse, i.e., trust precedes satisfaction, since it plays a central role in the online consumer's purchase decision, as in the purchase of online books (CHIOU, PAM, 2009), auctions (PO-HUNG, 2013) and tickets (SIU, ZHANG, LAM, 2010). Johnson, Bardhi and Dunn (2008) suggest that trust in technology precedes consumer satisfaction in the online environment.

Thus, customer satisfaction can only be achieved when customers feel comfortable to place orders through the Internet, and this only occurs when the consumer trusts the service provider. Other studies support this thesis, as the research of Harris and Goode (2004), who identified this direct positive link of trust preceding satisfaction. However, this relationship is still unclear. Taleghani, Choobeh and Mousavian (2011) identified that on tourism service sales web sites, satisfaction precedes trust. According to them, while it is possible that the customer does not trust online shopping, actions that stimulate consumer satisfaction during the buying process can ensure the buying decision even with the consumer not fully trusting the service provider. This finding may be related to the degree of relationship with the provider and the type of service offered.

Liang and Wang (2005) suggest that satisfaction alone cannot guarantee the repurchase

behavior of the consumer. According to them, only when consumers start to trust an online service provider is that they show the recurring purchase behavior. Thus, in the virtual environment, trust becomes an even more critical factor (WANG, EMURIAN, 2005) because, unlike offline retail stores, the inability to interact with a seller and the goods and the high degree of intangibility of virtual environment contribute to increased risk perception of consumers about the online transactions. Consequently, trust can be a key aspect to facilitate the decision of Internet shopping (ROMAN, 2007).

When trying to identify the roles of satisfaction and trust and their consequences in relational exchanges, Garbarino and Johnson (1999) concluded that different factors mediate the future intentions of customers with weak and strong relationships with companies (also called transactional and relational customers). The first important conclusion is that the overall satisfaction determines the future intentions of customers with little relationship with the company. As for relational customers, elements mainly responsible for the great future intentions are trust and commitment. Thus, transactional marketing programs based on management's satisfaction would be more effective for customer with little relationship, whereas relationship marketing programs targeting relational customers should be focused upon building and maintaining trust and commitment, not satisfaction (GARBARINO, JOHNSON, 1999).

As the operational competence and environmental security concern aspects of consumer perception on the system used, leading them to use (or not) the system and to create (or not) a relationship with the company providing the service, we chose to test a model in which trust serves as a mediator between the variables related to the system and satisfaction (because without trust and without using the system, the consumer would not be able to generate perceptions of satisfaction). Based on this argument, in the case of relational exchanges, the relationship between

trust and satisfaction in virtual environments enables us to propose the following hypothesis:

Hypothesis 6: The consumer's trust on the Home Broker system provided by a broker will have direct and positive effect on the trust perceived by them in relation to the use of home broker services.

3 METHODOLOGY

In order to test the hypotheses formulated for the study, we conducted a *cross-sectional survey* (PARASURAMAN, GREWAL, KRISHNAN, 2006) with a non-probabilistic sample of the population of interest. Structured questionnaires were presented to consumers of home broker services at a single moment in time.

3.1 Implementation of variables

This study uses scales already prepared and tested in the literature for the measurement of all the constructs involved in the model structure. Thus, the following scales suggested and tested by Balasubramanian, Konana and Menon (2003) were used:

- Satisfaction: comprises 2 items;
- Willingness to trust: comprises 2 items;
- Perceived operational competence: comprises 6 items;
- Perceived trust: comprises 4 items;
- Perceived security: comprises 7 items.

Items included in the survey instrument were translated into Portuguese by professionals, with steps of translation and back translation, which was used to ensure that the scales in Portuguese approached the maximum of the original.

A pre-test of the questionnaire was conducted with a small sample of the population of interest to evaluate the understanding of respondents on this first version. The results obtained from this initial pre-test served to refine the questionnaire and draft a new version. This

second version also underwent a final pre-test, in which we checked whether any last adjustment was necessary both in translation and in the presentation of the questionnaire. With the results of the latter pre-test, a final survey instrument, with total 21 items measured by five-point Likert scale was developed, in addition to seven items on demographic variables.

3.2 Data collection sample and procedures

The population studied was the users of online brokerage services (individuals only). Thus, the survey only measured perceptions of investors who were already using the home broker services and therefore could respond on their actual perceptions of such systems.

All questionnaires were self-administered, with a link to the *web site* containing the survey, which had emailed to the customer list available. The link to the survey instrument was sent to 7800 active customers of several large Brazilian brokers. The list was obtained from the database of a web site specialized in investments. The final sample included only a single broker's investors (the same team responsible for the investments web sites that led to the email list) and had used the same home broker system at least once in the past six months.

A sample of 298 questionnaires was obtained (response rate of 3.82%); 43 were eliminated due to lack of data and filing errors. Thus, the final sample consisted of 255 valid questionnaires (3.27%). Of these, 35.3% were female and 64.7% male. Regarding marital status, the majority of respondents (40.8%) were married and 23.5% were single. With regard to the average family income, 38.8% of participants indicated family income exceeding R\$10 thousand, 26.7% indicated family income to range from R\$5 thousand to R\$10 thousand, 21.5% ranged from R\$3.5 thousand to R\$5,5 thousand, and, finally, 13% of respondents indicated family income not to exceed R\$3,5 thousand. Respondents were average 41.85 years of age, with a standard deviation of 13.97 and a confidence interval of 95% between 40.13 and 43.58. The average

volume of funds traded by respondents through the home broker system was R\$177,351.90, with standard deviation of R\$27,419.35. Total funds invested by the customers surveyed to the survey date exceeded R\$45 million.

4 RESULTS

4.1 Test for common method variance

Since both dependent and independent variables collected by means of the survey instrument resulted from opinions collected from the same respondents, data was subject to issues of common method variance. Following the suggestion of Podsakoff and Organ (1986), a Harman factor test was used to examine the extent to which this bias would be present in the data. The results of a principal components analysis on all measured items indicated the presence of five factors with eigenvalues greater than one, with no factor being responsible for most of the explained variance (the factor that explained most variance captured only 30% of total variance). Given this result, as indicated by Podsakoff and Organ (1986), data does not appear to present problems of common method variance in the case analyzed.

4.2 Measurement model

To test the validity, unidimensionality and reliability of the scales used in the measurement model, we performed a confirmatory factor analysis (CFA). An analysis of covariance matrix of the standardized residuals of the CFA indicated that several items were contributing to the poor fit of the model. According to these results, the model was adjusted and refined with the elimination of three items belonging to the scale of competence, a trust scale item and an item of the security range. The final measurement model with 16 indicators showed good fit indexes (RMSEA = 0.048 with CI 0.032 to 0.062, CFI = 0.97, IFI = 0.97, TLI = 0.96, $\chi^2 = 148.00$, d.f. = 94, $p < 0.001$, $\chi^2 / \text{d.f.} = 1.57$).

The face validity for all scales used was guaranteed during the development of the research instrument (choice of scales already used in the literature, careful translation and pre-testing). To check the nomological validity, we analyzed the correlation matrix between constructs, with all correlations being significant and in the expected direction (Appendix 1). With respect to convergent validity, the average variance extracted for each construct (AVE) was calculated. All AVE values calculated ranged from 0.55 to 0.87, which indicates the convergent validity of the scales used. With regard to internal consistency and reliability of the scales used, all scales met the minimum reliability levels indicated by the literature (FORNELL, LARCKER, 1981), with values ranging from 0.73 to 0.93 for the alpha coefficient and from 0.70 to 0.89 for the composite reliability. Finally, all shared variances were lower than the variance extracted by the items measuring the constructs, which indicates appropriate discriminant validity.

4.3 Structural model

Once scales and the constructs used were validated, we proceeded with the estimation of the structural model to test the research hypotheses. All indexes indicated good fit of the model to the data. The $\chi^2/\text{d.f.}$ ratio was 1.58, and therefore less than the maximum value of 3.0 suggested by Byrne (2010). Moreover, the incremental adjustment indexes are shown above the minimum value of 0.90, with 0.97 CFI, 0.96 TLI and 0.97 IFI. In turn, the absolute fit indexes showed values below the limit of 0.08 established by the literature (HU, BENTLER, 1999; BYRNE, 2010; HAIR et al, 2009), also indicating good model fit. RMSEA was 0.048 (0.033 to 0.062 CI) and SRMR was 0.039. Given the indexes presented, we conclude that the fit of the proposed model is satisfactory.

With checking of the fitting of measurement and structural models proposed, we assessed the estimated coefficients for the causal relationships between the constructs (Table 1).

Each of the hypotheses of the research was checked with the analysis of the magnitude, direction and significance of the standardized coefficients,

estimated by the structural model (BYRNE, 2010). Figure 2 illustrates the magnitude and significance of the relationship found.

TABLE 1 – Estimated standardized coefficient, hypotheses and significance

Proposed relationship	Standardized coefficient	Sig.	Hypothesis checked
H ₁ : Willingness → Competence	0.11	0.135	no
H ₂ : Willingness → Security	0.20	0.030	yes
H ₃ : Security → Competence	0.87	< 0.001	yes
H ₄ : Security → Trust	0.54	0.005	yes
H ₅ : Competence → Trust	0.48	0.023	yes
H ₆ : Trust → Satisfaction	0.89	< 0.001	yes

Source: Prepared by the author

According to the analysis conducted, the model was able to explain approximately 98% of the observed variance in the trust of consumers regarding the use of the home broker services, which indicates that the construct can be well explained by the variables used. The same can be said of investors' satisfaction with this type

of service. With a proportion of explained variance of 79%, we noticed that the proposed model has captured much of the variability of such satisfaction. The perceived operational competence, on the other hand, had 55% of its variance explained, whereas security of the investment environment had only 15%.

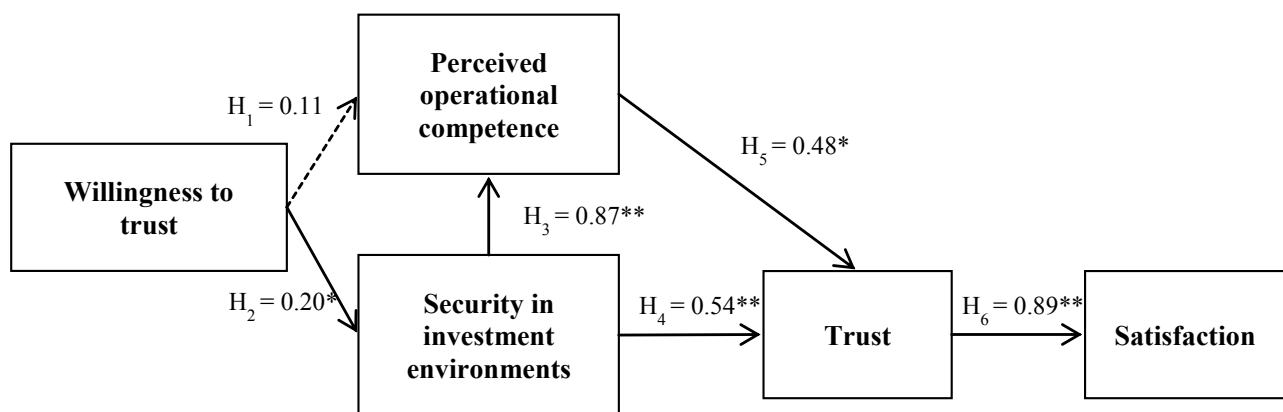


FIGURE 2 – Model and relationships found (* indicates $p < 0.05$; ** Indicates $p < 0.001$)

Source: Prepared by the author

4.4 Discussion of results

Of all hypotheses, only H1 was not supported, contradicting the results of Balasubramanian, Konana and Menon (2003). The other five cases were all confirmed. We will first discuss the confirmed hypotheses. At the

end of this section, we seek arguments about the rejection of H1.

The impact of willingness to trust on perceived security was significant (p -value= 0.030), confirming hypothesis 2 in which willingness to trust directly and positively affects the perceived security. This result aligns with the argument

that the literature whereby individuals who are naturally willing to believe in the honesty of society in general are more likely to believe in the security provided by control systems defined by regulatory bodies (MCKNIGHT, CUMMINGS, CHERVANY, 1998). In the case of the customer-broker relationship, the existence of institutions such as the CVM and Bovespa seems to suggest that willingness to trust will effectively and positively influence the perception of security of the environment by the investor. This suggests that investors may be positively evaluating the security of online environments of home brokers based on their willingness to trust the broker as a whole and the regulatory institutions of its operations, and are in line with what is argued in the literature (BARBER, ODEAN, 2000; SHAPIRO, 1987). So, in a standardized environment where regulatory institutions are strong and reliable, they play an important role in the formation of consumer trust.

Hypothesis 3, in which perceived security would have a direct and positive effect on perceived operational competence was verified ($p\text{-value} < 0.001$), which indicates that, in the investor's mind, security aspects play a major role in the formation of perceived operational competence of the online brokerage (standardized coefficient for this relationship was 0.87). In the Brazilian case, as CVM serves as rigidly with respect to monitoring the market, issuing standards and guidelines on how brokers should function in operational terms with respect to the ability of systems, scales, contingency planning (in case of systems failure), business opportunity, quality of reporting, online discussion forums, and privacy, it seems to positively affect this perception, making the investor realize the operational competence of brokers, since they are under rules of the CVM and Bovespa.

The perception of safety also significantly affects trust, as suggested by Hypothesis 4 ($p\text{-value} = 0.005$). This result can be interpreted as indicating that users perceive the home broker service as safe, tend to trust it and its operational

competence more (standardized coefficient of 0.54), which makes sense in financial transactions. This is important to indirectly positively affect the individual's satisfaction by means of trust. As already pointed out by Geffen (2000) and Yoon (2002), in online transactions, trust is a crucial factor for transactions to be carried out, particularly in the financial services environment (HARRISON, 2003). Accordingly, the results found here are in line with the literature, indicating that the perception of security plays an important role in building trust, factor which will positively affect the ultimate satisfaction of the individual with the broker for the relationship between both parties remain effective.

Hypothesis 5 (verified - $p\text{-value} = 0.023$) suggests that perceived operational competence directly and positively affects trust. This reveals that there is some influence of operational competence perceived by investors on their trusting the online broker services (standardized coefficient of 0.48). Factors taken into consideration in defining the operational competence of the services offered, such as execution time of transactions and prices related to them, quality of research results, and quality/promptness assistance are important to positively influence investor's trust, confirming the argument of Shih-Ming, Hsiu-Li and Hui-Min (2012) that the decision to continue with the intention of using online financial services is linked directly to trusting the service provider, and this is built by means of the provider's operational competence. Given these factors, trust in the broker tends to increase throughout the relationship.

Thus, just as the perception of security affects trust, positive perceived operational competence helps in building trust in long-term relationships, as in the case of the relationship with online brokers, which will also indirectly and positively affect satisfaction of the individual. This means that both factors are important for building trust and indirectly influence the ultimate satisfaction of the individual during the relationship with the brokerage.

Hypothesis 6, on the other hand, presented direct and positive effect of investor's trust on satisfaction ($p\text{-value}<0.001$), indicating a strong relationship (standardized coefficient of 0.89), which reinforces literature argument that in virtual environments, trust precedes satisfaction (CHIOU, PAM, 2009; PO-HUNG, 2013; SIU, ZHANG, LAM, 2010). Findings show the factors that lead to the construction of satisfaction in long-term relationships in the home brokers environment. On the crucial importance of trust in online environments, we showed how dimensions that directly affect their formation, such as the perception of security and perceived positive operational competence, also help in long-term relationships, as in the case of the relationship with online brokers, which will also indirectly and positively affect the individual's satisfaction (indirect effect of magnitude of 0.846 of security in satisfaction and operational competence of 0.423 on satisfaction). This means that both factors are important for building trust and indirectly influence the ultimate satisfaction of the individual during the relationship with the brokerage. We also evidenced how trust is important for the individual to have positive satisfaction when they trust the broker. Thus, actions should primarily be towards the formation and consolidation of investor's trust, as it turns out that investors' trust in home broker services offered by online brokerage firms has a strong influence on their satisfaction with the services received. It is noteworthy that in relational exchanges services, the trust factor is crucial to building the longevity of relationships (GARBARINO, JOHNSON, 1999). These actions should be clearly communicated to users in order to increase the sense trust when they are transacting with brokers.

Finally, we did not manage to verify hypothesis 1. When considering the impact of willingness to trust on the perceived operational competence, we found that this effect was not significant ($p\text{-value}= 0.135$), causing it to be rejected. Willingness to trust presented

no significant effect on the perception of competence in the context of online brokerage researched. One possible explanation for these results, which contradict previous research (BALASUBRAMANIAN, KONANA, MENON, 2003), may be linked to the fact that, in the Brazilian context, the perceived operational competence with regard to the home broker service does not depend on the customers' willingness to trust it. As the Brazilian environment, with regard to brokerage firms, is relatively consolidated with rules and trustworthy institutions, the existence of willingness to trust is not necessarily relevant, in the sense that it affects the perception of operational competence that an individual may have. This means that the perception of operational competence does not rely on that individual's willingness. In this sense, one can investigate other factors that may positively influence the individual, such as factors linked to technical aspects of the virtual environment and how they could influence the individual's perception during the relationship.

In summary, the results of the model used establish direct, positive and significant effects between the constructs for all hypotheses tested, and indirect effects on the formation of satisfaction, except for the first hypothesis (H1). The magnitude of the effects was, in most cases, greater than 0.50 (except for the effect on perceived willingness to trust on security, which was 0.20, and the Competence → Trust relationship, which came close to 0.50, reaching 0.48), and the two strongest effects observed in the relationship between perceived security and perceived operational competence (0.87) and in the relationship between trust and satisfaction (0.89).

5 CONCLUSIONS

This study contributes to increase understanding of individual behavior in repeated transactions in the virtual environment in

financial services, particularly in respect of home broker services. Using the national context as the stage of investigation, we sought to evaluate investor's satisfaction in this environment and how the formation of investor's trust in online brokerage services is crucial to positively affect the satisfaction element. The survey results indicated that it was possible to identify relevant factors that influence trust and how this affects satisfaction of consumers of this kind of service. The theoretical contribution of this work reinforces a stream of literature that indicates that trust precedes satisfaction in the virtual environment (CHIOU, PAM, 2009; PO-HUNG, 2013; SIU, ZHANG, LAM, 2010), vis-à-vis authors suggesting that satisfaction precedes trust (TALEGHANI, CHOOBEH, MOUSAVIAN, 2011).

The results and relationships presented, however, reveal other relevant contributions to understanding the Brazilian context of home broker services, as they evidence some aspects of Brazilian consumer behavior consistent with consumers of other nationalities. First, this study confirms the importance of using cognitive constructs in the study of consumer behavior and the significance of these constructs in understanding the consumption of online services. As already pointed out by Johnson and Grayson (2005), the perception of competence and the perceived reliability of a service provider, aspects related to cognitive confidence, play an important role in the formation of trust.

Second, there was also a strong influence of constructs perceived security (with indirect effect of magnitude of 0.846) and trust on customer satisfaction in online environments, especially home broker services. The effects of these constructs on satisfaction had already been identified by Balasubramanian, Konana and Menon (2003), but the impact of these same constructs on the Brazilian online service scenario had not yet been checked. We were able to detect that perceived security and trust in a company that offers online services impact strongly customer satisfaction with the services offered.

Third, the use of a construct little investigated in the literature, such as the willingness to trust construct also increases the understanding of how trust and satisfaction are formed. At first, willingness to trust slightly affects the perception of security. This perceived security, on the other hand, appears to act strongly and directly on the perceived operational competence and trust, and also to strongly and indirectly influence satisfaction, by means of its action on these two constructs. Finally, it was also seen that the perceived operational competence was strongly influenced by the perceived security and somehow directly influences trust, which has a strong and direct influence on consumer satisfaction with online financial services. In summary, the results presented here contribute in some way to increase understanding in the formation of consumer trust in financial services in virtual environments, thus reinforcing the idea that the virtual environment trust precedes satisfaction.

5.1 Management implications

With regard to management implications, this article presents some insights that may be useful to companies that provide online services, particularly brokerage firms. Customer satisfaction and business relationships in virtual environments can be better managed when issues of competence and trust are worked simultaneously. Results support that vision with trust and security, two variables of great importance to customer satisfaction of home brokers in Brazil. This indicates that it is important that financial service providers seek to offer quick answers processes, reliable, and easy find information and ease of navigation on their pages, and invest in ways that increase security of operation, improving the perception that the individual will have to carry out a transaction on its web site. Managers should focus on efforts to clarify security devices used in their business operations, and work in a way that may create a perception of security in the individual, explaining how regulations and rules have a positive impact on their

operations. Furthermore, an optimized, fast quality environment will positively influence the perceived operational competence and the trust, thereby affecting customer satisfaction.

5.2 Limitations and future research

One limitation of the study relates to the collection and processing of data. Regarding external validity of the results, given the sample of convenience and the fact that the data reflects but the view of home broker service users of some brokers in Brazil, it is possible that the relationships observed in the study cannot be generalized to any and all consumer of such services.

Regarding future research, replication of the model tested with a larger number of consumers with profiles different from those studied in this work and other services offered in virtual environment would be a good way to validate and expand the scope of the results obtained here. Future research can also explore other scales for the constructs used in the model or conceptually similar constructs, comparing their results with those obtained here. Finally, it would be interesting to investigate possible moderating effects that some demographic variables (such as gender, income and age) could have on the relationships observed.

Finally, one should investigate why Hypothesis 1 was not confirmed, contradicting previous studies. We must seek what factors actually influence the perceived operational competence by the user when carrying out online transactions.

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APPENDIX A

Table of correlations and statistics describing the constructs

	Satisfaction	Trust	Security	Competence	Willingness	Average	Deviation
Satisfaction	1	0.675	0.735	0.613	0.149	4.4	1.31
Trust	0.675	1	0.725	0.565	0.184	4.4	0.92
Security	0.735	0.725	1	0.612	0.135	4.4	0.92
Competence	0.613	0.565	0.612	1	0.257	4.6	0.77
Willingness	0.149	0.184	0.135	0.257	1	4.2	0.86

Note: All correlations were considered significant at the level of 0.05.