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Identification of influent factors on products purchase through internet

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Abstract

The aim of this study was to identify influential factors in the adoption of online channels for purchasing books, CDs or DVDs. With this aim in mind, the main references we adopted were UTAUT (Unified Theory of Acceptance and Use of Technology) model by Venkatesh et al. (2003) and models developed by Heijden, Verhagen and Creemers (2003) as well as Bramall, Schoefer and McKechnie (2004). Descriptive research was carried out with offline buyers of these products, and the collected data were submitted according to uni-, bi- and multivariate statistical techniques. The data suggest that attitude toward using technology, trust and performance expectancy are among the most important factors driving offline buyers' decision to migrate online.

Keywords

E-commerce, technology use, UTAUT model, offline channel, online channel.

Introduction

Over the course of administration's evolution, prevailing business models have thoroughly described the most relevant paths to profitability. In the past, the capacities required to focus directly on the utmost profitability of relationships with customers were not clear-cut and easily identifiable. Today, information technology tools allow companies to associate their investments in customer relationships directly with customer-generated returns. The concept of technology offers a broad range of applications, from information supplier to entertainment, from communication medium to exchange market, from leisure to business. As a catalyzing factor for processes

involving the handling of information, this technology can strategically influence all of the processes it supports. McKenna (1992:1) posits that “technology is transforming choice and choice is transforming the marketplace.” Technology created the promise of “anything, anywhere, anytime.” With competition expanding to global markets and a host of information and communication resources enabled by technology and new methods, customers have become increasingly empowered.

In the last four years, among the most marketed categories over the Internet have been “books, newspapers and magazines” and “CDs, DVDs and videos,” which together account for volumes ranging from 30% to 48% of the period’'s overall sales (BALBONI, 2008:97; E-BIT, 2006b:17; VEJA, 2005:46). This share of purchases is expected to decrease, in line with lower exchange rates, growing use of the Internet for purchases in general and the dissemination of music and films over digital channels (MICHEL, 2006), albeit insipient in Brazil. However, the trade of books, CDs or DVDs still constitutes a significant portion of e-commerce revenues in the Brazilian consumer market: 26% and 16%, respectively, of total users that acquired products and services, according to a survey conducted by the Internet Management Committee (CGI) (BALBONI, 2008:96).

Given the evolution of technology and its possible implications for consumer behavior, the following question arises: which factors influence the decision to buy books, CDs or DVDs in the online environment?

Based on what has been exposed, the goal of this study is to identify the determinant aspects in a consumer's adoption the Internet, or *online channels*, in the process of buying books, CDs or DVDs.

Theoretical foundations

This section presents the main concepts that underpin the theoretical framework of our research: 1) Internet and e-commerce and 2) Models of acceptance of information technology.

Internet and E-commerce

Technology affects marketing in two basic ways: with new products or new processes (PERREAULT & MCCARTHY, 2002:68). In this sense, technology supporting marketing processes has played a major role in the relationship between firm and customer, allowing firms to provide their sales force with more information and use it to their and their customers' benefit.

In the assessment made by Churchill and Peter (2000:46), Internet technology, in particular, is potentially useful throughout the marketing process, insofar as it provides access to a large amount of demographic data and other information on the firm's external environment. In addition, it presents a powerful means of communication with current and potential customers, allowing firms to supply information about themselves and their products, promote long-term business relationships and offer products for sale. They can also obtain a direct return on products, promotions and other activities.

Boone and Kurtz (2001:123) add that the Internet also facilitates marketing activities concerning the purchase of goods and services, the enhancement of market size and the reduction of costs with third parties. However, although one of the most fundamental requirements of a marketing professional is knowing how to identify the size, scope and characteristics of the market where the business will compete, the size of the Internet market is still the object of some controversy. This controversy is the result of a series of factors, including: increased penetration of personal computers and, consequently, Internet access; a wider range of items available to buy electronically; customers' familiarity with Internet shopping; and their experience with the advantage of such transactions (REIBSTEIN, 2001:201).

Computer use is mainly associated with demographic characteristics such as level of schooling, age range and household income (BALBONI, 2008:82). According to a survey conducted by the Internet Management Committee (CGI.br), between September and November 2007, 47% of the Brazilian population aged 10 years and older has never used a computer; besides that, only 40% of the population can be considered a frequent or habitual user (BALBONI, 2008:146). Personal computers are present in 24% of Brazilian homes, in different regional proportions. The highest growth was recorded among families with an income of three to five minim-wage salaries, families that also constitute the main target of public policies for digital inclusion through fiscal incentives. In these homes, penetration jumped from 23% to 40% (BALBONI, 2008:79).

The same survey found that 59% of the Brazilian population has never accessed the Internet for the following reasons (Table 1):

Table 1 – Main reason for never having accessed the Internet

Answer	Percentage in relation to people who have never accessed the Internet (multiple answers)
Lack of computer /Internet skills	55
Lack of interest or need	39
No way to pay for access	31
No place to access	18
Does not know / did not answer	15

Source: adapted from Balboni (2008:168).

According to Balboni (2008:79), access to the Internet is also connected with socioeconomic and regional factors. In 2007, the Internet reached 17% of all Brazilian homes. In Brazil, 45 million people already habitually use the Internet, accounting for 34% of the population. Internet use among families with an income above five salaries minimum reaches 74%, with a growing participation in relation to that recorded in previous years of families with a lower income: 44% in families whose income is between two and three minimum-wage salaries (25%, in 2006), and 58% in families whose income is three to five minimum salaries (41%, in 2006) (BALBONI, 2008:82). The main location for Internet use in Brazil is no longer home (40%). Public centers with paid access, such as LAN houses and Cyber cafés are now in the lead (49%) (BALBONI, 2008:85), which may explain the expanded participation of lower-income families.

In 2004, 2 million Brazilian homes had broadband Internet access (some 4.4% of the total), with a forecast for growth to some 5.9 million in 2008, or 12.6% of all homes (EMARKETER, 2005 cited by BEAR, STEARNS & CO., 2005). The survey by CGI.br found that some 50% of homes with Internet access already have broadband access, a growth of 10 percentage points over the previous year, surpassing forecasts even for 2008 (BALBONI, 2008:79).

Some positive signs can be observed through the achieved sales volume. In its seventeenth edition, the WebShoppers report (E-BIT, 2008a:9) yields figures that confirm the trend already observed in previous years. In 2007, sales were 43% superior to those of the previous year, reaching R$ 6.4 billion (E-BIT, 2008a:9), and confirming the forecast of R$3.8 billion in the first semester of 2008 ((E-BIT, 2008b:10).

The year of 2007 totaled 20.4 million orders over the Internet, an increase of 5.6 million over the previous year. The research company "e-bit" credits the increase in sales to the increase of number of Internet consumers. In the previous year, this effect was related to an increase in the C Class participation, to a more intense use of the channel among those who already used it, and to a heavier investment of large companies in this sales channel, which increases customers' trust in the Internet and the penetration of virtual shops (E-BIT, 2007a:10). In 2007, 9.5 million people had shopped in at least one virtual Brazilian store, an increase of some 35% over the previous year.

In the first semester of 2008, this figure surpassed 11.5 million people (E-BIT, 2008b:10), exceeding the expected figure of 10.5 million people (E-BIT, 2008a:10). In 2006, the growth in the number of people who experienced buying over the Internet was mainly because of the American dollar's stability and programs for both digital inclusion and sales of cheaper computers (E-BIT, 2007a:9-10, 24). The year 2008 adds to the growing trend toward verification of the convenience and ease of using search and price-comparison sites (E-BIT, 2008b:11). However, the company cites data from the Brazilian Public Opinion Institute (IBOPE) indicating that the number of Internet

consumers has not yet surpassed 24% of all Brazilian Internet surfers, estimated at 39 million people in 2007 (E-BIT, 2008a:9).

The survey carried out by CGI.br in 2007 (which did not include the month of December, when Christmas shopping occurs), found that only 16% of individuals using the Internet have made purchases over the Internet, although many have researched prices of products and services through this means. The use of the Web for electronic commercial activities is more frequent among individuals with a higher level of schooling and income: among net surfers with an income above ten minimum salaries, 80% do price research over the Internet (BALBONI, 2008:95). This reveals that consumers are going shopping more prepared, more informed, taking sharper challenges to companies in terms of their differentiation from competitors.

Table 2 illustrates the results of multiple answers to questions about products and services acquired over the Internet in the twelve months prior to CGI.br's survey:

Table 2 – Main products acquired over the Internet in the last 12 months

Acquired item	**Percentage in relation to total users that acquired products and services over the Internet**
Electronic equipment	41
Household products / electrical appliances	27
Books, magazines or newspapers	26
Computers and computer goods	18
Films, music and ringtones	16

Source: adapted from Balboni (2008:97).

The Internet offers consumers easy access to a great wealth of information (BLACKWELL, MINIARD & ENGEL, 2001:269). Winer (1999:256) emphasizes that although the Internet serves a wide range of finalities besides sales, its strength lies in its ability to provide customers with direct access to products and services. Zwass (1996

cited by BOONE & KURTZ, 2001:117) defines electronic commerce (e-commerce) as the search for customers through the collection and analysis of business information, the conduction of transactions with customers, and the maintenance of online customer relationships by means of telecommunications networks. Boone and Kurtz (2001:117) add that e-commerce provides the foundation for the launch of new products and enhances the reach of current companies.

According to Kosiur (1997:4), e-commerce is a system that includes not only transactions related to the purchase and sale of goods and services to generate revenue directly, but also transactions able to *support* revenue generation, such as, for instance, the creation of demand for goods and services, the supply of sales support and service to customers, and the facilitation of communication between business partners.

In addition, Reynolds (2001) studied marketing opportunities for Internet businesses, identifying basic positioning strategies: informational and transactional, each one able to replace or complement conventional trajectories for reaching consumers (Figure 1).

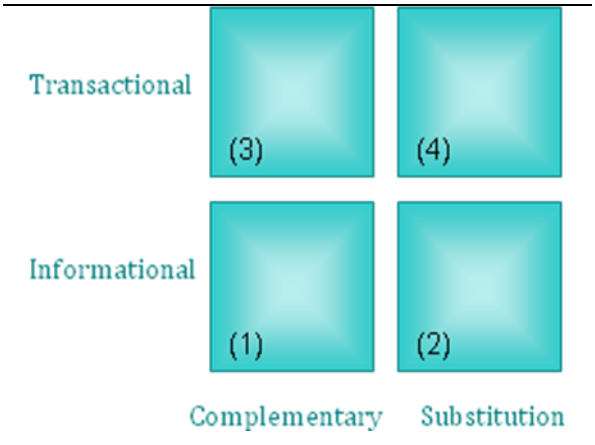

Figure 1 – Approach models
Source: Reynolds (2001:205).

For many established companies, an initial presence (1) can be purely informational, complementing current promotional activity. This is a low-risk and low-return strategy. Corporations seeking to relate more relevant information to their customers are more creative (2). In terms of transactional positioning, the most natural approach for established businesses is to seek to occupy a position complementary to their offline position in the electronic channel (3). However, problems connected with the distribution of payment modes that this approach can cause are only now being solved. Finally, position (4) favors Web-based businesses that are starting out, which can use the channel and an adequate combination of skills to develop digital products and services that may not be appropriate for transactions within traditional channels, such as online music retail. However, Reynolds (2001:207) cautions that marketing professionals must be able to assess market size, maintain brand tangibility, ensure an adequate corporate investment and apply new creative capacities. Moreover, these professionals must decide whether to adopt an informational or transactional strategy and whether to use the Internet to complement or replace conventional marketing.

According to Blackwell, Miniard and Engel (2001:147), the winners in the e-commerce arena will be those who know how to care for their customers better than their competitors and how to offer them better solutions than those previously available: "Online retail technology determines what can be offered to consumers, but only consumers determine which technologies are accepted."

In Brazil, CGI.br's survey emphasizes:

> "the remarkable increase in the use of paid-access public spaces (LAN houses and cyber cafés), which have become the most used space for

> Internet access in the country, mainly among young people and low-income individuals. The adoption of public paid-access locations shows that possession of equipment is not a pre-requisite for Internet use [...]." (BALBONI, 2008:29).

Balboni (2008:96) also considers that there is a huge growth potential for Internet shopping, once 45% of the Brazilians who have already used the Internet do price research using this medium. Moreover, only 10% of net surfers who acquired products or services via the Internet reported having some type of problem during the process, such as a delay in delivery or delivery of a faulty product.

Given the figures in the surveys, which show wider digital inclusion, more homes with broadband Internet access, a larger volume of purchases, and increased average ticket value, the outlook for e-commerce in Brazil seems bright.

Models of Acceptance of Information Technology

Historically, various authors have studied the impact of individuals' behaviors and attitudes on business, analyzing the presence of mediating and moderating variables that interfere in this relationship, and developing theories and models to better understand it.

Venkatesh et al. (2003:427) summarized the basic conceptual structure (Figure 2) underlying the models of acceptance of information technology that they studied.

Figure 2 – Basic conceptual structure of models of user acceptance
Source: Venkatesh et al. (2003:427).

These authors visualize acceptance models as a sequence of steps based on the analysis of individual reactions to the use of information technology. They then assess these individuals' intentions in using this technology and make a prediction for its actual use. These models and their improvements have been used to forecast technology acceptance and use, ranging from the use of corporate systems to cellular and Web applications (for instance, LIM & DUBINSKY, 2004; MOON & KIM, 2001; WANG, ARCHER & ZHENG, 2006).

Various models and theories had been published seeking to identify the factors determining whether or not technology will be adopted before Venkatesh et al. (2003) formulated the *Unified Theory of Acceptance and Use of Technology* (UTAUT) model (Figure 3) based on the consolidation of concepts from eight of these preceding models and theories (TAM, TPB, IDT, MM, MPCU, SCT, TRA, DTPB).

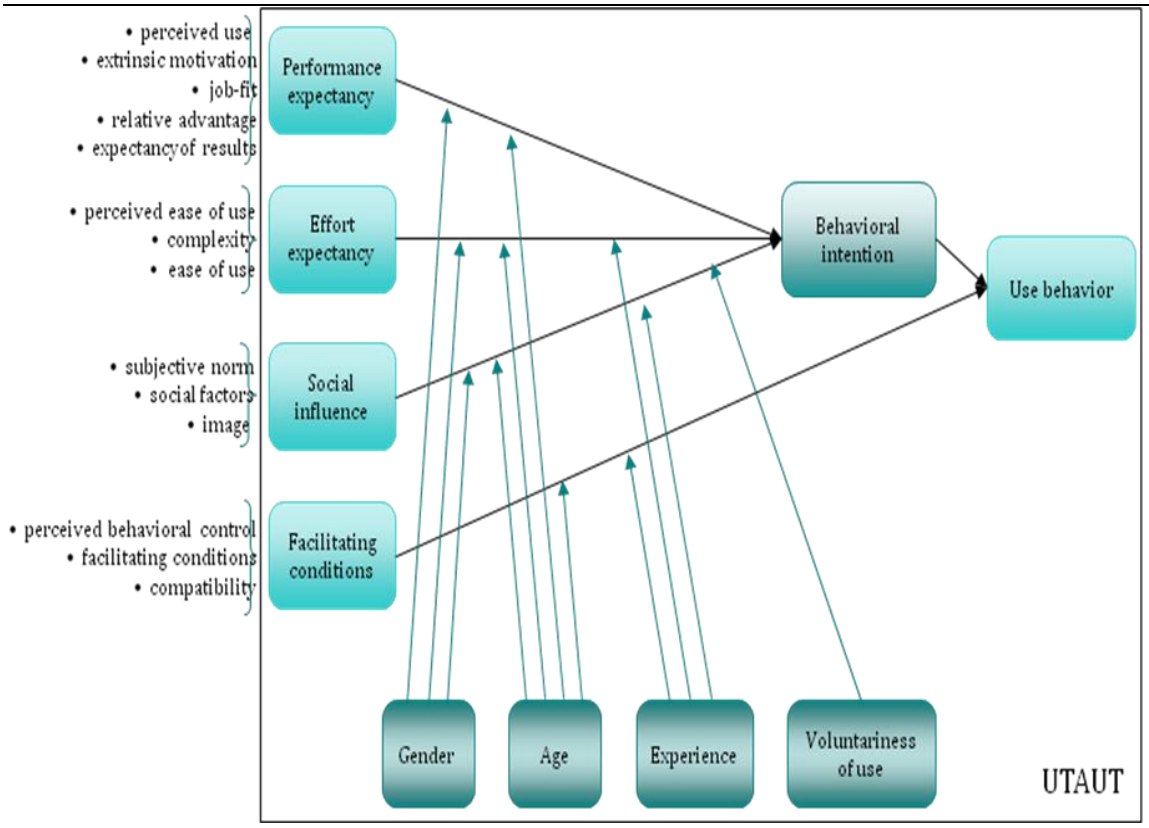

Figure 3 - Unified Theory of Acceptance and Use of Technology (UTAUT)
Source: Adapted fromVenkatesh *et al.* (2003:447).

Venkatesh et al. (2003) believe that four independent constructs are essential in determining user acceptance and use behavior: performance expectancy, effort expectancy, social influence and facilitaing conditions. These constructs are moderated by four factors: gender, age, voluntariness of use and experience. According to these authors, performance expectancy constitutes the biggest influence on a user's intent.

Picture 1 contains the definition and origin of each of these determinants. The *behavior intent* construct, present in the theory as mediating *use behavior*, has its origin in the Theory of Reasoned Action. This construct defines the degree to which an individual feels motivated to adopt the behavior at issue (based on performance expectancy, effort expectancy and social influence), regardless of the conditions that enable this behavior (which, according to this theory, are limited by *facilitating conditions*).

Picture 1 –UTAUT's principal factors

Construct	Definition	Origin
1. Performance expectancy	"Degree to which an individual believes that using the system will help him acquire income as a result of his work"	▪ Perceived use (TAM/TAM2 and DTPB) ▪ Extrinsic motivation (MM) ▪ Suitability for the function (MPCU) ▪ Relative advantage (IDT) ▪ Results expectancy (SCT)
2. Effort expectancy	"Degree of ease associated with use of the system"	▪ Perceived ease of use (TAM/TAM2) ▪ Complexity (MPCU) ▪ Ease of use (IDT)
3. Social influence	"Degree to which an individual perceives that other important people believe he should use the new system "	▪ Subjective norm (TRA, TAM2, TPB, DTPB) ▪ Social factors (MPCU) ▪ Image (IDT)
4. Facilitating conditions	"Degree to which an individual believes there is an organizational and technical infrastructure to support use of the system"	▪ Perceived control of behavior(DTPB) ▪ Facilitating conditions (MPCU) ▪ Compatibility (IDT)

Source: Venkatesh et al. (2003, p. 447, 450, 451 and 453)

Abbreviations:

TRA: Theory of Reasoned Action (AJZEN; FISHBEIN, 1980)

TPB: Theory of Planned Behavior (AJZEN, 1991)

TAM: Technology Acceptance Model (DAVIS et al., 1989)

IDT: Innovation Diffusion Theory (ROGERS, 1995)

DTPB: Decomposed Theory of Planned Behavior (TAYLOR; TODD, 1995)

MM: Motivational Model (DAVIS et al., 1992)

MPCU: Model of PC Utilization (THOMPSON et al., 1991)

SCT: Social Cognitive Theory (BANDURA, 1986, COMPEAU; HIGGINS, 1995 & COMPEAU et al., 1999)

One of the issues underlying the adoption of an online purchasing channel that has received attention from various authors is a consumer's trust in the Internet. Bramall, Schoefer and McKechnie (2004) assert that despite the fact that Internet shopping outstrips traditional outlets, there is strong evidence that although consumers use the

Internet to obtain information about products, only a minority make online purchases, thereby reflecting on their loyalty to this channel.

Some researchers state that the strongest barrier to the success of the Internet as a mass-market commercial medium is consumers' lack of trust in it (HOFFMANN et al, 1999b cited by BRAMALL, SCHOEFER & MCKECHNIE, 2004; JARVENPAA, TRACTINSKY & VITALE, 2000).

Trust emerges as an increasingly important issue in the discussions about electronic retail. Mayer et al. (1995) cited by Heijden, Verhagen and Creemers (2003) define trust as a consumer's willingness to remain vulnerable to the actions of an online store based on the expectation that this store will carry out a specific, important action for him, regardless of his ability to monitor or control it.

Bramall, Schoefer and McKechnie (2004) developed a conceptual framework that examines the determinants and consequences of consumer trust in e-retail.

The determinants addressed by these authors, divided into three groups (related to store, Internet Web site and consumer), establish relationships that can lead to greater trust in the Internet as a retail medium and in a specific e-retailer, lower perceived risk and a stronger willingness to buy.

Heijden, Verhagen and Creemers (2003) developed a study examining influential factors in online Internet shopping from the perspective of trust and technology. The conceptual model that they used (Figure 4) evidences the general relationship between

attitudes and intentions contemplated in the UTAUT model, and remains consistent with other online shopping models that include the *trust* construct.

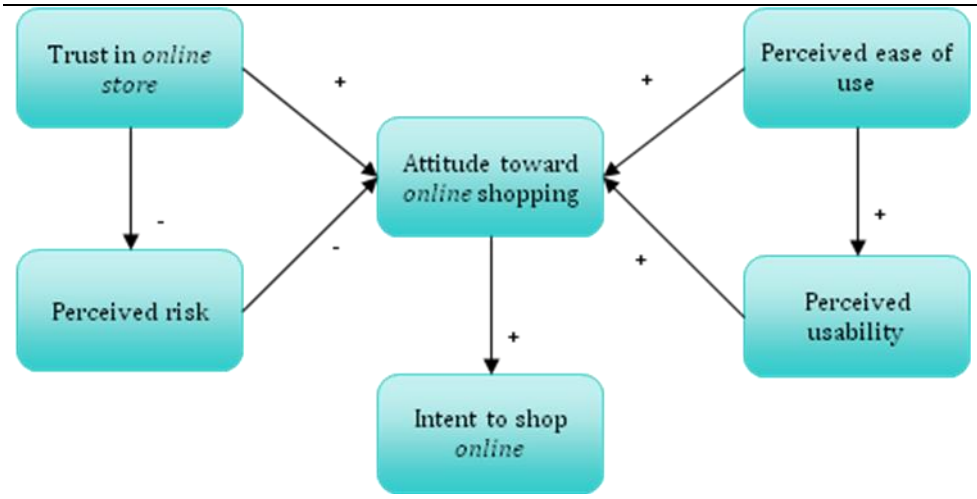

Figure 4 – Conceptual model of shopping intention based on technology and trust
Source: Adapted from Ajzen & Fishbein (1980); Davis (1989); Jarvenpaa, Tractinsky & Vitale (2000), by Heijden, Verhagen & Creemers (2003:44).

These models found in the literature will support our development of this work's model.

Internet markets for books, CDs and DVDs

According to the Brazilian Association of Record Producers, ABPD (2006:10), the 52.9 million units sold in 2005 in the Brazilian music market (music CDs, DVDs and VHSs) correspond to a fall of 20% in relation to 2004, translating to a circulation of R$ 615.2 million, 12.9% below that of the previous year. This negative result was a global trend in 2005, reflecting the 3% fall in total music sales worldwide, according to the International Federation of the Phonographic Industry's (IFPI's) value of world sales.

Despite this reduction, Brazil again ranked among the ten countries with the best revenue in the music industry in 2005, published by IFPI (2007). Exchange variations influenced this result to a larger extent than market performance in comparison with

other countries. In the music CDs segment, the performance of the Brazilian music market in 2005 presented a 12.5% fall in invoiced values and a 21.7% fall in net units sold (gross sales minus returns) compared with 2004. In the case of music DVDs, which in 2005 represented 25.2% of total Brazilian music industry sales (in value), the market segment presented for the first time a fall in sales of 14.1% in value and 9.6% in units. According to the ABPD (2006), this negative result can be ascribed to a series of factors: (1) physical piracy, with a remarkable increase of this illegal act in the sector of music DVDs; (2) consumption stagnation; and (3) growing competition with other media and modes of leisure.

Both the music industry and consumption habits are undergoing a transition phase all over the world, which affects the legitimate market's ability to respond quickly, even when there is a fall in the rates of physical piracy. Current digital sales correspond to 10% of the world's music market. Recording companies are testing and innovating with a wide array of business models and digital music products involving hundreds of licensed partners, and an amount of 4 million songs available online in 2006 (IFPI, 2007).

To illustrate this, Table 3 presents the results of research on the principal items purchased via Internet in 2005:

Table 3 – Principal products acquired over the Internet

Acquired item	**Percentage in relation to all products purchased**
CDs and DVDs	19%
Books and magazines	11%
Electrical and electronics	5%
Cosmetics and medications	5%
Computers and software	5%

Source: Veja (2005:46).

In 2006, the category represented by CDs and DVDs was no longer the list's bestseller. In 2004, this segment's participation was 27.3%, but it fell, in a two-year period, to 15.9% (E-BIT, 2006b:17). With the popularization of music and film distribution in digital formats, often in a clandestine manner, this category ceased to rank among the most procured products in online sales. Computer and electronics equipment, health and beauty products, and mobile phones replaced it, mainly due to the devaluation of the American dollar and the fall in prices of products with higher aggregated value. This does not mean that these products' sales numbers are not significant. In 2007, on commemorative dates such as Valentine's Day or Children's Day, CDs and DVDs accounted for 6% and 7%, respectively, of the most sold products (E-BIT, 2008a:14).

Another category that has always been among those most sold over the Internet is that of books, newspapers and magazines. It has topped the ranking of most sold products (17%), with a drop in participation since 2004, but maintaining its representation in relation to 2006 (E-BIT, 2008a:12).

Amazon.com's online bookstore, created by Jeff Bezos, can be considered the biggest worldwide. Commercializing products such as books, CDs, videos, DVDs, toys, electronics, software and video games, the company is not only a retailer: it is deemed an information supplier. Consumers can access the site and do research directed to specific titles or topics of interest, surf, read and submit opinions on titles, acquire personalized services, participate in promotions, and track the status of their orders (BLACKWELL, MINIARD & ENGEL, 2001:521). The company also maintains a service that tells customers about releases of their favorite authors or topics (KEEGAN, 2002:447).

In Brazil, Livraria Cultura, one of the market's leaders, reports an annual increase of some 50% in Web sales. In fact, 18% of its current revenue was generated by book sales over the Internet (NUNES, 2007).

Methodology

Research type

We conducted research aimed at supplying primary data for the study at hand, as a complement to the literature review, by studying buyers' views on which factors influence their decision to make purchases through a specific channel.

Toward that goal, we performed descriptive research during the first semester of 2009, whereby it was possible to cross variables and identify relationships between them. The analysis phase used the quantitative approach, which enabled testing adherence to the model used as a reference for this study.

Population and sampling

In Brazil, São Paulo still constitutes the state with the highest number of Web users who buy online (E-BIT, 2007a). For this reason, the geographic area chosen was limited to the city of São Paulo. The population of interest comprises city dwellers of the ABC socioeconomic class (Brazilian criterion) who buy books, CDs or DVDs only in physical stores (*offline* environment). The classification of a customer as predominantly *online* or *offline* was based on answers to an introductory question presented in the collection tool.

The purpose of a sampling, according to Babbie (2001:185), is to select a set of elements from a population so that the description of these elements somehow portrays the total population from which these elements are selected.

Because available reference systems do not encompass buyers of books, CDs or DVDs, either over the Internet or through traditional means, the reference system consisted of the population in general that frequented cultural establishments such as bookstores, movies, theaters, concert venues, exhibitions, displays and similar locations. We selected a sample using a random approach to respondents. A simple, casual sampling was made, resulting in a sample of 303 respondents, of which 172 acquire books, CDs or DVDs only in physical stores.

Study's model

The goal of this study was to create a profile of consumers who do not yet buy books, CDs or DVDs over the Internet, and to analyze the chances or conditions for their doing so (intent).

Given this study's objective, the model chosen to analyze the factors influencing an individual's adoption of online purchasing was the UTAUT model, created by Venkatesh et al. (2003:447), with some adaptations.

The UTAUT model has been applied in studies involving Internet banking, wireless mobile services and health-oriented information technology, plus a few applications within the context of electronic shopping.

Although originally oriented to the business context, UTAUT has proven suitable for the purposes of this study because it stems from a combination of various models and takes moderating variables into consideration.

However, some observations and limitations are noted about the application of the UTAUT model. One of them refers to attribute job-fit, contained in the *performance expectancy* construct. In the original UTAUT model, the study focused on companies and the suitability for use of a new technology at work; in the case of e-commerce, its expression was adapted to make it suit the task of shopping. For this reason, it is also worth distinguishing that, in the original context, because the subject was a new technology to be implemented within organizations, this adoption could be voluntary or mandatory, whereas in the case of e-commerce, purchases are essentially voluntary. This moderating factor from the original model becomes dispensable in the e-commerce model.

Concerning risk, this study's model is complemented by the *trust/risk* construct from works by Bramall, Schoefer and McKechnie (2004:19) and by Heijden, Verhagen and Creemers (2003:44), which congregate specific attributes that are apart from social influence and related to security.

Venkatesh et al. (2003) did not include *attitude toward using technology* in the UTAUT model because they did not consider it a relevant predicting construct of behavioral intent, in the presence of the constructs *performance expectancy* and *effort expectancy*. This view is also shared by Fenech and O'Cass (2001 cited by ANCKAR, 2003) and

Teo et al. (1999 cited by ANCKAR, 2003), in their studies on the Technology Acceptance Model (TAM). Some considerations, however, must be provided.

Research by Engel, Blackwell and Miniard (2000:541) found that entertainment during the buying process can exert some influence on the consumer's process of choosing a store. According to Hoffman and Novak (1995 cited by CHAKRAVARTI, CUNHA JR. & WEITZ, 2000), a consumer under this influence will feel positive effects on his willingness to buy over the Internet. Moreover, other studies verify that entertainment is one factor that motivates a consumer to shop online (Anckar, 2003 and Boone & Kurtz, 2001) and to return to specific Web sites (Koufaris, 2002). Thus, variables related to the *attitude toward technology use* construct were also included in this study.

Another observation regards the temporal issue. In the original UTAUT model, the study considered three different points in time: expectations for using new technology after training and opinions after two separate periods of implementation. In the case of this study, data was collected at only one point in time, considering those who have never bought online, whose testimonies were based on their opinions about a possible purchase.

With regard to moderating factors and the temporal issue, the different points in time in the original model characterized a growing experience in the subjects' use of the system. In a different vein, this study operationalizes the moderating factor *experience* according to the amount of experience using the Internet reported by the respondent.

In contrast to what occurs in the original UTAUT model, this study's model does not include the construct related to o*nline purchasing behavior*, which would be influenced by the intention to adopt Internet shopping. This exclusion is due to two factors, both conditions that prevent identifying whether or not the subject adopted online purchasing behavior:

- Data collection was conducted considering only one point in time, at which the channel used for shopping among the focused product categories is verified through a nominal variable;
- The voluntariness of shopping.

Thus, the technology acceptance model adopted in this study is the one presented in Figure 5. The model's hypotheses to be tested by this work are found after Figure 5. For simplicity's sake, this model will be referenced throughout this text only as UTAUT, despite having incorporated the adaptations here explained.

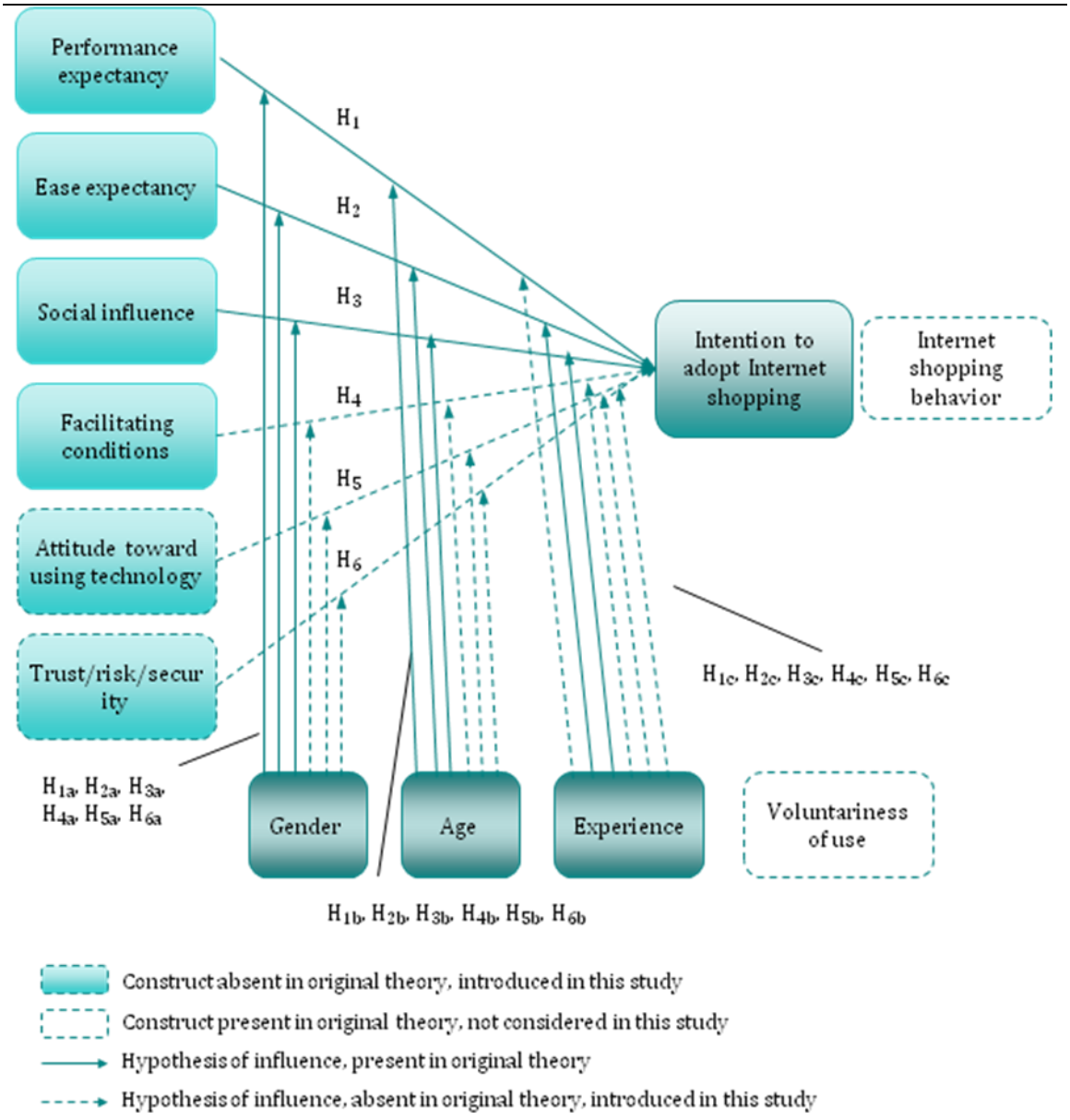

Figure 5 – Modified Unified Theory of Acceptance and Use of Technology: model for this study

Source: Adapted from Venkatesh *et al.* (2003:447), Bramall, Schoefer and McKechnie (2004:19) and Heijden, Verhagen and Creemers (2003:44).

This study tests the following hypotheses of the UTAUT model:

H_1: Performance expectancy is a factor relevant to intent to adopt Internet shopping.

H_2: Ease expectancy is a factor relevant to intent to adopt Internet shopping.

H_3: Social influence is a factor relevant to intent to adopt Internet shopping.

H_4: Facilitating conditions are factors relevant to intent to adopt Internet shopping.

H_5: Attitude toward technology use is a factor relevant to intent to adopt Internet shopping.

H_6: Trust in the Internet as a retail medium is a factor relevant to intent to adopt Internet shopping.

Data-collection tools

In addition to questions about the sample's profile, the study included questions with aspects corresponding to each construct of the adapted UTAUT model.

On a scale with the following degrees: very low (0 to 2), low (2.1 to 4), regular (4.1 to 6), high (6.1 to 8) and very high (8.1 to 10), respondents were asked to assess each aspect's degree of influence on their intention to buy (or not to buy) books, CDs and/or DVDs over the Internet. These aspects are found in Picture 2.

Picture 2 – Aspects that may influence the decision to buy (or not to buy) online

	Degree	
Time saving / Easier and more efficacious purchases		V10
Convenience (ability to buy any day, any time and from any place, and to receive goods at home)		V11
Ability to compare information about stores/products/prices		V12
Product purchase without the need for physical contact		V13
Financial aspects (prices, delivery rates, negotiation, promotions, range of modes of payment)		V14
Willingness to wait for the delivery		V15
Facility to learn how to buy over the Internet		V16
Organization of sites (layout, design)		V17
Facility to navigate sites (fluidity, page-loading speed)		V18
Personalized offers, tailored according to previous purchases		V19
Recommendations from relatives, friends or other people who are important to you		V20
Number of people important to you who buy over the Internet		V21
Friends' or relatives' experiences with Internet shopping		V22
Status and/or prestige ascribed to Internet shopping among people you usually spend time with		V23
Knowledge required in the online buying process		V24
Speed of connection to the Internet, of downloading images, of access to data or of Web page visualization		V25
Customer service for complaints or clarifications		V26
Availability of computer with Internet access		V27
Trust in the media for Internet access (computer, connection, network, security programs)		V28
Fun/pleasure using a computer or the Internet		V29
Belief that buying books/ CDs/ DVDs over the Internet is fun/agreeable/interesting		V30
Opportunity to buy on impulse		V31
Familiarity with online stores		V32
Guarantee of delivery on time		V33
Guarantee of privacy and security of purchases over the Internet		V34
Trust in/ tradition of / reputation of site		V35

Using the same scale, respondents indicated their degree of agreement with the following statements (Picture 3):

Picture 3 – Statements about intention to shop online

	Degree	
I intend to buy books/ CDs/ DVDs over the Internet		V36
I intend to visit online stores that sell books/ CDs/ DVDs		V37
I intend to research opinions /evaluations about products in online book/CD/DVD stores		V38
I intend to buy books/ CDs/ DVDs over the Internet and not in physical stores		V39
The existence of loyalty programs would motivate me buy over the Internet		V40

The following are this study's main results, based on our processing of this research data.

Results analysis

Sample profile

From the total of respondents (172 cases), most (59.4%) are females aged over 42 (31.4%). Most have completed secondary school (47.1%) or a higher education (40.8%). Of the individuals who buy only in physical stores, 8.6% do not use the Internet and 67.8% have used it for more than 5 years. Most individuals who buy exclusively in physical stores have made 4 to 7 purchases of books, CDs or DVDs in the previous 12 months. It is interesting to observe that 43.4% of individuals who only buy in physical stores reported doing research on books, CDs or DVDs before actually buying. Of these, 50% conducted research in physical stores, 21.1% in online stores and 28.9% using both types of channels. Most research is related to financial aspects of the purchase (prices, payment modes, discounts, freight/delivery rate).

UTAUT—Intent to adopt online shopping

We applied the Structural Equation Modeling (SEM) technique to identify dependence relationships between constructs as well as each construct's contribution in estimating the subjects' level of intent to adopt online shopping. SmartPLS software was used in this application.

Evaluation of the measurement model

Convergent and discriminant validities were assessed:

- Convergent: exists if the values of the constructs' average variance extracted (AVE), which represents their relation with their indicators, are equal or

superior to 0.5 (CHIN, 1998:320 cited by ZWICKER, SOUZA & BIDO, 2008:7). High values, of 0.6 or higher, of the loads of variables in their respective constructs also indicate convergent validity (BIDO, 2008).

- Discriminant: evaluated by comparing the correlations between the constructs with the value of the square root of that construct' AVE (FORNELL & LARCKER, 1981 cited by ZWICKER, SOUZA & BIDO, 2008:7), and/or by the examination of crossed loads between the constructs and their component variables (CHIN, 1998:321 cited by ZWICKER, SOUZA & BIDO, 2008:8). The first criterion assumes that, in the presence of discriminant validity, the indicators or variables of a construct (or latent variable) have more explanatory power for that construct than for any other construct in the model. The second criterion assumes that the factor loads of the construct's component variables are higher in their construct than in the others. The significance of the indicators' loads for the constructs, required in discriminant validity, is confirmed in the structural-modeling phase.

In the first evaluation, the *trust in the means to access the Internet* indicator (V28) presented a higher factor load in another construct, not in the original construct, causing inaccuracy both in discriminant validity and in convergent validity. After this indicator was excluded from the model, the AVE values increased, and all of the constructs surpassed the minimum value required for convergent validity (0.5); the values of Composed Reliability also surpassed the minimum required of 0.7, as shown in Table 4:

Table 4 - UTAUT – Convergent validity and reliability

Construct	AVE	Composed reliability
Attitude toward using technology	0.7548	0.9020
Facilitating conditions	0.6276	0.8706
Trust / Risk/ Security	0.7402	0.9192
Ease expectancy	0.6841	0.8965
Performance expectancy	0.5812	0.8922
Social influence	0.6890	0.8974
Intent to adopt Internet shopping	0.6533	0.9039
Average	0.6757	

Source: Processed collected data

Table 5 shows that only three variables have crossed loads between 0.65 and 0.7 (V12, V13 and V23), slightly inferior to the limit value (0.7). For the other variables, the highest loads are in their respective constructs, which are higher than 0.7 and significant, indicating discriminant validity for these constructs. Discriminant validity is also verified through the method proposed by Fornell and Larcker (1981 cited by ZWICKER, SOUZA & BIDO, 2008:7), because the values of the square root of the AVE (in the diagonal of the correlation matrix, Table 6) are higher than the correlations between the other latent variables.

Table 5 - UTAUT – Crossed loads and their significance in student t-test

	Attitude toward use of technol.	Facilitating conditions	Trust	Ease expect.	Performance expectancy	Social influence	Intent to adopt Internet shopping	Student's t-Test in respective construct
V10	0.4025	0.5052	0.3455	0.6226	**0.8048**	0.4418	0.4053	22.362
V11	0.3873	0.4938	0.3019	0.6038	**0.8217**	0.4543	0.4310	21.412
V12	0.2671	0.3824	0.2350	0.5271	**0.6976**	0.3388	0.3496	11.138
V13	0.4729	0.4022	0.1211	0.5359	**0.6604**	0.4025	0.3718	12.044
V14	0.4261	0.5481	0.4424	0.5734	**0.8022**	0.4748	0.4657	24.127
V15	0.4785	0.5319	0.3019	0.5685	**0.7734**	0.4551	0.4807	26.759
V16	0.6258	0.6322	0.3614	**0.8107**	0.6145	0.5302	0.4593	25.408
V17	0.4314	0.5721	0.3560	**0.8501**	0.6640	0.4639	0.4398	25.838
V18	0.4614	0.6491	0.4476	**0.8380**	0.6506	0.5140	0.3962	21.667
V19	0.5655	0.5924	0.2457	**0.8089**	0.5617	0.5707	0.5187	29.831
V20	0.4515	0.5095	0.3615	0.5648	0.5177	**0.8700**	0.4425	38.628
V21	0.3516	0.4691	0.3678	0.5173	0.4454	**0.8767**	0.3702	25.687
V22	0.3946	0.5526	0.4270	0.5871	0.5642	**0.8884**	0.4719	39.172
V23	0.4166	0.4140	0.1133	0.4069	0.3141	**0.6643**	0.3566	11.874
V24	0.5013	**0.7765**	0.4170	0.5764	0.5047	0.5298	0.3818	16.410
V25	0.6133	**0.8361**	0.4755	0.6874	0.5755	0.5255	0.5139	30.397
V26	0.3727	**0.7420**	0.4828	0.5174	0.4342	0.4092	0.3692	15.499
V27	0.5938	**0.8111**	0.4328	0.5443	0.4791	0.4110	0.4677	23.098
V29	**0.9022**	0.6280	0.3312	0.5958	0.4791	0.4794	0.5775	53.194
V30	**0.9057**	0.5700	0.3728	0.5669	0.5222	0.4769	0.5731	45.877
V31	**0.7938**	0.5412	0.3451	0.4922	0.3928	0.3042	0.5352	22.279
V32	0.4699	0.4553	**0.7961**	0.4494	0.3831	0.3752	0.5110	21.827
V33	0.2971	0.5237	**0.8822**	0.3439	0.3105	0.2617	0.4171	34.603
V34	0.2647	0.4529	**0.8640**	0.2674	0.2933	0.3637	0.3899	27.751
V35	0.3170	0.5188	**0.8957**	0.3493	0.3388	0.3426	0.4550	39.056
V36	0.5314	0.4574	0.5319	0.4098	0.4490	0.4535	**0.8485**	33.232
V37	0.3292	0.3153	0.5206	0.3596	0.4133	0.3213	**0.7627**	17.915
V38	0.5367	0.5090	0.3637	0.4941	0.4982	0.3975	**0.8188**	24.070
V39	0.6118	0.4304	0.3528	0.4305	0.4176	0.3803	**0.8254**	29.938
V40	0.5805	0.5133	0.3535	0.5406	0.4555	0.4548	**0.7829**	22.891

Table 6—UTAUT—Correlations between latent variables

	Attitude toward use of technol.	Facilit. conditions	Trust	Ease expect.	Perform. expect.	Social influence	Int. adopt. Internet shopping
Attit. toward use of technology	**0.8688**	0	0	0	0	0	0
Facilit. conditions	0.6683	**0.7922**	0	0	0	0	0
Trust	0.4025	0.5686	**0.8603**	0	0	0	0
Ease expectancy	0.6365	0.7387	0.4188	**0.8271**	0	0	0
Performance expect.	0.5367	0.6327	0.3908	0.7500	**0.7624**	0	0
Social influence	0.4867	0.5913	0.3940	0.6324	0.5655	**0.8301**	0
Intent to adopt Internet shopping	0.6474	0.5545	0.5227	0.5544	0.5527	0.4999	**0.8083**

Source: collected and processed data.

By and large, the constructs showed correlation coefficients moderated with *intention to adopt Internet shopping*, according to the classification proposed by Hair Jr. et al. (2006:312) (Picture 4). The highest value was that of *attitude toward technology* (0.6474). This construct also presented the highest AVE value, followed by *trust*.

Picture 4 – Classification of coefficient correlation values

Concept	Correlation value
Light, barely perceptible	0.01 a 0.20
Small, but defined	0.21 a 0.40
Moderate	0.41 a 0.70
High	0.71 a 0.90
Very strong	0.91 a 1.00

Source: Hair Jr. et al. (2006:312).

Evaluation of the structural model

In the structural model, estimated through bootstrapping with N=172 and 1000 repetitions, the relationships of *performance expectancy, attitude toward technology* and *trust* with *intent to adopt Internet shopping* are significant (at the 5% level). Figure 6 presents the constructs' structural coefficients, focusing on those showing significance in Student's t-test; the values observed for Student's t-test are given in parentheses. The

indicators and their respective loads were omitted for simplification, but all loads are significant.

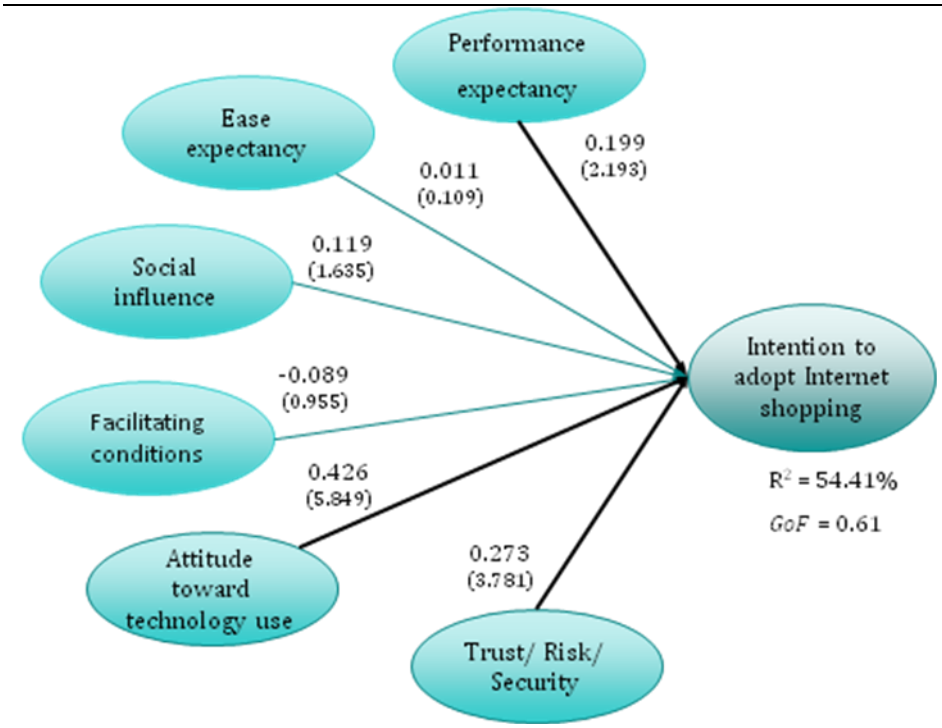

Figure 6 - UTAUT – Measurement and structural model

Source: processed collected data.

Next, the algorithm PLS is again applied, and only constructs with significant effects are retained. Figure 7 shows the adjusted final model.

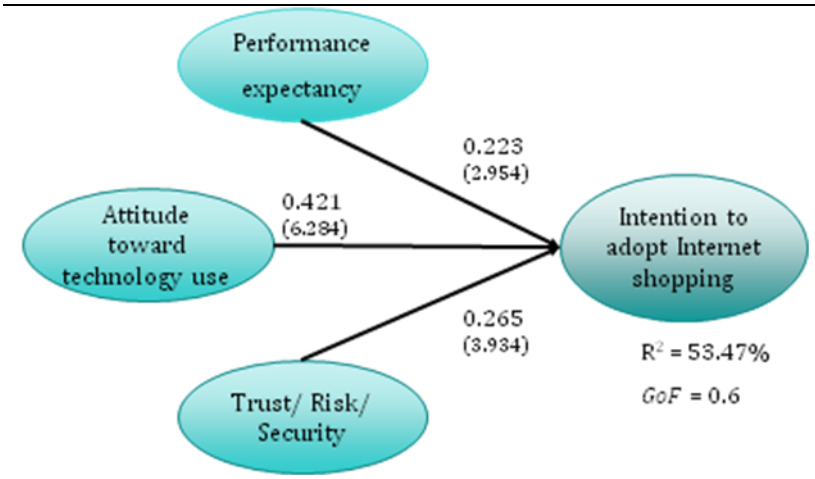

Figure 7 - UTAUT – Adjusted final model

Source: processed collected data

From the perspective of path analysis, *attitude toward technology* has a direct effect on *intent to adopt Internet shopping* of 0.421; *trust* has an effect of 0.265; and *performance expectancy* has an effect of 0.223.

Based on the structural coefficients, which have direct and indirect effects, one can calculate the contribution of exogenous constructs to the explanation of the variance in *intent to adopt Internet shopping*. The contributing percentages to the variance percentage explained for that construct can be obtained by associating the sum of the structural coefficient with 100%. The values of the contributing shares can be calculated by multiplying the percentages resulting from the previous calculation by the value of the explained variance, so as to obtain the weigthing factors of each construct for this variance.

Thus, *attitude toward technology* explains 46.3% of the variance in *Intent to adopt Internet shopping*, *trust* explains 29.2%, *and performance expectancy* explains 24.5%

(46.3 + 29.2 + 24.5 = 100%). In other words, the contribution of *attitude toward technology* to the explained variance of *intent to adopt Internet shopping* is 24.76%, of *trust* is 15.59% and of *performance expectancy* is 13.12% (24.76 + 15.59 + 13.12 = 53.47 = R^2).

The average AVE between the constructs was 0.6757. The calculated R^2 was 0.5347, indicating the degree to which the dependent variable is predicted by independent ones. Based on these values, we calculated the model's goodness-of-fit index, as proposed by Tenenhaus, Amato & Vinzi (2004 cited by MENDES-DA-SILVA, BIDO and FORTE, 2008:12), resulting in 0.601. Although no reference values were found for this index, one can accept this result as adequate because the minimum criterion for the AVE was established at 0.5, according to Mendes-da-Silva, Bido & Forte (2008:12).

The constructs a*ttitude toward technology* and *trust*, initially absent in the UTAUT model of Venkatesh et al. (2003), were incorporated into the model to be tested and proved significant in this study.

Picture 5 shows the results for the hypotheses related to the UTAUT model.

Picture 5 UTAUT model hypotheses

Hipotheses	**Result**
H_1: Performance expectancy is a factor relevant to intent to adopt Internet shopping.	Confirmed
H_2: Ease expectancy is a factor relevant to intent to adopt Internet shopping.	Not confirmed
H_3: Social influence is a factor relevant to intent to adopt Internet shopping.	Not confirmed
H_4: Facilitating conditions are factors relevant to intent to adopt Internet shopping.	Not confirmed
H_5: Attitude toward using technology is a factor relevant to intent to adopt Internet shopping.	Confirmed
H_6: Trust in the Internet as a retail medium is a factor relevant to intent to adopt Internet shopping.	Confirmed

Structural equation modeling, a technique of confirmatory analysis, besides supplying a means to determine our model's discriminant and convergent validity, which confers validity on the analysis presented, also enabled the identification of the constructs that influenced the sample subjects' behavioral intentions toward the online channel, thus meeting this study's stated objective.

It also allowed us to reach conclusions regarding the study's hypotheses, specifically the confirmation or not of these influences within the studied model.

The constructs *attitude toward technology use* and *trust*, which were not present in the UTAUT of Venkatesh et al. (2003), have proven significant in this study. It was worthwhile, therefore, to incorporate them into the adapted UTAUT model.

The structural equation modeling technique allowed us to develop, based on UTAUT, a model adjusted for *intent to adopt Internet shopping*, within the context of book, CD and DVD commerce.

Conclusions

The rapid rise in Internet use as a means to propagate the commercialization of various product categories—including books, CDs and DVDs—enabled the formulation of the problem/issue, "Which factors influence the consumer's decision to purchase books, CDs and DVDs in the online environment?"

Based on this problem, we developed a study aimed at investigating determinant aspects in consumers' adoption of the online channel in the process of buying books, CDs and DVDs.

It was evident that it is necessary to develop different strategies for consumers who have not yet adopted the online shopping channel. After consumers are attracted to the online channel, efforts must be channeled particularly to issues such as: the consumer's attitude toward technology, the degree of trust the consumer has invested in the potential shopping channel and the consumer's performance expectancy for online shopping.

Toward this goal, considering the current stage of electronic commerce of books, CDs and DVDs in Brazil, we suggest that attention to the following areas will contribute to Brazilian consumers' adoption of the online channel: (1) the confirmation of expectations generated after an initial purchase experience, (2) meeting performance expectancy through shopping continuity, (3) the elements leading to consumer satisfaction (which are influenced by aspects 1 and 2), and (4) the conditions facilitating online shopping. However, working toward the confirmation of expectations entails knowing them, and consumer expectations encompass a variety of themes including financial aspects, a company's reputation, company–customer communication and delivery term, among others.

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