

# **ELECTRONIC COMMERCE: THE VIRTUAL SUPERMARKET THROUGH THE CUSTOMERS' EYES**

**TRACK: ELECTRONIC COMMERCE**

**ABSTRACT:** this paper deals with one of the industries that have been experimenting the internet world, although its digital version hasn't, apparently, been able to draw enough attention from the customers to make its traditional competitors feel threatened, so far. It is the supermarkets industry. The authors' ideas are supported by a survey carried out by them, which focused on capturing the participants' impressions on their first contact with the electronic commerce service of a chain of supermarkets in the state of Paraná, in the south of Brazil. Participants in the survey were well acquainted with computers and Internet navigation, so that the results were not biased by computer illiteracy.

**KEYWORDS:** electronic commerce, e-business, virtual organizations, virtual supermarket

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## *INTRODUCTION*

Electronic commerce has been proving to be a revolutionary way of addressing specific markets. In some cases, such as books and CD's, the impact of the new players on traditional businesses is strong, and well settled enterprises are being forced to review their strategies and invest on the virtualization of, at least, part of their operations.

In the current stage of development, electronic commerce seems to be particularly suitable for digital products, which can be delivered to the customer through the web, and small size tangible goods or goods of small aggregate value, for which the sale is not necessarily based on the physical contact with the product (SIEBER, 1999) and which can be delivered to the customer through regular delivery services, like the post. That's the case of CD's and books.

This paper deals with one of the industries that have been experiencing the Internet world, although its digital version hasn't, apparently, been able to draw enough attention from the customers to make its traditional competitors feel threatened, so far. It is the supermarkets industry.

The authors' ideas are supported by a survey they carried out, which focused on capturing the participants' impressions on their first contact with the electronic commerce service of a chain of supermarkets in the state of Paraná, in the south of Brazil. Participants in the survey were all very well acquainted with computers and Internet navigation, so that the survey results weren't biased by computer illiteracy.

The reason why the authors carried out the survey with experienced Internet users was to ensure that the lack of familiarity with the web, in general, wouldn't bias the results by introducing other causes for an eventual frustrating experience. Negative impressions should only result from the following possible causes:

- intrinsic problems to the site;
- the available technology for site implementation;
- the available technology for the flow of information between company and customer;
- logistics and distribution problems.

The authors believe that a positive experience, in the first contact with the service of a virtual supermarket, increases the chances that the customer uses the service again in the short run. A negative impression would prevent the customer to look for the service again, indefinitely, until he has reasons to believe the limitations of the site, the technology or the logistics/distribution have vanished, which may take a long while.

### *THE SURVEYED SUPERMARKET CHAIN AND ITS SITE IN THE INTERNET*

The supermarkets' industry has been submitted to huge transformations, along the last few years. Large national and international chains have been playing a very aggressive role in the Brazilian market, taking advantage of their cost advantage in negotiating large volumes with their suppliers. Small local supermarkets, or even regional chains, have found it difficult to cope with the competition and the pressure of the big ones willing to buy their businesses, in order to reach even larger scales.

The supermarket chain that runs the virtual business, whose site was the object of the survey is a regional family owned chain, which has strong presence in Curitiba, a one million inhabitant city

in the south of Brazil. The chain has 8 branches in Curitiba, but also has physical stores in three other cities in the state of Paraná.

Their virtual operation started in January 1999, without much advertisement. Only in March 2000 the service started being announced on the media. The participants in the survey were interviewed the beginning of May 2000, having carried out their supermarket purchases through the web late in April.

### *THE GROUP OF PARTICIPANTS*

The authors were concerned about choosing a group of people to participate in the survey that would be well acquainted with the use of microcomputers and an internet browser, as that has been the most generally used interface for business to consumer (B2C) electronic commerce. Thus, 30 students of a graduate course on computer networks were elected to try the e-commerce service provided by the virtual supermarket and then participate in the survey. All of them used computers and the Internet for their daily professional activities or as entertainment.

One could argue that such a sample is not a good representation of the population of internauts, as the majority of the internet users (and potential customers for virtual services) do not have the same "intimacy" with the computer and the computer programs, required for the interaction in the web, as the participants in the survey. But the fast spreading of the web's use, and the more and more democratic access to it, indicate that, in the near future, there won't be such a gap between experts and regular users, concerning their ability to deal with the general resources available on the web.

LOHSE and SPILLER (1998) and BURKE (1996) believe that now, more than ever before, the promise of the electronic commerce and on-line purchases will rely, to a great extent, on the interface being used and the way people interact with the computer. The interface can be better evaluated, at this stage, by a group of users who do not get trapped by elementary difficulties with the computer or the software, in the authors' opinion. The interaction with the web tends to quickly improve, as the population begins to have more access to it.

Neglecting the theoretical requirements of good statistics practices when choosing a sample that doesn't quite represent the whole population, the authors are conscious they are also giving up the opportunity of presenting consistent statistic results. Even so, the trade-off seems to be favorable: the authors believe they have avoided situations in which the experience of an electronic transaction is biased by the fact the buyer is not able to operate the computer and/or the browser, accordingly.

Care has been taken in order to prevent people who had already used the supermarket site before of participating in the survey. The reason for that was simple: among other issues, the authors intended to evaluate the users' perception on their first contact with that specific e-commerce site.

ALBERTIN (1999) says that organizations should understand that customers visit a site on the Internet because it is there, but they will only come back if they find it worth it. There is a Portuguese adagio that says, "the first impression is the one that remains". As the web has many more sites available than one could possibly visit along his entire life-time, it seems plausible to think that, in this case, more than in any other, the first impact is crucial to determine future interactions. Who would, after all, come back to a site that didn't cause a good first impression, when there are so many options available?

## *THE QUESTIONNAIRE*

Several researchers have been concerned with capturing the competence of organizations in addressing their virtual operations, in some cases trying to replicate their brick and mortar businesses in a virtual environment and, in other cases, developing new businesses from the scratch (BURKE, 1996; HO, 1997; WEBB AND SAYER, 1998; and EVANS AND WURSTER, 1999). Among them, the work of LOHSE AND SPILLER (1998) deserved special attention from the authors, and has been used as the grounds for the elaboration of the questionnaire used in the survey.

*See Figure 1*

The participants of the survey received a copy of the questionnaire, previously to visiting the site of the virtual supermarket. The authors wanted them to express their feelings about the experience, after having carried out a transaction through the Internet, mentioning the main advantages and disadvantages of an online transaction when compared to a traditional one. Although most questions required a straight answer, which could be easily tabulated, there was usually room for further comments or explanations by the participants. Contributions by the participants through comments to the answers were very important to enrich the survey, qualitatively.

## *PRESENTATION AND ANALYSIS OF THE DATA*

30 filled-in questionnaires were returned to the authors, one of which had to be eliminated due to technical problems. All other questionnaires could be processed. A few of the results are presented below.

With respect to previous experiences with electronic commerce, the survey revealed that the majority of the participants had never carried out a transaction through the Internet, despite of their profile of heavy users of computers and the web. Previous studies on the Brazilian e-market had shown that the number of people who buy things through the web is still small, when compared to the number of people who have access to it. According to a survey by WEB-MARKETING (1999), about 331,000 Brazilians bought something through the web in 1999. If that number is compared to the estimate number of internet users in the country in 1999 (ca. 3.8 million), one ends up with 8.7% as being the percentage of Internet users who effectively used the web during that year to buy something.

Considering the small percentage of online purchases, when compared to the number of Internet users in the country, it is possible to speculate that Brazilians are using the web as a research resource for the products they are interested in, but are carrying out the actual transactions in a brick and mortar store. That means sites on the web are performing much better as “windows”, where products are presented to the public, than as “cashiers”, to collect the customers money. This seems to be a global trend, as it has already been noticed elsewhere (ERNST & YOUNG, 1998; ALBERTIN, 1999).

*See Figure 2*

Among the participants in the survey that had already bought something on the web, CD's, books and computer gear prevailed. None of them had ever visited a virtual supermarket, before.

When one compares the number of items purchased by each participant with the time spent on the site, it is possible to notice some correlation between the two, as shown in the dispersion graphics in Figure 3. Although Figure 3 shows the time spent in the site as a

function of the number of items purchased, there is no evidence to support such assumption. It could well be that the number of items purchased was a function of the time spent in the site. In fact, that is what most e-business entrepreneurs believe to happen. For them, the more time they can keep the internaut in their sites, the greater the chances he is going to buy something there, by clicking on a promotion banner, for example.

For LOHSE AND SPILLER (1998), additional visits and sales are generated as a result of promotions. Each hour of promotion on the main screen of an electronic shopping mall generates, according to those authors, an increase in sales of 4% and an increase in site traffic of 1,4%.

*See Figure 3*

It was requested that the participants indicated the amount of time they would have spent to purchase the same items in a physical supermarket, including the time inside the shop plus traveling time. Figure 4 shows that the majority of the participants believes purchasing on the web is faster (Dots above the diagonal line, on Figure 4, indicate more time required for a visit to a brick and mortar supermarket than to buy on the web). That was already expected, despite the low transfer rate of the dialed connections most participants had available.

*See Figure 4*

Most participants found it easy to navigate through the supermarket's web page. BAUER, GREYER AND LEACH (2000) consider the easiness of finding what one wants quickly, in a web site, a major issue to ensure customer's satisfaction.

*See Figure 5*

Simulations of a virtual supermarket indicated that consumers use visual hints of the products to support their purchase decisions. In the simulations carried out by BURKE (1996), graphic simulations had better acceptance than those did with just descriptive text about the products being offered. Remarks of participants in the current survey enforce Burke's findings. The lack of visual hints made it difficult for the participants to find what they wanted: "Graphics help. Just the brand isn't enough, sometimes. I gave up buying several items as a consequence of that", said one of the participants. "I lost the notion of weight and volume", argued another. "I never thought two guavas would weight 500 gr. and that a 500 ml bottle of alcohol was so little". A third participant confessed having been mixed up by the size of a cocoa can. Did he usually buy the 500 gr. can or the 250 gr. one?

According to LOHSE AND SPILLER (1998), many organizations do not take full advantage of adding a rich description of their products to their web sites. 50% of the researched companies had product descriptions with less than three text lines, which, in those authors' opinion, probably resulted from a straight transcription of pre-existent catalogues and folders, without any changes to better fit the new media.

Another interesting finding was that only two of the participants in the survey believed there was no relevant learning curve related to the site's operation. All of the others thought there would be a reduction in transaction time to less than a half, in some cases, if they were to buy the same things through the web a second time, due to a better understanding of the site features and possibilities.

*See Figure 6*

Such severe learning curve may be related to the fact that there are no standards for setting up an e-business enterprise, as yet. On the other hand, when a customer visits a brick and mortar store, he is already acquainted with the “script” (SCHANK, 1982).

Although most participants thought the layout of the virtual shop was suitable, there were quite a few complaints. Some people thought goods were grouped in too wide and generic groups. More, smaller, sections would make it easier to find the desired items, in their opinion. An example of such situation was the food section, which included all edible items sold by the supermarket. LOHSE AND SPILLER (1998) had also noticed that customers find it difficult to remember where products are, in virtual shops, differently to what happens in brick and mortar stores, where there are lots of visual clues.

*See Figure 7*

Participants complained it was not easy to find some products. Many of them didn't have a complete description. In other cases, it was difficult to relate the desired item with the possibilities being offered. One of the participants noted: "The shampoo's brand was there, but it didn't mention for what type of hair it was". Another one had troubles buying milk: "There were too many abbreviations in the description of the product, I wasn't able to find out which one was the one I usually buy". And someone complained about the toothbrushes: "I need to know if a toothbrush is soft or hard." BROWNING (1999) says the consumers should be able to find the products they want without having to go through several menus or searches. The product should pop up after just one or two clicks of the mouse; otherwise, there is great risk the customer is going to give up. According to his research, 20% of the visitors leave the site each time they are asked to click further into the site.

*See Figure 8*

The difficulty in finding a product in a virtual shop is related to navigation problems and the convenience of the site's design, but also to the lack of available information on the products. Lack of information generates doubts and mistrust. Many participants in the survey complained the site didn't provide an easy way to solve their doubts. There was no broad FAQ (*frequently asked questions*) list and e-mail support seemed inefficient. One of the participants claimed never to have received an answer to his information requests made to the e-mail address provided in the site. The dissatisfaction for not receiving an answer to a request through a communication channel that had been made available by the company is much greater than the disappointment of not finding such communication channel available.

A research by Net Effect (1999) has shown that only 5.75% of those who visit an e-commerce site effectively buy something there. 67% of the purchases are abandoned due to lack of real time support to the customer. EVANS AND WURSTER (1999) say that the navigation and information services in the sites should be built, primarily, in order to solve problems and clear customer doubts, not to enforce sales. For LOHSE AND SPILLER (1998), sites that offer a FAQ section receive more visits, comparatively to those that don't have them. Sites that provide feedback to their customers have been increasing sales steadily. VENETIANER (1999) states that if one wants to make friends, he should give them the opportunity to speak and complain and should listen carefully. Therefore, it's important to provide the sites with mechanisms that allow for easy customer feedback. Once the customer has made contact through the communication channels that have been made available to him by the organization, he should be quickly responded to.

After having filled in the trolley, the next challenge is carrying out the transaction. LOHSE AND SPILLER (1998) say that finishing the transaction has been more complicated than it should and, when the payment process takes too long, customers give up the purchase. In the case of the virtual supermarket analyzed in the survey, there was no problem related to the actual transaction, because payment was not made through the site, but when the order was delivered to the customer's front door.

The site has several metaphors to the physical supermarket: trolleys are used to keep the goods, while they are being selected and products are organized in (virtual) shelves, just like in a traditional store. Many of the participants understood that as an effort to make the purchase a bit more similar to what the customers are used to. In fact, the virtual trolley is even more complete than the real one, as it can keep a score of everything that is in it and sum up the value of the goods, at any time.

For some reason, several items that were available to purchase in the site weren't available at the physical inventory. That generated the need of a phone call from the supermarket to the customer to negotiate changes by similar items or canceling the item's purchase. Opinions about such procedure were diverse: "They didn't have the brand of yogurt I wanted, but they called me and asked me if I would accept another brand. I enjoyed the fact that, if they don't have the product, they phone you back to know what to do". "The initial value of my purchase was R\$44.80, but at the end, it drop down to R\$28.94 as they couldn't deliver several items. They are sure losing money!". "They told me they had tried to contact me, but as I wasn't home, they brought only the items they had in stock. That way, I will still have to go to a brick and mortar supermarket to buy what was left. That wasn't nice!"

It is clear that the virtual supermarket is not making the best use of the information technologies available, in order to make inventory information available to the customer in real time. Products that can't be delivered shouldn't even appear as options on the customer's screen. Besides that, with the logistics systems available now-a-days, and the use of electronic data interchange, inventory reposition is something that shouldn't take more than a few hours and that can be easily predicted.

More than 50% of the orders were delivered within 30 minutes of the scheduled time, and 75% of them were delivered within an hour of the agreed time. That sounds good, at a first look, but participants were very tough with respect to the timing. "To arrive before the time is just as bad, or in some cases even worse, than being late", said one of the respondents. Another participant ended up canceling his order because he was not able to get it during his work hours, while he was at the office to receive the delivery.

*See Figure 9*

The participants were all very happy with the quality of the goods they received. Since the customer cannot personally choose items that may have variable quality (fruits, vegetables etc.), it seems the virtual supermarket is putting extra effort into making sure the customer is going to be pleased with their selection.

Among the greatest advantages mentioned by the participants in the survey were the convenience of not having to leave home or the office to go to the supermarket and the time saved. They also appreciated the fact they didn't have to carry all the shopping bags around. "Whether you live in a house or on the 4<sup>th</sup> ground of an apartment building without elevator, the order is brought to your front door", reminded one of the participants. Many were happy that they didn't buy anything by impulse ("The promotions weren't that attractive on the web, I guess", mentioned one of the respondents).

Many disadvantages of the virtual purchase were also highlighted. The major one, in the participants' opinion, was the time to delivery, and the delays or early arrivals, which generated inconvenience. The difficulty to visualize and choose products by their looks was another problem. People are used to see and handle the goods, and not only ready about them. But one thing is for sure: if people are to start buying supermarket goods through the web on a regular basis, they will have to start paying attention to other details about the products than the ones they are used to, otherwise, they will keep feeling lost. Supermarket purchasing will become a lot less visual than it is in brick and mortar stores, if the new model succeeds. Curiously, the difficulty in being able to buy something by impulse was also mentioned as a disadvantage by some. They said they enjoyed buying new products, or something they didn't really need, just to please their consumer's impetus. Many were concerned with social issues. If they don't need to leave home to go to the supermarket or do other shopping, they will have fewer chances to meet and talk with other people. Go out shopping is a social event, in their opinion.

### *CONCLUSIONS*

Different people react differently when exposed to the same situation. Among the participants in the survey, there were a few enthusiasts of the virtual supermarket ("I will do all my supermarket shopping through the web, from now on, because I hate going shopping") and there were others that would require extra effort to be convinced to change their buying habits ("I didn't feel very comfortable buying through the web, I think I will stick to the traditional way of buying. It's hard for me not to see and touch what I am buying."). In the middle of the way, there are those who could balance the advantages and disadvantages of each way and would make use of both, depending on the occasion ("I would buy again through the web, but only products I don't urgently need and when I was unable to go to a brick and mortar shop").

So that people get more confident in going to the supermarket on the web, they will need to get rid of some paradigms of the traditional commercial transaction and submit themselves to others, related to this new way of doing business. For example, people are used to recognize goods by the color or other features of the packing. Sometimes they don't even know the brand, or the name of the product they are used to buy. That doesn't stop them from finding such products on a regular supermarket, but is a problem on the web.

If they are willing to make even the most traditional customers move to the electronic commerce, virtual stores will have to develop ways of making it easy for their visitors to find what they want. But, maybe the metaphor of the supermarket shelves, which has been used in most virtual supermarket implementations, isn't the best approach. Its virtue is that it allows an identification with something that is not totally new to the customers, making the transition a little bit less uncomfortable (as it was noticed by the participants in the survey): the virtual world isn't, after all, so different from the mortar and brick's one. On the other hand, it doesn't take advantage of some of the features that really represent the main edge of computers on humans, up to our days: their capacity of processing large amounts of information in a quick and precise way.

If the reason to visit a supermarket is just to purchase items required for keeping the household (i.e., getting rid of the list of missing items, ensuring they end up in the kitchen closet without much effort), maybe it would be more reasonable if the virtual supermarkets concentrated in becoming more efficient than their competitors in processing purchase lists. In that case, more important than having colorful pages with lots of images, it would be to have some sort of "intelligence" to accept orders originated from a word processor file, for instance, trying to solve any inconsistencies or providing

explanations while the customer was still online. Inconsistencies would be related to not being able to select from two very similar product descriptions, among which the customer would have to choose. Explanations could be about the way products would be packed or disposed for transportation. They could also deal with the difficulties regular customers of brick and mortar shops would have in their first contact with a virtual store (remember: how much do two guavas weight?).

No doubt the customers would have to change their buying habits and the way they think when they go shopping in a supermarket: it's not enough to know one needs alcohol. Without being able to have the product in hands, the only way to decide about the size of the alcohol bottle to buy would be having a good idea of what a 500 ml alcohol bottle is like and what a 1 liter alcohol bottle is like. And it's not just a matter of being acquainted with volume measures. Of course, when someone buys a 500 ml alcohol bottle through the web (as it happened to one of the participants), when he intended to buy a 1 liter bottle, he did that because he was used to think visually, not textually, as it may become necessary from now on.

In order to be able to stop having the supermarket tours as the weekend program, people will have to agree on some concessions. The purchase list will have to be a lot more detailed than before, in order to allow for the discrimination among different, but very close products, by an automate process. In this new purchase model, nobody will have the chance of standing in front of the shelves, with two different products, one in each hand, trying to decide which one to take, regardless of that being an advantage or a disadvantage.

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1. Did you buy anything through the web previously to this? In case you did, what was that? Who did you buy from? What was the approximate value of the purchase?
2. How many items did you buy this time at the virtual supermarket?
3. How much money did you spend at the virtual supermarket?
4. How much time did you spend on the site to select items and carry out the transaction?
5. If you had to buy the same goods in a traditional supermarket store, how much time would you have spent? (include traveling time)
6. Do you believe you would spend less time to buy the same goods on a second attempt? In case you do, how much faster do you think you would be?
7. Is navigation through the site easy? Comment on that.
8. Does the way goods are offered make it easy for the customer? Would you have any other ideas on how to make goods available on an easier way? Comment on that.
9. Did you have problems finding the items you wanted, or information about them? Comment on that.
10. Which were the main difficulties you had, concerning carrying out the transaction? Comment on that.
11. What are the "metaphors" (similarities with a brick and mortar store) used by the site, in order to facilitate the customer's experience with the site. Is the approach efficient? Comment on that.
12. Was the information on security enough to make you feel comfortable about the transaction? Comment on that.
13. Were the goods delivered on time, accordingly to what had been agreed? Explain.
14. Did the goods have the expected quality? Explain.
15. Were the delivered goods the same you had requested? Was anything missing? Explain
16. Which were the main difficulties regarding the delivery? Explain.
17. Do you think it is important that the company develops any kind of incentive for regular customers to the virtual shop (such as a fidelity card)?
18. Could the doubts about the site, products or delivery be solved directly from the site? If not, did you get in touch with the virtual supermarket through e-mail? How long did it take for you to get an answer?
19. In your point of view, which were the main advantages and disadvantages of the transaction through the web, when compared to a visit to a real shop. List the 5 major advantages and the 5 major disadvantages, from the most important to the least important ones, in your opinion.
20. Would you buy at a virtual supermarket again? Explain in which circumstances.

Figure 1 – Questionnaire used in the survey

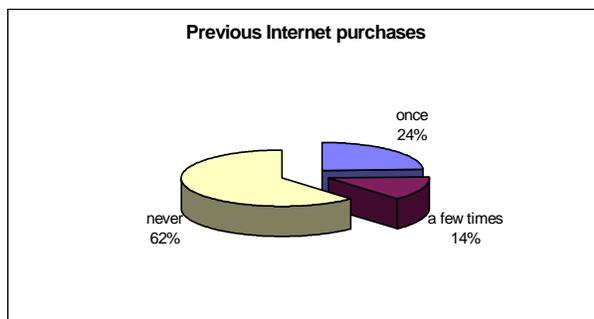


Figure 2 – Previous Internet purchases

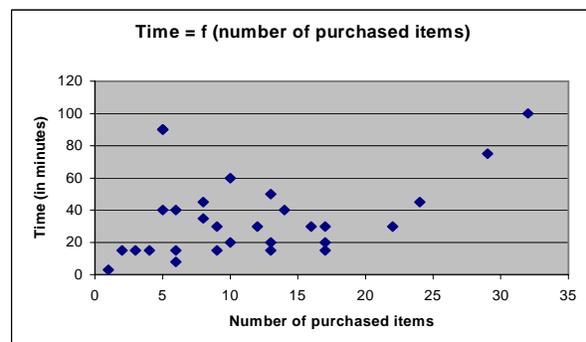


Figure 3 – Purchased items x time spent in the site

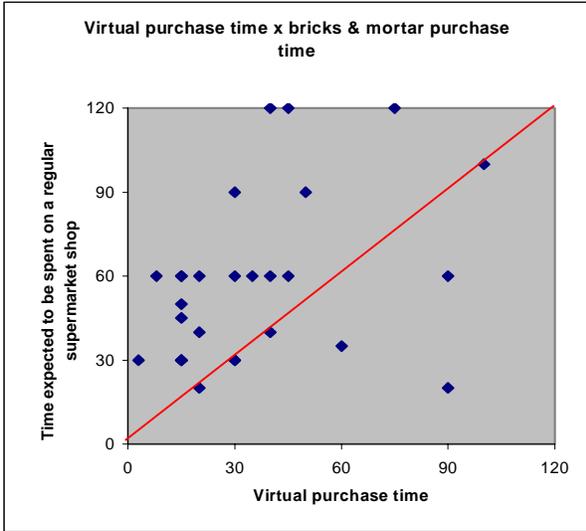


Figure 4 – Virtual x traditional purchase time

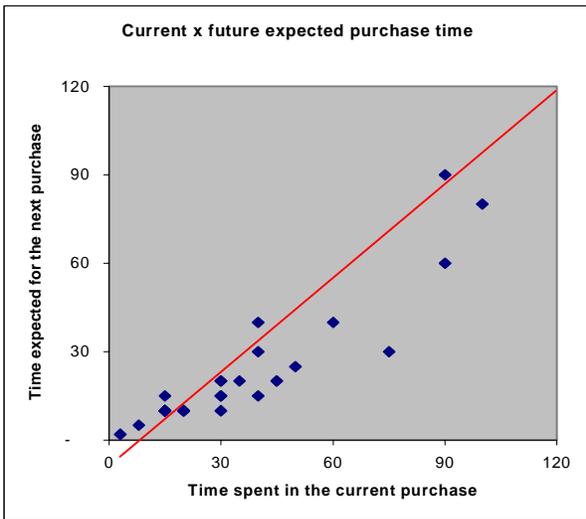


Figure 6 - Current x future expected purchase time



Figure 8 – How easy is it to find the goods in the site?

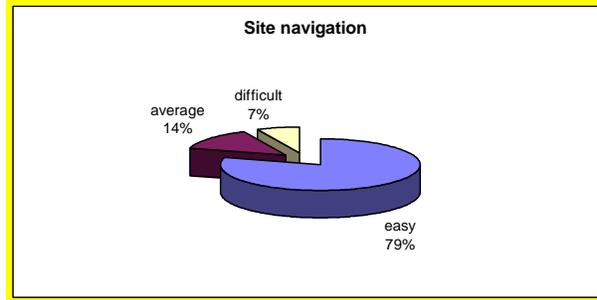


Figure 5 – How easy is it to navigate through the site?



Figure 7 – Product layout in the site

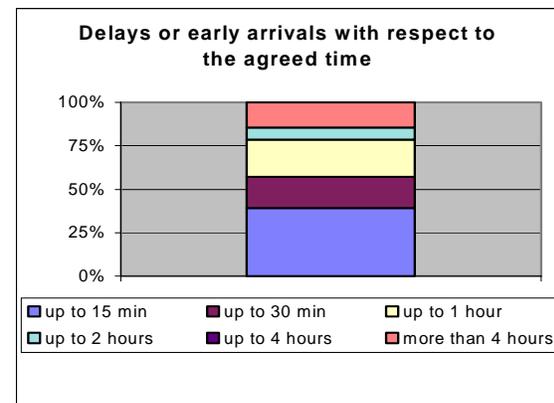


Figure 9 – Delivery time