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Final report on the e-commerce project and structure of the websites.

- Publications / Projets de recherche - Anciens projets - Ergonomie et commerce électronique -

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This project is divided into two parts:

- **first a study on the conditions of use of the Internet in Brittany: who are and aren't the Net surfers, with the idea to bring a scientific clarification on what is called the « the digital divide »;**
- **then, and concerning the Net surfers, we wanted to focus on a type of use, undoubtedly the most important in term of economic development: the use of Web sites, while considering the way to keep the visitor's attention on a web site.**

Sub-project 1: Users of the Internet in Brittany.

The number of Internet users has strongly increased in France in these two last years. According to Médiamétrie, 23 million of French people may have been connected to the Internet during March 2004 (that is to say an improvement of 22% in one year and 40% over two years). Besides, ADSL has experienced a very strong development since 2002, exceeding 3 million subscriptions at the end of 2003. Several reasons can explain this acceleration of the Internet's spreading in France. First of all, competition has grown more intense between Internet Service Providers leading to a substantial fall in prices, especially on the ADSL. The feedback effect between users has also to be taken into account (A new user has an impact on his family, friends and workmates increasing their chances of becoming new users). The French Net surfers critical mass was probably reached in 2001, which encouraged many French people who hadn't made up their minds, to massively adopt the Internet in 2002 and 2003 to benefit from the network effects further to this critical mass of users.

The Breton people obviously took part in this movement: Internet spread these last years all over Brittany. Nevertheless, was this spreading done in a uniform way? What are the households that are connected to the Internet and for what uses? Can we speak of one or more digital divide(s) in Brittany and what forms do these fractures take ?

This sub-project aimed at answering these various questions. It intends on the one hand to define, in the sharpest possible way, the profile of Breton Net surfers and on the other hand, to identify the outlines of Brittany's digital divide. For that, we exploited the M@rsouin survey carried out in December 2002 with 2000 people, by telephone.

The point of this work is to provide the authorities with a precise overview of the Internet's spreading in Brittany at the end of 2002, as well as keys to understand the factors stimulating or slowing down the Internet's use. This knowledge can prove to be useful to make the right plans of action aiming at spreading ICT and the Internet.

It is divided into three parts.

A first part provides descriptive elements on the investigation of December 2002: what is the share of Breton households having an Internet access at home? How is the Internet used by Breton Net surfers ?

In the second part, sharper analysis was carried out to isolate the determinants of the Internet's use and especially of online purchases, in connection with the objectives of the project's second part. Because, our intention is certainly not to reduce the Internet's use to the commercial uses, but we thought that this type of use has strong economic stakes

for an area like Brittany. Indeed, if online purchasing customs start to spread widely in Brittany, that will necessarily stimulate a regional offer of e-commerce websites.

That way, these sites will be able to rely on the regional demand to cover their launching costs (which are high and irrecoverable, that is why companies hesitated before launching out in e-commerce), before wanting to conquer more distant customers. On the contrary, if online purchasing does not become a success in Brittany, Breton companies will be reluctant about launching out in the electronic trade and Brittany is likely to miss this promising distribution channel. It is thus important to understand how the Breton households grasp e-commerce and how online purchasing customs are spread over the Breton population.

The third part of the report offers a compared analysis of the results of the M@RSOUIIN's survey with a survey from Luxembourg carried out in June 2002 with 1554 people. The point of this comparison is to draw a parallel between two rather different European territories (in terms of size, population, localization in the EU, GDP per inhabitant and especially of diffusion of the Internet). In spite of these differences, are the determinants of the Internet's use in Brittany similar to those observed in Luxembourg?

The main striking facts are as follows:

- 47% of the Breton households were equipped with a desktop pc or laptop in December 2002;
- 29% of the Breton households had an Internet connection at home. Among these households, only 13% had broadband connections ;
- important geographical disparities were recorded as regards computer equipment and the Internet in Brittany. For instance, 51% of the urban households (inner city or outskirts) had a computer, against 44% in rural areas. Just as the Internet access rate of the urban households was 33% against 23% for the rural households;
- the professional status of the head of the household is also at the origin of strong disparities. For example, a Breton household whose head of household is an executive or another high intellectual profession has an Internet access in 66% of the cases. This rate goes down to 46% for intermediate professions and 23% for « workers »;
- linked to the professional status the instruction level gives rise to inequality in Internet 's access and the use. Breton people having more than five years of higher education have an Internet access at home in 63% of the cases. Unlike the Breton people having A-levels who only have it in 37% of the cases and in 16% for those without diploma or who stopped after primary school;
- the head of household's age is also a determining factor. Even though 37% of the households having a head of household between 30 and 59 years old have an Internet access, only 6% of the households whose head of household has more than 65 years old are connected (moreover only 11% of the retired households have an Internet access);
- the connection rate to the Internet is all the more high given that the size of the household is important (from 18% for singles, it peaks to 45% when the household is made up of five individuals or more); finally, 29% of the Breton Net surfers have stated that they have already made a purchase on Internet in December 2002.

These figures are interesting to make up a first idea of the Internet's spreading in Brittany. However it is important to look further and to aim at understanding what the factors, which determine in a Breton household the subscriber's choice to get connected to the Internet or to purchase online, are. In this extent, statistical techniques exist in order to

isolate correctly the variables which exploit this type of decisions and to quantify their effects.

Using these techniques, we highlight that the factors which determine the existence of a connection at home are very different from those that influence the purchase on the Internet. If the socio-economic variables (age, level of study, socio-professional category, life style) are of important consequence at the moment of the first decision, they are supplanted by the experience gained on the Internet and the social neighbourhood of the individuals (number of friends of the person having already bought on the Internet) at the moment of the second decision. So, an individual will have a greater probability to buy on the Internet if many of the people around him have already bought online. This idea that the individual choices are done in interaction with the circle or the social network, is confirmed as regards e-commerce. These results on the Breton households are largely confirmed by the survey made in Luxembourg.

The following table proposes a synthesis of the main determinants of the adoption of the Internet and online purchase (encouraging or curbing effect) in Brittany.

FACTORS	Internet connection at home	Online purchasing
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Encouraging effect	Household with children, executive or another high intellectual profession head of household, living in an urban area, at least one member of the family regularly uses the Internet at work, possession of other ICT equipment (mobile phone, PDA, digital camera)	The circle of the Net surfer also buys on the Internet, informatic and Internet experienced user
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Curbing effect	Head of household having more than 65 years, head of household is a worker, level of study lower than the A-levels, living in rural area	The circle does not buy on the Internet, executive or high intellectual profession, Net surfer of less than 20 years
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Neutral effect	Sex, location of the Net surfer, possession of other ICT equipment, type of the Internet connection (broadband or not)	
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The M@rsouin survey, through the various statistical processings executed, seems to draw attention to the existence of a divide or a digital divide between the Breton households in the access to the Internet (urban/rural households, high socio-professional category/workers households, graduated/not graduated) but also in the use of the Internet (experienced/not experienced Net surfers, with social support/without social support). What can the Brittany region do in front of this divide ? What public policy choose to reduce the digital divide in Brittany?

First of all, the report provides an optimistic first reading of the digital divide , while insisting on the transitory characteristic of the Internet access divide. Indeed, the diffusion of a service like the Internet necessarily goes through a launching stage being defined by a divide between those who already adopted it and those who did not yet. The divide between the 30% of Breton households having an Internet access and the 70% not having it thus has to be reduced naturally with time. From this point of view, the digital divide is rather an indicator on the state of diffusion of the Internet in a country. If one considers the diffusion of the Internet in the United States, it is clearly the case.

The first American surveys (from 1994), had shown that early adopters were mainly male, between 30 and 40 years old, of a high level of study (at least 2 or 3 years of higher education), working in professions with strong 'responsibilities'. But, the latest studies bring to conclusion that the Net surfers' population is getting closer in its layout to the US population. According to the last report carried out by the University of California in Los Angeles (UCLA Internet Carryforward, 2003), the digital divide would no longer be topical since "75% of the American use the Internet, that a huge majority of the children have the Internet at school and that half of the working population has a connection at the office". Just as more than 60% of the American households that have an Internet access at home.

In a few years the same levels of diffusion of the Internet in Brittany can reasonably be expected.

Under these conditions, is it judicious to launch public actions to encourage a diffusion that will happen anyway?

Yes because the digital divide cannot be reduced to a simple problem of access to the Internet, but raises the question of the capacity to use the ICT. First of all, it is important to note that disparities in the Internet access still remain in the United States, disparities in the Internet access linked to the age, the location and especially to the income. For example, still in the USA, an important delay in the adoption of the Internet by the minorities was witnessed, particularly the black community. However, above all, a public intervention is justified because the digital divide has developed on two levels: first of all on the access level (between those who have an Internet access and those who do not) and then on the level of the Internet use (between those who know how to use the Internet and those who do not). The second level of the divide is a cognitive divide pulling apart those who possess the "capacity to find, in an efficient and effective way, information on line" and those who do not, and has five main causes:

- 1. the equipment quality and the access means of Net surfers (type of computer used, of software and of connection to reach the Internet),
- 2. the degree of autonomy while using the Internet (is the help of a third party always needed by the individuals? Limited time of navigation?), the authors are assuming that the more Net surfers are self-sufficient and not under pressure, the more they can benefit from the contributions of the Internet [1],
- 3. the motives justifying the use of the Internet. According to objectives that the Net surfer sets himself, the benefits gain by use of the Internet will be very uneven,
- 4. the qualification level (from a technical point of view, but also in terms of ability to find and use online informations, to use a searchengine, to deal with the technical problems alone...)
- 5. those who can help in the social network: a dense social network eases the use of the Internet, while being able to obtain help from the family or from individuals sharing interests and with very close skills.

Our work clearly confirms the importance of causes 4 and 5: purchasing online strongly depends on the skills or experience of the Net surfer, but also of his social circle.

The existence of a double divide thus requires a public policy on a double level: a policy aiming at going with the reduction of the fracture on the Internet access and a policy aiming at tackling the divide on the capacity to use the Internet.

Setting up a regulation framework favorable to competition and to private investments is, without any doubt, the best way to quickly reduce the first level fracture, the expected fall in prices of an increased competition boosts the diffusion of the Internet in all the layers of the population. From this point of view, Brittany must attend its territory in order to attract private operators, to ease the development of competitive offers, to lower as much as possible the entry barriers (for example by not giving a preferential treatment to an operator...)

But the Brittany region cannot see its political line stay that restricted. Indeed, it must also tackle the second level fracture, which has not a natural trend to diminish, unlike the first level fracture. Thus, the diffusion of the Internet can leave behind some groups of the population and lock them up in a digital trap door of exclusion that can't be left that easily. This exclusion of the Internet access may stem with financial reasons, but also result from an incapacity to know how to use the Internet. This last difficulty is reinforced by the consequences of the social circle and experience. Indeed, the individuals excluded from the Internet often have a poor social network, less dense than the rest of the

population, which will even more accentuate their exclusion. These individuals, since they don't know, in their circle, intensive users of the Internet, will feel reluctant to adopt the Internet. Besides, the more an individual spends time on the Internet and the more he will improve his skills in the field of research of information and navigation on the Web. Conversely, an individual who lacks the initial skills in order to use correctly the Internet, will very likely give up and turn away from the Internet, which will deprive him of any experience.

Within these conditions, a public intervention seems necessary to a regional level to bring these individuals out of the exclusion trap doors: a policy of information and training targeted at the « e-society outsiders », lacking social support or skills to use correctly the Internet. It is a true challenge awaiting the Brittany region. After having successfully contributed to reduce the first level fracture on the access thanks to the public access point to the Internet (public offer of access to Internet), the Brittany region must from now on develop an ambitious plan of action that tackles the second level fracture, which contrary to the first level fracture, tends to reinforce itself with time if not taken care of.

Sub-project 2: electronic marketing: study on the influence of social factors on the behavior of Net surfers.

Objective.

The main goal of the researchs we undertook with the support of the Brittany region was to analyse what kind of influence would the introduction of social variables have when one communicates with an individual on the Internet. One e-mail address stands for one individual. The originality of our work also comes from that the evaluation of these variables was made in a real situation since the Net surfers were solicited through their e-mail address or a site built for the occasion. In all the cases, we opted for an experimental approach in order to test our variables and did not resort or in little proportions to intent surveys or observation. In fact, we focused on the behavior really produced by an individual left in all autonomy in its usual way of entry and interaction through the Internet.

Results achieved and conclusion.

In order to make readable the work undertaken in 2003 and during the first half of 2004, we present a synthesis of the main research by taking into account the specificity of each studied variable.

Research orientation 1: psycho-social techniques of influence on the Internet.

The scientific competence of some researchers of the GRESICO laboratory and at CREM as regards procedures of behaviour influence in face to face discussion led us to try to generalize and to adapt these procedures to the very particular world of communication through computers. In this respect during the year 2003 and the first six months of 2004, we tested two influence techniques that until now, has never been adapted nor tested to this communication mode.

The foot in the electronic door technique

The « foot in the door » technique is a persuasion technique that consists in submitting one first inexpensive request (called preparatory act) to a person to then submit him a second request, more expensive (called final act). The results were a higher acceptance rate to the second request than what is achieved in a control situation where this second request is not preceded by an initial request. Researchs on this paradigm generally employed a face to face or telephone interaction between the caller and the solicited person. The GRESICO laboratory was the first to test and present an extension of this technique applied to the case of communication through computers (email) by showing that even by a simple email, asking a small thing to someone (a piece of information) through email, favourably disposes the person to accept a more expensive later request. This principle was named the « foot in the electronic door » in reference to the initial technique applied in face to face discussions. During the year 2003, we tried to broaden this technique to another interaction situation: visiting a web site. Net surfers received an email asking them to visit a web site related to an aid organization. The objective was here to obtain donations in favour of this organization. Half of the Net surfers (« foot in the door » technique), while they reached the web site, were led to a petition for a right cause and were requested to put in their name, first name and e-mail (preparatory act) then, after this validation, the Net surfers were sent to a page asking them to donate. For the other half of the Net surfers (control situation), there was no petition on the web site and were led directly to a donation page. In order to test the possible effects of the « foot in the door technique » we compared the Net surfers' behaviour depending on which web site they visited. The results are summed up below:

Experimental

« foot in the door »

Activation of the donation page	12,1%	3,3%
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Activation of the link towards an aid organization to make the donation :	5,2%	1,3%
• compared with the total number of tested Net surfers	44,2%	40,0%
• compared with the Net surfers who activated the donation page		

These results showed us that the « foot in the door » was transferable to a new communication situation (Internet) and that it produces the same persuasion effects. Besides the theoretical interests that lie here, the stakes applied to this research have to be considered. Since then we attempt to improve and reinforce this technique.

The « door in face » technique

The « door in face » technique is also a persuasion technique that consists in asking an outrageous thing to someone, who will refuse to do it (preparatory request) in order to then ask him a more affordable thing (final request). The fact of refusing the first request generally leads the person to accept more favorably the second request compared to a situation where this second request is declined directly. In the specialized literature, this procedure was called the « door in face technique ». We tried to broaden this principle to communication through computers. As previously the web site of an aid organization was used on the pretext of testing the effects of this technique. Some Net surfers while visiting the web site were proposed to get a little involved in helping the organization. When they got to the page, they faced an outrageous request. Managing partially during two years the web site. They had the choice to accept or refuse, if they refused (that was systematically the case), they were sent to the donation page. In the control situation, the subjects were directly sent to the donation page. Here also we tested the effectiveness of the technique by comparing the acceptance rates of the requests according to the two manipulated conditions.

Experimental

« door in face technique »

Activation of the donation page	11,0%	3,5%
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Activation of the link towards an aid organization to make the donation :	5,5%	1,9%
<ul style="list-style-type: none"> • compared with the total number of tested Net surfers 	49,4%	55,2%
<ul style="list-style-type: none"> • compared with the Net surfers who activated the donation page 		

Here again, we have proved that it was possible to transfer this technique to a new communication context. Now again, this technique was never studied according to this framework.

Conclusion.

As we can see, our first studies show that well-known techniques of behaviour influence also work in the mode of communication popularized through computer. These results have an important theoretical range because the mode of communication by computer precisely enables to form a notion of some theoretical assumptions explaining, in a general way, such or such technique. Moreover the practical interest is proven if you wish to popularize a web site, to build up loyalty, to gain more informations, to encourage Net surfers to answer questionnaires. Finally, these first results presenting the transfer of these techniques through characteristic modifications open up new horizons for the transfers of many others influence techniques. In the long term, our objective is to test each one of these techniques, by adapting them within the framework of computer and Internet communication.

Research orientation 2: Internet and the chameleon effect.

The chameleon effect is a persuasion theory in marketing and psychology which stipulates that someone will be more favourably disposed to accept your requests if he has the impression to share something, invented or not, with you. So, a person who seems to share characteristics that we do have, will be more favorably thought of and his requests will have a greater chance to be accepted. In order to verify this postulate, we led a certain number of researchs, specifically applied to the case of the Internet communication. Here again, the GRESICO laboratory and the CREM laboratory appear to be the first which invested this mode of communication within the scope of this theoretical paradigm.

In a first experiment, students of a university received an email coming from a person (another student) they did not know and who kindly requested them to answer a questionnaire on their food behavior. According to the cases, the first name of this person was identical or different of the receiver's one. The similarity/dissimilarity was thus manipulated by this way. The results will show that 72% of the people agreed to answer when the sender had the same first name and 44% when the first name was different. In one second experiment, we proceeded the same way but, this time, the similarity of the surname was manipulated. The results will show that 96% of the people will answer the questionnaire of a sender having the same surname and 52% in the different case. On the basis of these first results showing an effect of the similarity/dissimilarity of identity information on the Internet, we led a third experiment where Net surfers

were asked by an unknown person to visit a web site of an aid organization in order to make a donation. According to the cases, the sender of the e-mail had the same first name or a different one than the receiver's.

Experimental

Same first name

Activation of the donation page	21,7%	4,3%
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Activation of the link towards an aid organization to make the donation :		
• compared to the total number of tested Net surfers	8,4%	1,9%
• compared to the number of Net surfers who activated the donation page	38,8%	42,9%

The results show that there are 4 times more Net surfers that visit the web site in situation when the first names are similar than in the case they are different. In fact, that has a direct effect on the number of people who want to make a donation.

In a fourth experiment that we are currently running, people are brought to interact, by the means of e-mail, with technicians who send them technical advices in order to enable them to execute a backup of some of their files. Of course, such a situation made it possible to manipulate the similiarity/dissimilarity between the sender and the receiver of the email. Also, depending on the cases, the first name of the technician was identical or different from the receiver's. This situation of mail maintenance was voluntarily fictitious in order to well control the variables. The answer contained sufficient informations so that the subject manages to carry out the procedure, but forced him to implicate himself quite a bit: everything was not explained step by step. After the subject's success or failure in executing the task, he was asked to evaluate the quality of the technician's advices (accuracy, easy to execute,...) and to imagine the characteristics of his personality (sympathy, competence...). The results will show that the evaluations were more positive in the case of similarity of the first names and, especially, when the subjects did not manage to carry out the procedure.

Conclusion.

The results of these experiments prove that the creation of a similarity on the Internet has positive effects on the behavior of Net surfers. They will more favourably agree to visit a web site or answer an online questionnaire. As a matter of fact, such results open a broad scope of study on the effect of similarity and the practical applications are to be considered in one to one online marketing.

Research orientation 3: The introduction of social variables in the communication popularized by computer.

The objective of this axis was to work on a theoretical postulate largely shared by online marketing experts, in order to influence someone's behavior in a virtual world like the Internet, they need to be able to reintroduce, in an adapted form, the social information that is known and controled by the individuals. However, there is no choice but to accept that this social information is poor.

So as to test this assumption, we led a certain number of experiments that intended to measure the effect of a social variable: here, the photographic representation of the interlocutor.

In a first experiment, we sought to study the impact of the simple presence of a numerical picture of a person asking by email if students agreed to answer a questionnaire on their food behavior. This picture was joined with the presentation label at bottom of the email. The answering rates are shown in the table below:

Picture

Sender is a man

Recipient is a man	80,0%	100,0%	55,0%	75,0%
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Recipient is a woman	70,0%	85,0%	40,0%	60,0%
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The results showed that the simple addition of a picture has a positive impact on the number of answers. While providing information of social nature to the receiver, we prove that he is more favourable to meet with the requests of the sender.

In another series of experiments, the principle of this initial research was extended and we tried to study the picture's impact within the scope of a relation by email towards a wide range of targets. We also observe a positive effect of the picture. Even if the survey rates do not reach those presented by the students, the difference between the two conditions is proportionally more important. Moreover, we demonstrate that the answering rate is all the more important than the physical attraction of the person on the picture is increased.

In a third experiment, recently carried out, people were brought to interact, using emails, with technicians who sent them technical advices in order to enable them to execute a backup operation of some of their files. The subjects had to choose between several technicians introduced by a card where appeared, or not, their picture. Information concerning their skills was included in order to direct the subject. Of course, this information systematically changed depending on the subject in order to only test the picture's effect all other things being equal. The answer contained sufficient informations so that the subject manages to carry out the procedure, but forced him to implicate himself quite a bit: everything was not explained step by step. After the subject's success or failure in executing the task, he was asked to evaluate the quality of the technician's advices (accuracy, easy to execute,...) and to imagine the characteristics of his personality (sympathy, competence...) The results will show that, in 93% of the cases, the cards illustrated by a picture were selected. Moreover, the evaluations of the technical advices and of the person were more positive when a picture was there, for a same quality and quantity of given advices.

Conclusion.

The results of these experiments show that when a relation through emails or the Internet becomes less anonymous, in particular by giving away more informations on the sender, that will result in leading the person to behaviour in a better way towards the sender.

Future prospects.

Within the scope of the study on the Breton Net surfers, the CREM has committed itself in a cooperation with the CEPS, an institute of study and research in Luxembourg on households and companies. Two researchers of the CREM stayed one month at the CEPS in January 2004 in the scope of an IRISS European program. This cooperation enabled us to obtain data on households in Luxembourg equivalent to M@rsouin's data and to execute a compared

analysis at the European level on the Internet uses. This partnership has to be reinforced, since it is planned that researchers and PhD students of the CREM stay at the CEPS in 2004 and 2005. The point of the cooperation with the CEPS is thus to strengthen the insertion of Breton teams in European networks and in the long term to be able to gather European projects in which M@rsouin could occupy a driving role.

The results of the three research orientations on the behaviour of Net surfers showed that the introduction of sociable variables through the Internet made it possible to truly affect the behaviour and the evaluation of the people with whom they interact. In fact, these results let us think that this axis can be largely developed in the future because the previously used factors, introduced in emails or in web sites, just represent one insignificant part of those that can be studied. Indeed, the fact that these variables definitely influence the behaviour of Net surfers also opens up new horizons for research on the evaluation of already known variables used in other contexts, but also, more interesting, of variables that it is crucial to now create. So, the objective of the laboratory will be for the months and years to come to keep up this research and innovation effort on social factors that influence the behavior of Net surfers. From a practical point of view, the multiplication of these studies will allow us to provide to sector manufacturers, development, presentations, requests suggestions.... in order to increase the visibility of their activity and thus to potentially raise the number of their customers, to build up the customer loyalty, to improve the customer's perception of the company or of the company's staff...