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**Understanding on-line Audiences: new research approaches**

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### Abstract

Audiences research today face a large number of challenges, technological change and its social consequences, probably being the most important. The contemporary audience that connects to the world and others via the web is difficult to understand using traditional approaches. The status of the World Wide Web nowadays, forces us to think both the user and the medium. User's activities are apparently a fertile ground to build a more comprehensive account of audiences today focusing on what the "audience does". Using Multidimensional scaling and cluster analysis techniques a study was conducted with the purpose of building a spatial map able to represent an important set of internet activities, group them into different clusters and identify different dimensions that can help in understanding users attitude towards the medium and the type of media culture it frames.

**Keywords:** audiences; internet; activities; multidimensional scaling; clusters

## **Understanding on-line Audiences: New Research Approaches**

What the internet and other new information and communication technologies provoke, is not simply a revisioning of the audience as a researchable group, but also a reconceptualization of media research methods and approaches. Today's online experience involve new forms of user's engagement with the media (Deuze, 2007) that go beyond direct interactions with the media and encircle a set of activities on which audiences' wider meanings are inscribed. Differently from the past passive consumer, today's audiences are more interactive (Ross & Nightingale, 2003) performing several activities and developing new relationships at the same time in a more engaging way (Livingstone, 2005).

Alasuutaari (1999) expresses an interesting possibility that the task of contemporary audience research is study the whole media culture on which audience activity takes place. This media culture encircles not only traditional commercial audiences analysis that focus on ratings and measurement (Schroder, Droter, Kline & Murray, 2003) but also the understanding of what users are actually doing on-line.

Our study goes beyond the analysis of substitution phenomena or measurement of on-line activity that are present in some analysis (Webster, Phalen & Lichty, 2000) and proposes to emphasize audience work or activity taking as a positive contribution the uses and gratifications theoretical approach that states that cultural experience of a specific media can be treated as a process of involvement and understanding of that same media by a specific audience (McQuail, 1997).

Our proposal is to scrutinize a variety of attitudes, values and reported behaviours towards the internet and trough the use of statistical tools, such as cluster and multidimensional

scaling, better understand on-line audiences in accordance with their positioning in respect to specific activities. Such a survey not only lays ground to a better understanding of today's on-line media culture, but also allows for the development of original procedures for the segmentation of internet users. In line with other studies (Flanagin & Metzger, 2001) we also suggest that the range of needs users satisfy on-line is potentially greater than those they satisfy through traditional media, but the paradigms of media consumption go in parallel with those we find in other "traditional" media. Though, our central hypotheses is that what users do on-line is not different from what they used to do using other media (i.e. the needs to be fulfilled are the same) but the activities they conduct are considerably different. The present document describes the statistical procedures that were conducted in the context of our larger study in order to isolate and identify the significant activities and discusses their relevance for the understanding of on-line audiences.

## **Method**

### *Participants*

A self-filled questionnaire was applied to a sample of 1,932 individuals, from which 599 (31%) were female and 1333 (69%) were male. Their age was between 12-18 years old. The majority of these, 1632 (94%), were students from Secondary Education and Further Education. All participants lived in different areas of Portugal. This sample was representative of the target population for the age group in the country.

### *Design and procedure*

In the first stage of this study, a questionnaire was build to get a measure of preference for different internet activities. The frequency of the activity was used as a measure of preference. So the respondent was asked to rate his frequency in the following internet activities:

Table 1.

*List of activities*

1	sim_pc3	general web browsing
2	sim_pc4	send sms
3	sim_pc5	listen music
4	tsknet1	mail
5	tsknet2	chat
6	tsknet4	study related web browsing
7	tsknet20	watch video
8	tsknet17	download music
9	tsknet24	blogging
10	tsknet23	web site creation
11	tsknet25	play games alone
12	tsknet26	play games with other players
13	tsknet28	online communities

14	tsknet29	p2p download
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While other activities could be considered, there is a limit on the number of stimulus appropriate for an MDS analysis thus creating a need to choose them. The researcher is responsible for the choice of activities. This set of activities seems reasonably comprehensive and represent an important part of the time the internet usage.

The design of the study then involved MDS analysis at the aggregate level which was applied to build the spatial map of the internet activities. A derived approach was used, with a preference rating based on the frequency of each activity. The data was processed with the ALSCAL program, available in SPSS. Interpretability was the key criteria in the decision about the number of dimensions. For that reason, the MDS was developed for two and three dimensions. RSQ was used as an index of fit and a stress value was computed. Finally, cluster analysis was also performed on the results of the 3-dimensions MDS to reveal better the similarities and differences of the internet activities. An ordinal scale for the frequency of usage was used as a measure of preference for the different internet activities and provided the basis for the subsequent MDS.

MDS and cluster analysis were used in tandem. This is a common procedure according to Arable, Douglas & De Sarbo (1987) or Trosset (1999), while there is some criticism regarding to the choice of MDS procedure to be used. The selected MDS procedure was INDSCAL in a choice similar to Geisinger & Sireci (1992).

The self fulfilled questionnaire was passed to all respondents in the presence of an assistant. The procedure for inquiry involved the administration of the questionnaires in “live settings” trough a three month period.

## Results

The results of the survey allowed us to identify the relevant activities and group them under three dimensions that summarize users' position towards the medium.

The following table shows the list of the variables used in this study and the corresponding internet activities:

Table 2.

*List of variables used in the study*

<b>stimulus</b>		
	<b>name</b>	<b>activity</b>
1	sim_pc3	general web browsing
2	sim_pc4	send sms
3	sim_pc5	listen music
4	tsknet1	mail
5	tsknet2	chat
		study related web
6	tsknet4	browsing
7	tsknet20	watch video
8	tsknet17	download music
9	tsknet24	blogging
10	tsknet23	web site creation
11	tsknet25	play games alone
12	tsknet26	play games with other

		players
13	tsknet28	online communities
14	tsknet29	p2p download

A 3-dimensional MDS produced the following results:

Table 3.

*Multidimensional scaling results*

Stimulus	Activity	Dimension 1	Dimension 2	Dimension 3
Number				
1	general web browsing	2,2669	-,1158	,0326
2	send sms	1,8621	1,1643	,9104
3	listen music	2,8284	-,1592	,1768
4	mail	1,0663	-1,4554	,1638
5	chat	,4553	1,5295	1,0450
6	study related web browsing	-,7064	1,0443	,2124
7	watch video	-1,7130	-,1095	,5012
8	download music	-,2055	-1,1359	,4147
9	blogging	-1,1126	,1951	,0046
10	web site creation	-1,4344	,3532	,3467
11	play games alone	-1,1944	-,1908	-,0039
12	play games with other players	-1,5390	-,0958	-,1443
13	online communities	,0062	-,9273	-,7413



14	p2p download	-,5798	-,0969	-,8286
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SPSS computed the following values for stress and squared correlation:

Stress = ,03634    RSQ = ,99264

The following table is a synthesis of the dimensions found in the study:

Table 4.

*Dimensions found in the study*

	Positive	Negative
Dimension 1	general web browsing send sms listen music mail	watch video Blogging web site creation play games alone play games with other players
Dimension 2	send sms Chat study related web browsing	mail download music online communities
Dimension 3	send sms watch video download music	chat online communities p2p download

The interpretation of the dimensions is, as usual, a subjective process. Based on these results we propose the following interpretations for the dimensions found in the internet activities:

Dimension 1: easy task orientation

Dimension 2: immediate results orientation

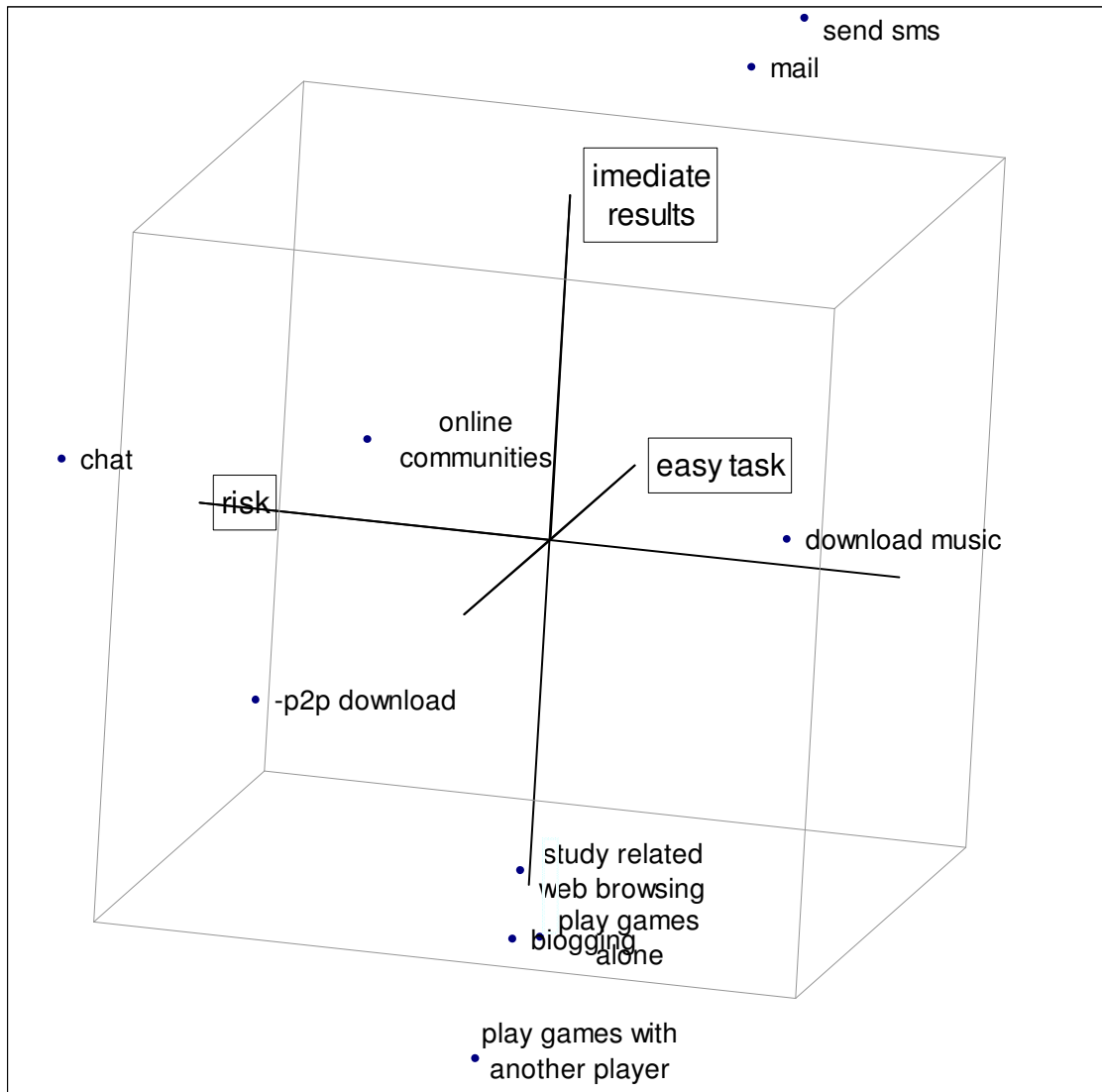
Dimension 3: risk orientation

Going back to table 2 we now can explain our interpretation of the detected dimensions. Dimension 1 is related with the complexity of the task, so general web browsing, mail, and listen music are perhaps the most basic activities in the internet, those accessible to any beginner. On the contrary, activities like web site creation or blogging reveal usually a more knowledgeable user. This goes in line with other studies (Ross & Nightingale, 2003) that found that when talking of on-line audiences there's a blurring of the frontiers between reception and production. Dimension 2 seems to reveal an orientation for immediate results. That is obvious in chat, a synchronous activity, and also in sms, a quick inexpensive way to contact somebody. It is not so obvious how browsing that is study related can reveal an orientation for quick results. Perhaps we must take in consideration that very often that kind of internet research is a superficial and quick way to get school homework done, so it seems to represent also an immediate results orientation. Compared with chat and sms, mail does not represent an immediate orientation. The same happens with the online communities, because it usually takes time to grow an online community. Music is often downloaded to be heard later, or even just stored and sometimes never heard after that. Finally, dimension 3 seems to be risk related. This dimension is inverted, meaning that a small value in this dimension means a more risky situation. In fact, p2p download is a very risky activity for the computer safety. The same happens with chat. The online

communities do not have these kinds of problems, but are sometimes considered a social risk, at least for young people and for those who make available too much information about themselves.

The following 3D scatter plot is a representation of the internet activities with the axis representing the subjacent dimensions:

Figure 1. 3D representation of the internet activities



We applied Cluster analysis to show better the similarities of the internet activities. A hierarchical cluster analysis was made with SPSS, using the Ward linkage procedure. The output generated by the SPSS is the following:

Table 5.

*Agglomeration for different clusters*

**Agglomeration Schedule**

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	1	3	,001	0	0	11
2	11	12	,012	0	0	5
3	9	10	,033	0	0	4
4	7	9	,078	0	3	5
5	7	11	,238	4	2	9
6	4	8	,425	0	0	8
7	5	6	,733	0	0	10
8	4	13	1,437	6	0	11
9	7	14	2,657	5	0	10
10	5	7	4,092	7	9	12
11	1	4	5,620	1	8	12
12	1	5	10,739	11	10	13
13	1	2	17,969	12	0	0

We then grouped the different activities into three different clusters.

Table 6.

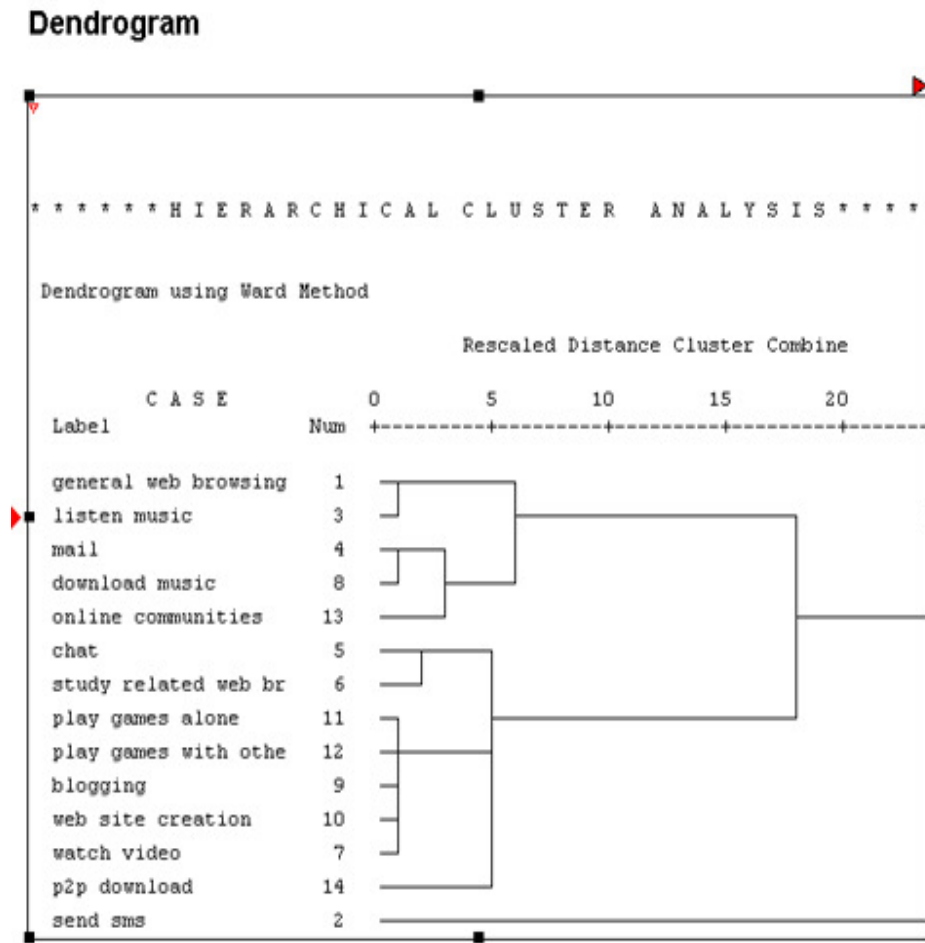
*Relation between activities and clusters*

**Cluster Membership**

Case	4 Clusters	3 Clusters	2 Clusters
1:general web browsing	1	1	1
2:send sms	2	2	2
3:listen music	1	1	1
4:mail	3	1	1
5:chat	4	3	1
6:study related web br	4	3	1
7:watch video	4	3	1
8:download music	3	1	1
9:blogging	4	3	1
10:web site creation	4	3	1
11:play games alone	4	3	1
12:play games with othe	4	3	1
13:online communities	3	1	1
14:p2p download	4	3	1

Finally, figure 2 represents a different representation of that same relation.

Figure 2. Dendrogram representation of relevant clusters



As we can see, both the agglomeration schedule and the dendrogram suggest a solution with 3 clusters. So, we will consider 3 clusters of internet activities:

- Cluster 1 includes general web browsing, listen music, mail, download music and online communities. So it is a cluster with the most basic internet activities.

- Cluster 2 includes chat, study related web browsing, play games alone, play games with others, blogging, web site creation, watch video and p2p download. So we can that is a more sophisticated cluster

- Cluster 3 includes only one activity, send sms, an activity that is unique in the sense that scores high in all the three dimensions.

Cluster 3 should not be considered as such because it has only one activity. Clusters 1 and 2 seem to differ in the level of the sophistication of the activities. Cluster 1 seems to be a cluster of basic activities and cluster 2 a cluster of more sophisticated activities.

### **Discussion**

The results of this statistical analysis provide an understanding of how internet activities relate with each other, and show how being an audience on-line is much more of an active experience than what it was with traditional media. But these results also show that different internet activities are competing for the time and attention of the user.

Our study shows that on-line audiences can be better understood using an integrated cognitive and affective model that integrates the experience of time and attention the user spends with the media with its cultural and social background. The dimensions found in the study need further confirmation, and the perceived risk and perceived complexity of a task change with internet usage and with technology development, though we must accept that the spatial map of the internet activities is also changing.

The use of MDS and cluster procedures allowed us to move away from descriptive or demographic studies but because they were conducted only at an aggregate level obvious limitations arose. Further qualitative analysis has to be conducted on the same subject in order to better understand if the identified clusters maintain their structure, namely with other groups.

The internet is a medium still in its infancy that provides new media contexts and new audience formations that the researcher should explore. Our study allowed for the isolation of relevant activities users conduct on-line that can be grouped into three dimensions that seem to

depict a generalized process of involvement with the media, though configuring a specific *media culture* (Alasuutaari, 1999). The study goes beyond theoretical considerations and focus on actual audience experience, in this case in a specific cultural and social setting that we believe can be extrapolated to other similar ones.

The development of the World Wide Web requires us to rethink both the audience and the medium. Results of this study show that a new more interactive audience is emerging that uses a new medium to fulfil old needs in new ways. But more important, a new identity is emerging that can no longer be apprehended by traditional segmentation. The ways users position themselves in relation with the three defined dimensions provide original ways to understand their presence in the on-line mediascape (Jenkins, 2006) showing that an affective culture frames their cognitive attitude towards the medium.



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