

# Using card sorting to explore collectivism in students' approaches on a university website

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## ABSTRACT

This paper discusses issues regarding the influence of national culture on the use of a website. The paper adds to previous research by analysing the concept of a collectivistic approach towards language use and information management on a university website. A novel combination of card sorting techniques with task explorations was used to disclose the 14 Pakistani bachelor students' mental models of the organisation of information on their university website, and their choice of vocabulary for the university website. The paper provides preliminary results on the culturally specific preferences for interacting with the university website among the speakers of the same language, Urdu. The students show a preference for English website text, but require a sub-section in Urdu that non-English family relatives are able to read. Furthermore, the variability between the students' mental models is high, as measured using a distance metric. The study tentatively suggests that Pakistani students in Lahore consider their association with their family of importance for how they manage information on the website.

## Author Keywords

Card sorting, Language, Information Management, National cultural dimension, Collectivistic websites.

## ACM Classification Keywords

H5.m. Information interfaces and presentation

## INTRODUCTION

In this study, we analyse a university website of a Pakistani university by conducting user-tests with card sorting techniques and information search tasks. The study adds to previous research by analysing the concept of a collectivistic approach towards language use and information management on a university website. We theorise that national culture profoundly influences the contents through shared knowledge structures and ultimately impacts on design and development of the website. The culture consists of several elements of which some are implicit and others are explicit, most often these

elements are explained by terms such as behaviour, values, norms, and basic assumptions.

Previously a variety of Information Systems and HCI research has been done from the concept of national culture. The national culture, in this study, is defined as behaviours and values that are followed in one geographical area (e.g. Estonian national culture) [1]. We use national culture to refer to the understanding of a student's mental model of university websites when he or she is residing and studying in Pakistan; eventually we will compare these results with results from studying Pakistani students in Denmark. This would give a chance to problematise the notion of culture so that it is not only formed through the county of birth, but it is about the context in which one enacts culture.

This study aims to document how the understanding of a university website among university students in Pakistan has profound characteristics of the local environment, and how a theme of family orientation and association is asserted and portrayed in their mental models of the website. Regarding family orientation, from a cultural psychological perspective, collectivism is a construct that summarises how groups are considered as the basic unit of analyses [2]. Callahan explains that computer users are integrated in strong groups in collectivistic cultures [3]. Robbins studied commercial websites in several geographical regions and found that website registration requirements, security provisions, and privacy policy statements are denoted with individualism /collectivism [4]. Regarding the characteristics of the local environment, Natel and Glaser found that translation, even though of excellent quality, creates a cultural distance which impacts on the web users' evaluation of the site. Conversely, where language is less important, such as in the evaluation of the quality of an offer, a consumer's native language has no impact on the buying decision [5]. The main research theme in this paper is to explore how Pakistani students approach the language use and information management on a university website.

## METHOD

In order to achieve the study goal and answer the research questions, a two step research design is developed to obtain the results. In the first part of the research, we investigated how the students living in Pakistan organise the contents according to their mental model. As it is research in progress, in the second part of the study, we plan to investigate how the Pakistani students living in Denmark organise information and contents. In this paper, we report only on the first part of our study.

A total number of 14 students participated in the study. The data collection was done by the first author, who speaks Urdu and English. The study was conducted in the usability laboratory at the University of Management and Technology (UMT), located in Lahore, Pakistan. The activities were focused on the students and their way of organising the contents of the university website. An equal number of male and female students took part in the sessions. All of the sessions were conducted individually and the interviews were audio recorded for later analysis. The students were primarily involved in card sort activities and task exploration activities.

### Activity 1: Open card and semi-closed card sorting

Card sorting is a technique that helps to understand how subjects group information into groups [6]. Card sorting can provide an insight into users' mental models, illuminating the way that they often tacitly group, sort and label tasks and content within their own heads [6–7]. The students of the experiments were provided blank 1" x 2" cards in two colours and asked to write and group them according to their understanding of the university website where they were studying. The students were provided 15 minutes to write as many cards as they could and group them in different categories and later they were asked to explain their grouping scheme once they finished their categorisation.

In the semi-closed card sort, the students were provided with 50 small cards containing the contents of the same university website. The students were also provided with five predefined categories and were asked to make an extra category if any of the cards did not fit in predefined categories.

### Activity 2: Task exploration and interview

The students were provided with five tasks that all tested the findability of information on the university website of students. The amount of time that students took to find these tasks was noted down during the task exploration activity. These students were handed over a Likert scale evaluation survey of the university website at the end of tasks.

A time of three minutes was provided to the students to do each task. This approximation of time was calculated through a pilot exploration of all information on the website. An example of such a task:

*Please find the contact information of the person/secretary who can provide you further information about Hostels. Please notify the instructor when you finish.*

After the task, the first author did a semi-structured interview with each student about their remarks on the experiments, culturally specific preferences, use of Internet, their view on the design of the university website, navigation on the university website, background studies and their view on the use of the website in Urdu and English.

The novel approach of card sorting techniques and task exploration was intended to discover how the students organise contents of the university website. The open card sorts would present a thought process of what is the mental model, choice of taxonomies, and culturally specific preferences of students for the university websites. The semi-closed card sort was used to gain additional feedback from the students about how the students can closely group the contents of the university website. The task exploration was used to observe how they did interact with the website. The activities were performed within subject, therefore the order was changed to control and minimise the learning effect. A large proportion of the usability literature explains how people approach websites and use information findability through scenarios of task exploration on new websites. This approach provided us with a set of different observations of the students' perspectives on the university website.

## ANALYSIS AND RESULTS

Each student took between 90 to 110 minutes to go through activities. The qualitative data was gathered through think aloud description of open and semi-closed card sorting. The explorative semi-structured interview emphasised on students' use of the university website, accessing websites in local language and evaluation of the university website. A total of 23 hours of data was collected from the 14 students. All the students could speak English and Urdu. We used an excel card sorting analysis template and University of Wisconsin Card Sorting tool, UW card sort analyser, to analyse semi-closed card sorting [7] [8]. We used a mixed approach to explain the open card sorting that allowed us to measure the minimum, maximum and average distance of students' sorts that shared attributes.

In this sample group of students, a small number (3) of students organised information into multilevel categories whereas the rest (11) organised it into a single level category during open card sorting. All the students used standard taxonomies or a descriptive approach to explain the contents of the university website.

The students who use computers regularly and interact with websites frequently tend to group information into standard taxonomies. In contrast, students who spent less time on the Internet in their daily routine exercised an interpretive and descriptive approach for the contents of the university

website. For example, Student 4 used a descriptive taxonomical approach ‘*which program introduced*’, ‘*about changing programs*’, ‘*dues of changing program*’, ‘*about the status of university*’. Students 1 and 5 used the taxonomies ‘*registration for the courses*’ which refers to the information related to courses which students take. In contrast, students 3, 19 and 15 used the taxonomical tag of ‘*registration*’ for the same concept.

It also emerged during the analysis of the experiment that some of the categories are culturally influenced and not affected by the amount of time a student spends on the Internet. The labelling convention of conventions ‘*extra-curricular activities*’ and ‘*ranking of the university*’ were equally distributed between all types of students. We do not expect this labelling for the next experiments in Denmark.

There were two main factors that were prominent in the students’ way of organising information. The first factor, in the students’ organisation of information about their university website, was the use of language. Despite the fact that all students speak Urdu, Punjabi or another native language, all the students used the English language to construct the contents of the university website.

The second factor in the students’ organisation of information was the use of context specific content in their sorts. These context specific contents include ‘*fee*’ and ‘*pick and drop*’. Pick and drop refers to the university initiatives for transportation of students as students expect the university to take care of transportation. A majority of the students used ‘*rank*’ or ‘*status of the university*’ in their card sorts so that students could compare it with other universities in the higher education commission. The higher education commission is a primary regulator of higher education in Pakistan which facilitates the development of higher education systems in Pakistan.

*When we [student] go to some university, we first check what university [a] holds in ranking, it is an approach of students that we want to check on PEC [Pakistan Engineering Council] and HEC [Higher Education Commission] ranking that where university [a] stays in relation to other universities in the country.*

For the semi-closed card sorts, students of the experiment placed 8 out of 50 cards into a new category with a name ‘*other*’ or ‘*miscellaneous*’ in semi-closed card sorts. The taxonomies of the cards and categories were directly taken from the university website of the students. A number of students were unable to understand ‘*alumni*’ and placed the cards which were not fitting in other categories.

We measured edit distance by using UW card sort analyser for semi-closed card sorting [7]. Edit distance is a measure that explains the similarity or difference between sorts of two users. The basic idea of an edit distance metric is that minimum numbers of steps are required to convert one sort into another sort where one step comprises of moving one card from one group to another group [9]. The result of edit

distance showed that students’ categorisation varied significantly as the smallest distance is 20 between students 11 and 2. The agreement of cards in a single category for all students was very low and classification of cards changed enormously within students.

There was no clear pattern that students studying in second and third year of study managed to complete tasks quicker and find information quicker than the students studying in their first year of study.



**Figure 1. Semi-closed card sort experiment.**

The students’ evaluation survey was designed to get an insight and feedback about the website. The survey initially included 23 variables. The similar concepts were merged together and 10 variables were finalised. The result of the survey showed that student’s satisfaction was below average from their university website.

The use of website was primarily focused on registration for the courses and downloading forms for course registration. Only three students of the study used the library section of the website to search for articles and books in the library. The students present an argument for not using the facility of library on the university website because most of the course information and guidance is provided by the lecturer and they can easily access it from the university book and photocopy shop. Half of the students could not find task related information for course code and course on the university website.

One student expressed the problems with searching for information on the university website:

*There are less categories and lot of subcategories, there should be a try of making lot of categories and less subcategories. For example if I want to see my schedule, I have to click mouse five or six times on different categories, it should be arranged in such a way that I have to click minimum clicks. [Student 6]*

Students explained that they would like to see the university website in English, but they wanted to see a section of the university website in their native language 'Urdu'.

## DISCUSSION

The study tentatively suggests that Pakistani students in Lahore organise information into a single level category considering their association with their family of importance for how they observe information on their university website. This study explains that there are culturally specific preferences for the university website among the speakers of the same language. The study also explains that although all the students had a native language as mother tongue, their preference for the university website was English. This result correlates with a study done in Botswana [10]. The study done in Botswana showed that most of the people in Botswana feel comfortable using Microsoft Word in English, rather than a localised version with the native language [10]. A majority of students disclosed a close association with their family and wanted to see a section of the university website in their native language Urdu. The analysis of semi-closed card sort showed a large variability between all students of the study.

The variability between the students was measured using edit distance. The theory suggests that an edit distance of 3 and 4 in a stack of 20 cards is explained as a closely related card sort [7]. We can contextualise this for a stack of 50 cards and easily say those students of our study vary in their grouping. Not all the taxonomical concepts, e.g., 'alumni', were understandable by the students. So even if they wanted to see the website only in English, they could not understand particular taxonomies.

## CONCLUSION

The study tentatively suggests that Pakistani students in Lahore organise information into a single level category. The study also suggests that Pakistani students consider their association with their family of importance for how they perceive information on the university website. This study helped to understand how the understanding of university students in Pakistan has profound characteristics of local environment and how a theme of family orientation and association is asserted and portrayed in their card sorting. The study also suggests that information management of university websites in bilingual countries not only depends on usability but also depends on what is the preference of language for other family members.

The current study focuses only on a single case study in a country with two official languages. The initial results would have been obvious if more students participated in the study and interview sessions would also be conducted

with the family members of the students. Another limitation of the study is that only one genre of website was researched. Also, since the students who participated in the activities were young, the study only builds on a small group of students studying in a university.

This study provides a guideline for designers that what should be considered important during the localisation of a university website and to what level these localisation factors play an important rule during the contents construction of a university website.

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