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Visual Appeal of Destination web pages: An Exploratory Eye tracking study on Generation Y

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Abstract

Information and Communication Technologies (ICT) have dramatically changed the provision of tourism destination information. That is the reason it is becoming critical for destination and businesses in the tourism industry to have a strong online presence. In order to achieve this goal, the proper use of online channels is crucial. The goal becomes more difficult when considering different behavior of web page users regarding their age cohort. The article focuses on Generation Y web page users and their evaluation of selected official town destinations´ web pages (5 main tourism attractions in Central Europe). The focus is on visual appeal of the websites. With help of a mix of qualitative research approaches, including an eye tracking study followed by questionnaires, the authors evaluate those web pages from different points of view and try to compare the results. The authors also found several conclusions for positioning of various visual contents of the web page.

Keywords: Destination, Evaluation, Generation Y, Tourism, Visual Appeal, Web page, Website.

Introduction

Any description of the ICT development path must of necessity start from an analysis of the concepts of Web 1.0, 2.0 and the possibilities of future improvements currently grouped under the expression Web 3.0. (Minazzi, 2014) Websites are a major channel to broaden companies´ reach and market share. Thus making websites visually appealing has become of great importance to organizations and also destination. Internet connection is important for this new possibility of new distribution channel. European Commission monitors so called DESI (Digital Economy and Society Index). The findings show that Member States have made progress in areas such as connectivity and digital skills, as well as in public services. There is highlighted the problem with a lack of high-speed internet coverage, cross-border e-government and difficulties in shopping and selling across borders. The leaders of DESI ranking are Denmark, the Netherlands, Sweden and Finland. The fastest growing countries are the Netherlands, Estonia, Germany, Malta, Austria and Portugal (European Commission, 2016b). In DESI 2016, the Czech Republic ranks 17th out of the 28 EU Member States. More people take-up subscriptions to fast broadband and mobile broadband. According Figure 1 Czech citizens have a good level of digital skills and as a result, they engage in a wide variety of online activities. Czech internet users are quite keen on online shopping. Czech Business use digital technologies to improve their efficiency and to access wider markets. But the Czech Republic has not progressed significantly compared to last year so it falls into the cluster of Falling behind countries whose score is below the EU average and which grew slower. (European Commission, 2016a)

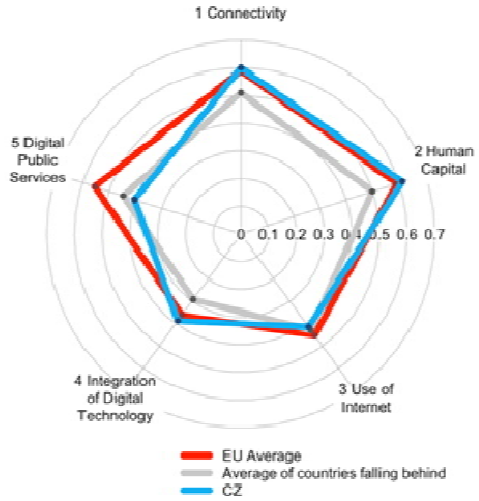

Figure 1: Digital Scoreboard of the Czech Republic
Source: European Commission, 2016a.

Websites are the important interfaces in HCI (Human-Computer Interaction). (Wang et al., 2014). Information on a websites is typically communicated through its perceptual elements, such as text and images. Making web pages more usable is important to organizations because a good web design can keep users from moving away from the website. While users may move away from a website for technical reasons, content reasons and form reasons. (Djamasbi et al., 2010) Visual hierarchy and its creating through arrangement of proper perceptual elements can guide users´ viewing the page. Internet penetration and use of internet are most important factor for use website in communication. World internet population and internet penetration you can see in Figure 2.

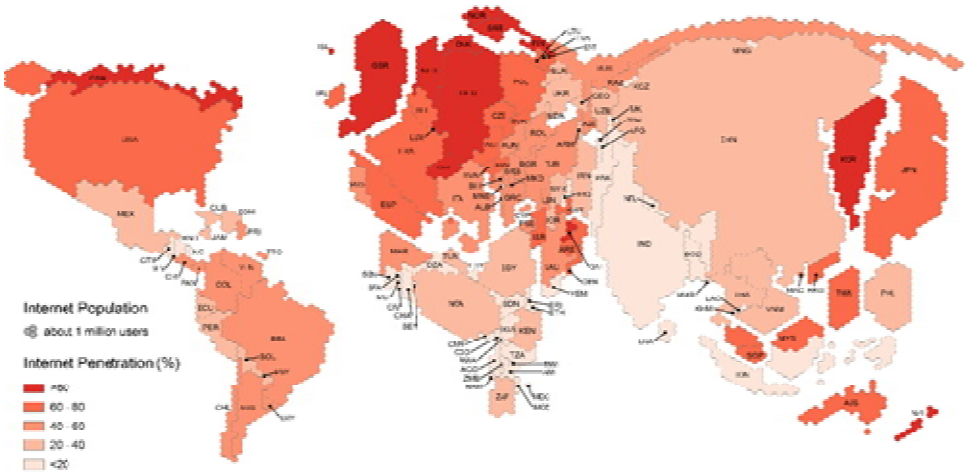

Figure 2: World internet population and penetration
Source: Graham & Sabata, 2013

Generation Y and its behavior

First authors dealing with age cohorts were Karl Mannheim and Paul Kecskemeti (1952). Each generation is socio-culture closed groups of people, mainly selected by year of birth and common behavior. They are defined with help of demography, culture, use of printed or no printed information, market survey and survey of members (Pendergast, 2010). This topic is very interesting in these days in all fields of research. The same situation is in tourism research especially because there is a multi-generation customer. (Leask, Fyall, Barron, 2011). It is important to know the specifics of each generation for providers of tourism services for attract of tourists. Generation cohorts are can´t use for all population. There are some differences between nation, history evolution, politics opinions etc. We focused on young people from Generation Y and their perception of information on the internet pages. First problem of research was to define member of Generation Y. Some authors defined Generation Y quite differently. Solka, Jackson and Lee (2011) deals with people born between 1977-1996, Perdegast (2010) 1982-2002, Neubome and Kerwin (1999 in Leask, Fyall & Barron, 2011) 1979-1994 or Solka, Jackson and Lee (2011) 1981-1995. This generation differs from other in many characteristics. One of them is shopping behavior (Bakewell& Michell, 2006). They use technological progress like e-commerce and use of ITC. Generation Y is one of the first generations to have technology and the internet from a very early age – they are significantly more likely than older internet users to create blogs, download music, instant message and play online games (Dajmasbi et al., 2010). They want to be always connected. They use internet in many activities, which cover sending text message, information capturing, using of social network, podcasting and reading and writing blogs (Nusair, Parsa & Cobanoglu, 2011) People of this generation are more oriented on games. They expect that their job will be a fun and they are focused on success. (Broadbridge, Mawell & Ogden, 2009). Kah and Lee (2014) deal with decision process in tourism and they conclude it in five phases: (1) recognition of needs or desire to travel, (2) searching of information, (3) evaluation of alternatives, (4) finale decision and (5) real purchase. Nowadays tourism businesses can influence phase of searching of travel information. In a networked environment such as the web, all organizations in the tourism sector are facing a dynamic and innovative industry. Multichannel Communication solution can help capture visitors´ attention. Integration of multiple platforms (e.g. blogs, social media) has been identified as a major issues, and specifically multi-channel communication (e.g. Facebook, Twitter, Instagram) and advertisement (Booking, Trivago, Uber) on social web platforms (Fenzel et al., 2016). Generation Y is very important segment for its strong buying power. In 2020 it will be the major segment in tourism consumption. They will also tend to share their unique travel experience (Cohen, Prayag & Moital, 2014). One way to capture visitors´ attention is web page. It has to be professional and with clear focus on target segment. Current generation of young people keeps only 10 % of text information. Two or three times more it keeps in graphic form. They grew up with computer games, TV and multimedia presentation. It is good to use humor in some message in web site presentation (Kipnis & Childs, 2004). Djamasbi et al. (2010) and Hao et al. (2016) found out that there are some different characteristics important for Generation Y in website layout (main large picture, pictures of celebrities, search feature and little text).

Research Methodology

The main goal of this paper is evaluate the visual appeal of official web pages of town destinations. Partial objective is to find specific problems of examined web pages. The selected official web pages of town destinations are five covering main tourism attractions in Central European countries.

Table 1: Cities and websites researched

City	Country	Website Researched
Prague	Czech Republic	http://www.prague.eu/en
Bratislava	Slovakia	http://www.visitbratislava.com

Vienna	Austria	http://www.wien.info/en
Kraków	Poland	http://www.krakow.pl/english/
Würzburg	Germany	http://www.wuerzburg.de/en/

Source: own, 2016

Authors used a mix of qualitative research methods to evaluate the web pages. Result of each method is a ranking of the web pages, also over all ranking has been computed.

Firstly the authors evaluated the main factors of the websites and mobile applications. The methodology is based on Luna-Nevarez and Hyman (2012) approach, but some of the observed factors had been adjusted to correspond with the main goal of the article and its focus to Generation Y. The results (including evaluated factors) are presented in Table 2.

Then an exploratory eye tracking study has been conducted. Eye tracking is a king of neuro-physiological method that can record the eye-movement metrics to objectively reflect participants´ attentions and emotions during the experiment. It is not valid method itself. So this study combined questionnaire (self-report method) and eye-tracking (neuro-physiological method) to measure the user affability. (Wang et al., 2014b) Eye-tracking is widely used in HCI studies since eye movement can reflect the visual search mode, which is important in revealing the cognitive processing mechanism. There are several advantages to using eye-tracking to examine website design. It removes the subjectivity of self-reporting data and it allows tracking users´ reactions without affecting other stimuli and can show which parts of the page captured participants´ attention most (Wang et al., 2014a).

An eye tracking study is conducted using the pages of town destinations. Participant's eye movement is tracked while browsing these pages, providing evidence of what attracts their attentions. Eye tracking for this type of research is used in many studies (Djamasbi, Siegel & Tullis, 2010; Wang et al., 2014a; Bergstrom, Olmsted-Hawala & Jans, 2013; Chu, Paul & Ruel, 2009; Yang & Huang, 2013). Eye-tracking was used by Djamasbi et al. (2011) specifically on Generation Y and its use site experience. Other way to research attention of webpages is eye-tracking measures the size of pupil. Pupils react to certain types of images, colors and designs (Loyola et al., 2015).

The authors used various methods for comparing the destination web pages during the eye tracking using Mangold Vision Eye Tracking solution (VT3 mini eye tracker with desktop computer) study, which has been combined with questionnaire:

- the respondents were monitored while trying to find following information: name of the destination, picture of the destination, language selection option, official contact information and search tool (also the time needed to find the information was monitored);
- the respondents ranked the web pages from the best to the worst according to their observation;
- the respondents evaluated how easy they found name, picture, language, contact information and search tool (1-10 scale, 10 = easy, 1 = difficult);
- the respondents rated the website, its purpose and answered how likely they would recommend the web site (1-10, 10 = best, 1 = worst);
- the pupils diameters were measured during the entire eye tracking process.

First two information (name of destination, picture) had been used for familiarizing with the web page and gathering initial vision focus of the respondents.

For this explorative study we have interviewed 6 Non-European visitors of the Czech Republic. All respondents were male Brazilian university students of Engineering, born between 1991 and 1994 (thus all were members of Generation Y), their native language was Portuguese, but their English language skills were at least at advanced level. Their average family monthly income was about 12 000 USD. This is also the limitation of the conducted research. The research was conducted in January and February

2016 at the University of West Bohemia, Faculty of Economics, Department of Marketing, Trade and Services in its eye tracking lab.

Results

Following results had been achieved. In Table 2 the main factors of destination web pages and mobile applications are compared.

Table 2: Evaluation of main factors of the web pages and mobile applications – 01/2016

Measured variable		Prague	Bratislava	Vienna	Kraków	Würzburg
Website						
Primary focus	Informative/cultural (1 pt.)	3	2	2	2	3
	Commercial/transacional (2 pt.)					
	Informative-commercial (3 pt.)					
Advertising	No (0 pt.)	0	0	1	0	1
	Few: 1-2 brands (1 pt.)					
	Many: > 2 brands (2 pts.)					
Social media (1 pt. if used)	Facebook	1	1	1	1	1
	Twitter	1	1	1	0	1
	Google+	0	0	0	0	1
	Youtube	0	0	1	0	1
	Instagram	1	0	0	0	1
	Flickr	0	0	1	0	1
	Blog	0	0	0	0	0
	RSS feeds	0	0	1	0	1
	Others - 1 each	1	0	1	0	1
City map	No (0 pt.) / Yes (1 pt.)	1	1	1	1	1
Weather information	No (0 pt.) / Yes (1 pt.)	1	0	1	1	1
Calendar of events	No (0 pt.) / Yes (1 pt.)	1	1	1	1	1
Mobile version	No (0 pt.) / Yes (1 pt.)	1	1	1	1	1
Mobile App						
Portability	IOS or Android (0 pt.)	1	1	1	1	1
	IOS and Android (1 pt.)					
Languages	Only local language (0 pt.)	1	1	1	1	1
	Multiple languages (1 pt.)					
Up-dated	Never (0 pt.)	1	0	1	1	2
	Sometimes (1 pt.)					
	Often (2 pts.)					
Focus	Informative/cultural (1 pt.)	2	1	2	2	1
	Informative-commercial (2 pts.)					
Total points		**16**	**10**	**19**	**12**	**22**
Rank		**3**	**5**	**2**	**4**	**1**

Source: own research, 2016

The main differences discovered in Table 2 are the number of social media used for promotion and the primary focus of the website, leading the rank is Würzburg followed by Vienna and Prague, respectively.

As illustration, the first impressions of selected web pages (Vienna, Würzburg) from participants at the eye tracking study are shown in Figure 3. It is clear to see that the interviewees did concentrate on

pictures (photos and also pictures in logo of the destination Würzburg), which confirms the considerations about Generation Y web page consumption.

Figure 3: Heat maps for Vienna and Würzburg – first impressions
Source: own research, 2016

For further evaluations, the participants were asked to find the position of five key factors (city name or logo, city picture, language selection option, contact information (or link) and searching tool) on the destination web pages, so some conclusions could be derived. The first two key factors were there to grab participant attention and to get them familiar with the webpage, the other three key factors were fully measured and analyzed.

Some interesting results from eye tracking are showed in the Table 3. The average times to fix the defined information (language selection, contact information, search tool) are presented. Krakow, followed by Bratislava and Würzburg seem to have the best web pages in terms of visual overview. Würzburg has definitely the best position of the search tool. On the other hand the Prague´s website did not rank very well. This might be impact of non-standard layout of the webpage, where the most searched items were predominantly in a centered menu located in lower part of the web page, which is not usual.

Table 3: Time for fixing object

Criteria	Prague	Bratislava	Vienna	Kraków	Würzburg
Language selection	2,4500	1,6933	0,7567	0,4083	0,6325
Contact information	7,0680	5,3580	N/A	5,6280	7,4650
Contact - time to scroll down	5,4720	4,9700	N/A	4,5180	4,4850
Searching tool	1,1983	1,2350	2,3683	1,3967	1,0067
Average	**4,0471**	**3,3141**	**1,5625**	**2,9878**	**3,3973**
Rank	**4**	**2**	**5 ***	**1**	**3**

** contact information were missing, so the web page was ranked as fifth*
Source: own research, 2016

Notes were taken during researching about location of the information on the websites, see Table 4. Those notes might explain the times to fix those objects, which are presented in Table 3.

Table 4: Position of information on the webpage

Criteria	Prague	Bratislava	Vienna	Kraków	Würzburg
Language Selection	Right side in middle line, flag with "en" just under a picture.	Very upper right side part, selection of abbreviations.	Very upper right side part, flag with "english".	Very upper right side part, just flags.	Very upper right side part, just flags
Contact Information	Lower part of webpage - need to scroll; within more menus.	Lower part of webpage - need to scroll; almost alone standing link.	Not available.	Lower part of webpage - need to scroll; within more menus (less than Prague, Würzburg).	Lower part of webpage - need to scroll; within more menus.
Searching Tool	Right on the middle part, just a search button under a picture.	Right on the upper part, just a search button, less visible.	Right on the upper part, search line inside of background picture, out of menus.	Right on the upper part, just a search button.	Middle on the upper part of the webpage (big search line).

Source: own research, 2016

Table 5 shows the participants' rating of the individual key factors (how easy were they to find). Those are presented as overall average for each web page and respondent. The results should correlate with the results in Table 3. The highest variety showed the evaluation of the Kraków web page. In general, the results of objective measurement (time to fix the object according the eye tracker data) does not really correspond with the subjective evaluation of respondents. Obvious objective trouble with searching the proper information in case of Prague web page, were not captured in subjective evaluation.

The interviewees also ranked the webpages according to their overall perception; the results are presented in Table 6. This data are similar to the data in Table 5. In this case we can state, that the respondents subjective evaluations – regarding overall webpage evaluation and evaluation of its individual factors – are almost corresponding.

Table 5: Average based on participant ratings

ID	Prague	Bratislava	Vienna	Kraków	Würzburg
1	8,8750	8,0000	8,5000	9,3750	9,5000
2	8,5000	8,0000	8,2500	8,3750	8,8750
3	8,6875	8,8750	7,6250	7,8750	8,8750
4	9,7500	9,7500	8,5000	9,7500	9,7500
5	9,5000	8,8750	8,6250	7,8750	8,3750
6	8,0000	8,0000	7,5000	7,1250	8,0000
Average	**8,8854**	**8,5833**	**8,1667**	**8,3958**	**8,8958**
Rank	**2**	**3**	**5**	**4**	**1**

Source: own research, 2016

Table 7: Pupils (left-eye) diameter in mm (the bigger the better)

ID	Prague	Bratislava	Vienna	Kraków	Würzburg
1	2,7902	2,7155	2,4870	2,9052	2,5524
2	3,0368	2,9935	2,9272	3,0127	2,9233
3	3,4083	3,3922	3,5005	3,4799	3,3302
4	4,0976	3,8316	3,8402	3,7217	3,5482
5	4,1074	4,0306	4,3436	3,9660	3,8650
6	5,2529	5,2255	5,2479	5,5009	5,0087
Average size	**3,7822**	**3,6981**	**3,7244**	**3,7644**	**3,5380**
Rank	**1**	**4**	**3**	**2**	**5**

Source: own research, 2016

The authors also evaluated the pupil diameters of respondents for each observed web page. The results are showed in Table 7. Using the assumption that the more the participants' likes the web page the bigger is the pupil diameter. Clearly the web pages of Prague and Kraków were the most liked. Prague´s web page works extensively with pictures and isn´t designed in a common way. Its web page has been also evaluated high from the respondents. This is to see in Table 8, which presents the summary of different evaluation methodologies used in this article.

Table 8: Summary of different methodologies results

Method		Prague	Bratislava	Vienna	Kraków	Würzburg
Main factors of web page and mobile application	Table 2	3	5	2	4	1
Times for fixing an object	Table 3	4	2	5	1	3
Average based on participant ratings	Table 5	2	3	5	4	1
Participants' website ranking	Table 6	1	3	5	4	2
Pupil diameters	Table 7	1	4	3	2	5
Average		2,20	3,40	4,00	3,00	2,40

Source: own research, 2016

Average ratings of Prague and Würzburg official destination web pages were the highest ones. Nevertheless, both of them did not mark high in all used methods of evaluation.

Discussion

In this study, the researchers evaluated a small group of destination web pages through five different methodologies that allowed them to derive different conclusions. Although some substantial differences in between the web sites lay-outs and structures, none of them was outstandingly above the average. Even though this study was made on an online topic (website) which by definition is unseasonable and knowing that the big efforts made by tourism managers is to prepare for next season, many people look for information off-season to prepare (perhaps getting some early-bird discounts) and plan ahead their holidays. For a tourism manager, being able to provide Generation Y the information they need all year round, so they can make a proper choice on destination and planning is advantageous.

Table 9: Evaluation on information location

Criteria	Evaluation
Language Selection	Clearly faster times when located on the very upper right side part with flags (graphic).
Contact Information	Long search times due to the need of scrolling; the more menus the slower.
Searching Tool	Clearly Wurzburg positions best, then everything within a menu, no influence of graphic.

Source: own research, 2016

As we can see in this study, tourism marketing plays a big role on strategy. From using social media as a way to connect with potential tourists to a deep analysis on tourism behavior, the tourists look for fast, attention-grabbing, visually appealing and user friendly content. Websites that had these differentials were better evaluated as we can see a great composition in Prague's website.

During the study it was possible to see that the location of information on the website is important and as a conclusion from Table 4, Table 9 specifies the best rated location for the key factors analyzed.

But, Table 9 shows, that different methods used, deliver different (sometimes opposite) results. So for example, would we concern only at eye tracking data (times to fix information), the Prague´s web page would rank very low. Although, subjective evaluations and pupil diameter showed that this web page is ranked high. Bratislava´s web page which uses a lot of pictures and less texts (thus, parameters appealing to Generation Y), but ranks in the middle in most evaluations. So obviously, not only visual factors influence the web page evaluation from the Generation Y point of view, but further factors might need to be investigated.

Finally, the presented results don´t show clear recommendation on how a web page appealing to Generation Y should look like, nor does it show an appropriate evaluation method (some objective observations proofed subjective evaluations, but some did not). On the other hand even such small scale study with limited number of respondents showed interesting conclusions – see Table 9.

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