# Examining Foreign Student Visual Perceptions of Online Marketing Tools at a Hungarian University

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*Abstract*—Higher education marketing has been a widely researched field in recent years. Due to the increasing competition among higher education institutions worldwide, it has become crucial to target foreign students with effective marketing tools. Online marketing tools became central to attracting, retaining, and satisfying the needs of foreign students. Therefore, the aim of the current study is to reveal how the online marketing tools of a Hungarian university are perceived visually by its first-year foreign students, with special emphasis on the university webpage content. Eye-camera tracking and retrospective think aloud interviews were used to measure visual perceptions. Results show that freshmen students remember those online marketing content more that have familiar content on them. Pictures of real-life students and their experiences attract students' attention more, and they also remember information on these webpage elements more, compared to designs with stock photos. This research uses eye camera tracking in the field of higher education marketing, thereby providing insight into the perception of online higher education marketing for foreign students.

*Keywords*—Higher education, marketing, eye-camera, visual perception.

## I. INTRODUCTION

HIGHER education institutions have been trying to catch up with the latest trends in marketing. Their marketization and the growing competition for students have urged the need for them to develop their online marketing strategies, similarly to many other for-profit institutions in the business world. The shift in the marketing strategies of Higher Education Institutions (HEIs) have not been smooth, which is due to the general reasons of HEIs being non-for-profit institutions in many countries. Therefore, the majority of HEIs especially in Hungary, have not been equipped with the necessary human and financial resources to adapt the quickly changing online marketing environment [1].

HEIs in Hungary have also started using online marketing tools such as continuous presence on their own webpages, on social media, such as Facebook, Instagram and TikTok, while trying their best to appear as desired. The examined university, the University of Szeged has 12 different schools that have their own institutional profiles and webpages. Due to the differences in their nature (ranging from economics to medicine), their online management is the task of each individual school. The current study focuses on the Faculty of Economics and Business Administration and its online marketing tool, specifically, their webpage.

The online presence of HEIs is crucial for students, as they

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can serve as a primary source of information about any school-related matter. Running an up-to-date online website for students is extremely crucial in case of foreign students of that specific institution, as foreign students rely mostly on information in the language of instruction (mostly English) and they might not understand the language of the country they study in. In Hungary, many foreign students never learn more than basic expressions in Hungarian, as after finishing their degrees, they continue their education in other countries, or return home, or stay to work in English. Therefore, it is crucial for foreign students to have access to important information, news, events, or school-related matters online in English. The transition is the most sudden and the webpage information is the most crucial at the beginning stages of one's studies, so that students do not feel lost or without guidance in their new environment.

As the University of Szeged, Faculty of Economics and Business Administration has a foreign student program called Business Administration and Management for foreign students for nearly 9 years, no previous studies have been conducted on the online perceptions of foreign students of the faculty webpage. Therefore, the aim of the current research is to reveal how the online marketing tools of the faculty are perceived visually by its first-year foreign students, with special emphasis on the university webpage content.

## II. ONLINE MARKETING IN HIGHER EDUCATION

### A. Online Marketing Tools in Higher Education

As HEIs started adapting marketing techniques from the business world, the application of online marketing tools has spread. Institutions realized that online marketing communication can enhance their brand, develop brand identity, image, and equity [2]. Pressure to find funding rooted in steady student numbers urged universities to turn to new marketing techniques applied from the business world [3]. Utilizing the tools of online marketing, the online presence of HEIs has become a tool to develop their own brand and identity, as they can emphasize their worth, create a value proposition for their potential, current and previous customers (the students), and develop loyalty towards them. Utilizing integrated marketing communication techniques including social media marketing, online banner displays, popup advertisement, search engine optimization and promotions have been proven to enhance brand image and contribute to brand equity [2].

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University practitioners and researchers have recognized the importance of online marketing tools in the successful internationalization process of HEIs, online solutions being in the forefront of development. Due to the current trends in the HEI market, neighboring countries' HEIs to Hungary, such as Poland and Ukraine have also recognized the need for organized online marketing communication in eastern Europe [1]. Research results show that online marketing tools are crucial for marketing in higher education regardless of where the HEI is located (inside or outside the EU) especially during the student recruitment process. Online marketing tools are used often, while tools of public relations and different sales promotion are less frequent. In order for the HEIs to stay afloat and recruit students that keep them competitive, online marketing communication is key and should be continuously developed, as these tools can convey important messages about their innovations, knowledge and education. As each institution nowadays is competing internationally, adhering to international standards and focusing on their future enrolment is a must [1].

Online marketing tools can prove effective in higher education, as young students' behavior towards collecting information has changed. With the help of the Theory of Planned Behavior, [4] examined how student perceptions towards online information and advice-seeking are influenced by social norms. Findings revealed that the more susceptible a student is towards online information and seeking advice online, the more likely it is that they are influenced by the social norms in the TPB model. This holds serious implications for HEIs [4]. If students are more susceptible for gaining insight into HEIs online even at the point of deciding and choosing a HEI, their attitudes towards online information provided by the HEI remains open. Therefore, online communication might not only be a key when choosing a HEI, but during and after one's studies. Research [4] also concluded that HEIs must place high emphasis on how previous graduates and current students write (or other words use online word-of-mouth advertisement) about the university and their experiences online.

Researchers [5] also found that students, viewed as consumers, can be influenced during their decision-making process by information found online. Results revealed that international students spend much more time, energy, and effort on choosing their HEIs, than their non-foreign counterparts in the UK. International students were found to take in more information, for which their primary source is the internet. Naturally, international students sought information online and the factors influencing their decision most were opinion of others, university communications (e.g., marketing materials, word-of-mouth advertisement and testimonials), and university fixed characteristics, such as rankings, reputation of the brand, location, price, size of student population and course content. Based on this, higher education marketing specialists should focus on and emphasize these latter traits when marketing their HEIs online, while targeting local and international students with different messages focusing on their interests completely [5].

Previous research [6] also focused on how online marketing tools can help HEIs navigate and stay competitive in the COVID-19-struck era and how the online marketing strategy of a HEI should adapt. Results revealed that due to the unaltered motivation of students to study abroad, HEIs need to adapt to students by making information available online regarding issues such as mental health, communication methods with faculty, hygiene and social distancing on campus, and future plans of the institution [6].

*B. Social Media in Higher Education Marketing*

Besides other tools, social media sites, namely Facebook, were recognized as one of the leading tools for communicating with and towards university students. Previous studies [7] investigated the importance of social networking sites (SNS), more specifically Facebook groups, in connection with the information exchange between universities and students. Their aim was to reveal whether they could be used as effective tools for marketing or not, utilizing an enhanced technology acceptance model. The study [7] argues that SNS are now considered a marketing tool in higher education, as some universities use these sites to establish a connection between their students and the university. Moreover, these sites and the group solutions they offer also prove to be an effective tool in the common learning process during specific classes. Results of the quantitative primary research [7] on the technology acceptance model comparing two universities in Serbia and Greece show that the usage of SNS shows no similarity to webpages. SNSs are used to develop and maintain connections, relationships, and different form of communication is utilized there, while distinctive student behavior could be observed. It was also revealed that SNSs members use the groups they joined to contribute, utilize administrators' and other members' contribution, search for information, engage in interesting topics and share personal interests. All in all, SNS groups were not found effective in new student recruitment [7].

Researchers [8] examined the strategic use of social media tools in higher education among the international student community members taking the COVID-19 pandemic and its effect into account. Due to the pandemic, the previously applied HEI marketing techniques have changed and there has been an overall shift in the pace in which higher education marketing is changing [8]. Previous tools included measures and strategies building a strong image and HEI brand for universities [2], but the pandemic resulted in a shift in the application of international students, as going abroad to study proposed a bigger risk for them than staying in their home countries amidst the unpredictable pandemic situation [8]. Despite the pandemic, the intentions of students to study abroad have remained intact, while HEIs have shifted to a slightly more available online education, offering courses to be completed from all over the world [9]. Digital marketing inevitably became the primary technique for HEIs [10], social media being used primarily in the process. Responsiveness, engagement, personalization, and peer communication on SNS proved to be the most crucial for the university students examined, which is a key finding when it comes to attracting and retaining international students [8].

Similarly, researchers [11] also focused on the application of

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social media in higher education. They found several factors that influence the adaptation of social media in higher education marketing. It was revealed that social media content quality directly affects international students' active online engagement, which later on can have an effect on their intentions to travel to the HEI or not. It was also an interesting finding that content with current students were attractive to the examined audience and might influence their own involvement. Credible sources (e.g., the website of the university, current students) were deemed crucial during the communication with prospective students online [11].

In the European higher education era, researchers [12] investigated how social media is used in HEIs in Poland. They found that the primary target audience of HEI social media activities are the young students or prospective students – in other words the digital natives – as social media is not yet utilized for disseminating research results or academic achievements in Poland. Social media was also found to contribute to building the universities image and reputation. SNS such as Facebook, YouTube, Instagram, Twitter or LinkedIn were found to be uses for publishing news, recent events, achievements, short videos of major events, university events, major accomplishments and major findings, respectively [12].

### C. HEI Websites in Higher Education Marketing

Websites play a crucial role in HEI marketing [11]. The application of digital marketing in HEIs was also researched [13]. Examining databases in a 6-year radius (between 2016 and 2021), only a handful of articles were concerned with digital marketing in HEIs, the majority of them focusing on social media marketing and websites. Findings show that digital marketing is highly impactful in the higher education sector, student enrolment can be enhanced by digital marketing and the usage of inbound methods (e.g., WhatsApp, Facebook, Twitter for enquiring about details of studies), communicating through SNS is essential to form student groups, smart gadgets utilized in classrooms help with student satisfaction, a significant percentage of prospective students are influenced by digital marketing, and the website of an institution is a primary source of information for prospective students [13].

Online marketing has been found to play a crucial role especially in international student enrolment [14]. Similar to previous studies [12], the website of 12 institutions was found to influence its perceived image and prospective students' decision to study there. Four topics were revealed to make up the unique online identity of universities examined internationally, which included internal characteristics (e.g., innovation, ideology, education quality, academic freedom), student resources (e.g., location, talent development, support), external position and affairs (e.g., network, university ranking, reputation, accomplishments), and corporate citizenship (e.g., social engagement, diversity, challenges) [14].

International students and online marketing were studied deeper in the literature [15]. Australian and British university websites were included in the research, with particular focus on targeting prospective students. The examination of 'why to choose' website content revealed that besides university matters, everyday lives of students is shown in the website videos and marketing material. Issues related to university, such as mission and vision were depicted on all websites, as they promoted high quality learning possibilities at the universities at hand. Moreover, the reputation of the institution (e.g., history, rankings, quality), the learning environment (quality of staff in teaching, peer support, extracurricular activities, campus environment), employment prospects, HEI image, and cultural integration were found to be pictured online. Accompanying videos played a crucial role in depicting life at the HEI, therefore visual elements were found to be crucial on a HEI webpage [15].

While the majority of the studies found in connection with international students and the online marketing activities of HEIs concentrate on student recruitment [14], [15], there is a limited number of studies that focus on online marketing for international students already admitted. This step is deemed crucial in higher education marketing, as it might contribute to international student retention. Therefore, the current study focuses on examining university webpage content intended for its international students.

## III. VISUAL PERCEPTIONS IN MARKETING AND EDUCATION

### A. Visual Perception and Eye-Tracking in Marketing

Different neuromarketing methods, such as eye-tracking and neuroimaging were found to be applicable in understanding and predicting consumer behavior in marketing. In the field of online marketing, eye-tracking could provide crucial information to marketing specialists about what information they should concentrate on when creating online advertisement [16]. Additionally, researchers [17] also found that consumers with different purchase intention traits focus on different visuals in varied ways, with more impulse buyers concentrating attention to in-store displays more than their less impulse buying prone counterparts. Researchers [18] conducted an extensive literature review on the application of eye-tracking in the field of marketing. With the examination of almost a thousand research articles, they found that eye-tracking has been used in the past decade the most intensively due to the rising interest of scholars in the understanding of consumers' visual attention and behavior. Researchers [18] defined five main thematic areas in which eye camera studies were conducted: brand attention, eye movement communication, online areas, gaze perception and choice labeling. They also predicted that eye camera testing will continue with the specific focus of marketing specialists of consumer emotions.

Studying websites provides additional information on what and how to place on the online platforms of a company. Researchers [19] examined the website in case of a hotel and examined if the main images' position and the website navigation suited the firm's customers. Their experiment revealed that placing the main image of a website on the top area is highly effective, but the sufficiency also depends on what the consumer is searching for on the page, i.e., its layout. Those consumers who have specific goals on the website will

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devote less time to the opening page, while those only browsing will spend more time on the main page of the website. A similar study [20] investigated hotels and pictures shown to customers, as they play a crucial role in consumers final decision on booking. They found that images with natural scenes are more appealing visually than those with build scenes. Webpage aesthetics with heatmaps was also examined in the literature [21]. They studied where the attention of participants ended up in case of 40 examined landing pages of websites. Participants could see the webpage for 3 seconds only, which provided just enough time for them to find the most appealing part of the website for them. Findings reveal that pages that are aesthetically attractive attract gaze quicker and more effectively while accessibility of content does not suffer. Eye-tracking studies in marketing have revealed information about how consumers view and evaluate certain products, brands and advertisement. Researchers [22] in their eye-tracking experiment with a sample of 90 people found that no matter how complex a website is, the main product will receive the highest attention if placed correctly. Overall webpage complexity affected the perception of smaller website elements, too. Regarding website layout, researchers found that when displayed on mobile devices, the navigation menu type and layout has a significant effect on participants' fixation time, while the gaze sequences show no significant differences [23].

Besides the studies of websites, specific content of advertisement has also been studied. Researchers [24] investigated whether the gaze direction of the model on certain advertisement pictures would affect consumers' attention, with specific focus on the gender perception differences. They found that models with a more direct gaze rather than avert one, would attract female more who with attention on the brand name while men would pay attention to the model's face in case the model has a direct gaze. These gender perception differences clearly show the need to understand consumers better to be able to design a visually appealing advertisement for them. Similarly, another study investigated whether specific demographic targeting of online advertisement has any effect on consumers and their visual attention. Research results reveal that demographic targeting can affect the eye-movement of research participants if they are allowed to freely browse on the internet. However, it did not influence brand attitude and how participants evaluated the websites [25].

### B. Visual Perceptions in Higher Education and Its Marketing

Students were found to be the subject of eye tracking studies for various reasons. The majority of the eye camera studies concerned with students focus on revealing students learning outcomes. For instance, previous research investigated the change in students reasoning ability while encountering controversial issues online. With the eye camera tracking of controversial webpage content reading and retrospective interviews, they revealed that students who successfully reasoned in the tests spent more time on other websites than the one with controversial content [26]. A similar study has been conducted about students' perceptions of reading texts on conflicting topics. Their aim was to find out how revealing and

showing students a desired eye-movement while reading and studying would change their reading patterns. The shown examples of desired eye-movement resulted in an increased attention of students on the results page of their online search and a decreased attention on texts that were not trustworthy [27].

## IV. EYE-TRACKING METHODOLOGY

The current study utilized the technique of eye-tracking with the Tobii eye camera, using the Tobii Pro Lab software. Eye cameras detect two different types of eye movement, namely fixations and saccades, with the aim of providing an accurate picture of cognitive processes and behavior for marketing researchers. "The eye camera makes it possible to measure the focus of attention and the types of behavior" [28, p.4].

The eye camera can record what the subject is looking at (product packaging, scrollable website, static image, video, etc.), in what order the subject views the data (what he looked at first and in what order his gaze passes), and how long the subject looks at a specific point. All this is possible and true for most eye cameras on the market because the device is based on pupil-centered corneal reflection and thus records eye movement. Most of the devices use infrared (or close to) light to increase the contrast between the pupil and iris and facilitate tracking, thereby clarifying the results. After recording the eye movement, the researcher can view the entire recorded material individually per stimulus image, per stimulus material, or in video form, which is recorded by the Tobii Pro Lab software in the format of a heat map and gaze tracking map. Eye camera measurement can give a more accurate picture than interviewing methods, as here the respondent is not based on his memory or previous impressions [29].

There is an ongoing debate in the literature about how many participants are needed for an eye-camera testing. Other researchers used their own primary research to prove the size of the appropriate sample size. The results of their website study with 60 people were examined on several subsamples (10 people, 20 people, then 30 people) and the result was that while the outcomes are still unreliable for 10-20 participants, there is no significant difference in the results for 30 participants and above. They supported their claim by means of a coefficient of determination ($R^2$). Above 30 participants, there is 85% reliability of results. Moreover, they concluded that in determining the ideal number of sample elements, the researcher must take into account a number of additional factors. These include the topic and aim of the research, the size of the examined population, and the number of stimuli. If a small sample is used in neuromarketing, it can result in low reproducibility, low probability of real effects, low predictability and an exaggerated estimation [30].

Eye camera research is used to reveal subconscious reactions, and in order to know get a comprehensive insight into the researched topic, it is necessary to supplement the eye camera methodology with other research tools. There are more and more studies in which other neuromarketing tools are used to refine the results in addition to the eye camera. However, we can also supplement the method with questionnaire, in-depth

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interviews and the RTA method. The latter, RTA (Retrospective Think Aloud) method is used after eye camera research, i.e. viewing the stimulus material. There are also several tools for the method of thinking out loud, which are continuous (CTA) and retrospective (RTA) research. In the case of eye camera research, the use of the RTA method is widespread. During RTA, the subject evaluates what he or she sees afterwards with the help of visual reminder stimuli. This methodology can open up space for self-observation, as the observed analyzes lived experiences and emotions based on his own thoughts and conclusions [31].

## V. PRIMARY RESEARCH

### A. Methodology and Sample

In the current research, eye-tracking is used to reveal how the online marketing tools of a Hungarian university are perceived visually by its first-year foreign students, with special emphasis on the university webpage content. Eye-camera tracking and RTA interviews were used to measure visual perceptions. The Tobii Pro Lab software helped with analyzing the results. Altogether, 15 first year students participated in the research. Foreign students at a Hungarian university were researched, as they were specifically targeted on the examined university webpage. The field work was conducted after the pandemic measures of the university were concluded and students were allowed back in the classroom in the fall of 2021.

The university webpage was analyzed with the help of four headers that showed recent news at the faculty that was in the interest of international students. Two photos used stock pictures, while two other headers used pictures of the students of the faculty themselves. Therefore, these four pictures provided good grounds for analyzing the difference between the perception of pictures with and without the own students at the university. Moreover, the research also intended to reveal whether the placement of the university's own students affects participants perception of the news depicted in the header.

### B. Research Results

First, four website headers were examined. If we take a look at Figs. 1 and 2, we can see that the images displayed in the website header are all about students at the university. However, Figs. 3 and 4 depict unknown students in stock photos used in the marketing efforts of the university. The heatmaps show where the attention of the respondents went on the pictures. Based on the heatmaps, we can conclude that in those pictures where people's faces can be seen, the attention of the research participants concentrated more. This is in line with the literature regarding eye-tracking and the nature of human attention [19], as we tend to focus our attention to our human counterparts. However, there is a striking difference between stock and actual photos. Stock photos with unknown students are viewed less, while the textual elements on the webpage are read by the participants more. On the other hand, photos with the university's own students receive much higher attention, while the textual elements are not read as much as the on the other pictures. In order to get a more in-depth insight into the

results, the data from the Tobii Pro Lab software are analyzed.



Fig. 1 Mentor teambuilding with own students and staff



Fig. 2 Treasure hunt event for freshmen with own students



Fig. 3 Advertisement of information session for students with stock photos

Looking at the data exported from the Tobii Pro Lab software, we can justify the results seen on Figs. 1-4, the heatmaps. On each picture, different AOIs (Areas of Interest) were designed, so that the software can differentiate between the real student, stock photo student and the text elements in one picture. Taking the First Fixation Duration into account, we can state that on those pictures in which real faculty students could be seen, the first fixation was shorter than that of the text next to the pictures. This means that students spent more time on the text in the pictures with real students. While in case of stock photos, the stock pictures attracted a longer first fixation duration. These are interesting findings and might show that the

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quality of stock photos determines how much time the students spent on them or the text right next to it (Table I).



Fig. 4 Information on scholarship opportunities with stock photos

TABLE I
FIRST FIXATION DURATION (DATA ARE GIVEN IN SECONDS)

| Picture | AOI | Average | Count | Variance | Standard Deviation (n-1) |
|---|---|---|---|---|---|
| mentor teambuilding | student picture | 0.19 | 15 | 0.01 | 0.09 |
| mentor teambuilding | text | 0.22 | 15 | 0.02 | 0.13 |
| treasure hunt | student picture | 0.22 | 15 | 0.01 | 0.12 |
| treasure hunt | text | 0.26 | 15 | 0.03 | 0.16 |
| scholarship stock | stock picture | 0.17 | 15 | 0.01 | 0.08 |
| scholarship stock | text | 0.17 | 15 | 0.01 | 0.07 |
| information session stock | stock picture 1 | 0.24 | 14 | 0.03 | 0.17 |
| information session stock | stock picture 2 | 0.21 | 14 | 0.02 | 0.13 |
| information session stock | text | 0.16 | 15 | 0.01 | 0.09 |

TABLE II
TOTAL VISIT DURATION: MENTOR TEAM BUILDING

| Participant | Student picture | Text |
|---|---|---|
| Participant 1 | 7.98 | 1.58 |
| Participant 2 | 6.76 | 3.47 |
| Participant 3 | 1.04 | 7.35 |
| Participant 4 | 0.09 | 7.92 |
| Participant 5 | 2.59 | 11.94 |
| Participant 6 | 14.08 | 0.73 |
| Participant 7 | 6.87 | 3.10 |
| Participant 8 | 9.07 | 4.87 |
| Participant 9 | 6.20 | 4.01 |
| Participant 10 | 6.12 | 5.24 |
| Participant 11 | 6.24 | 5.06 |
| Participant 12 | 6.98 | 4.28 |
| Participant 13 | 11.13 | 3.49 |
| Participant 14 | 10.76 | 2.87 |
| Participant 15 | 12.97 | 1.47 |
| Average | 7.26 | 4.49 |
| Share of Total Time (%) | 61.78 | 38.22 |
| Percentage Fixated (%) | 100.00 | 100.00 |
| Variance | 16.14 | 8.22 |
| Standard Deviation (n-1) | 4.02 | 2.87 |

If we compare the total visit duration on each picture and AOI, we can also draw some conclusions. First of all, in case of the mentor teambuilding picture, participants spent a longer

time in average on the students' pictures that depicted real students (average = 7.26 sec.) than the text elements next to the pictures (average = 4.49 sec) (Table II).

Similarly, if we take a look at the total visit duration of participants' gaze in the treasure hunt picture with real student photos, we can also see that the average time spent was almost twice as longer on the student picture AOI (average = 6.98 sec.) than on the text AOI right next to the pictures (average = 4.73 sec.) (Table III). This indicates that if participants know students on the marketing material used to target them, they spend twice as much time looking at the pictures of their fellow students than on the text that is targeted at them.

TABLE III
TOTAL VISIT DURATION: TREASURE HUNT

| Participant | Student picture | Text |
|---|---|---|
| Participant 1 | 7.75 | 2.25 |
| Participant 2 | 5.57 | 3.72 |
| Participant 3 | 6.89 | 6.87 |
| Participant 4 | 0.64 | 5.09 |
| Participant 5 | 2.83 | 11.09 |
| Participant 6 | 8.10 | 5.33 |
| Participant 7 | 9.55 | 0.71 |
| Participant 8 | 7.45 | 5.68 |
| Participant 9 | 8.20 | 5.18 |
| Participant 10 | 8.23 | 5.06 |
| Participant 11 | 11.20 | 1.19 |
| Participant 12 | 7.90 | 6.33 |
| Participant 13 | 3.86 | 5.28 |
| Participant 14 | 8.01 | 4.74 |
| Participant 15 | 8.49 | 2.37 |
| Average | 6.98 | 4.73 |
| Share of Total Time (%) | 59.63 | 40.37 |
| Percentage Fixated (%) | 100.00 | 100.00 |
| Variance | 7.35 | 6.50 |
| Standard Deviation (n-1) | 2.71 | 2.55 |

TABLE IV
TOTAL VISIT DURATION: SCHOLARSHIP STOCK

| Participant | Text | Stock picture |
|---|---|---|
| Participant 1 | 4.06 | 1.61 |
| Participant 2 | 4.71 | 0.33 |
| Participant 3 | 8.38 | 0.37 |
| Participant 4 | 0.14 | 0.47 |
| Participant 5 | 10.09 | 0.49 |
| Participant 6 | 11.76 | 1.28 |
| Participant 7 | 1.23 | 6.42 |
| Participant 8 | 7.62 | 3.27 |
| Participant 9 | 7.41 | 1.64 |
| Participant 10 | 6.19 | 4.07 |
| Participant 11 | 1.24 | 10.96 |
| Participant 12 | 4.55 | 3.08 |
| Participant 13 | 9.56 | 1.24 |
| Participant 14 | 9.21 | 2.62 |
| Participant 15 | 8.83 | 2.34 |
| Average | 6.33 | 2.68 |
| Share of Total Time (%) | 70.27 | 29.73 |
| Percentage Fixated (%) | 100.00 | 100.00 |
| Variance | 12.63 | 7.99 |
| Standard Deviation (n-1) | 3.55 | 2.83 |

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TABLE V
TOTAL VISIT DURATION: INFORMATION SESSION STOCK

| Participant | Stock picture 1 | Stock picture 2 | Text |
|---|---|---|---|
| Participant 1 | 0.58 | 0.54 | 2.44 |
| Participant 2 | 1.07 | 0.74 | 7.15 |
| Participant 3 | | 0.12 | 12.78 |
| Participant 4 | 0.10 | | 1.90 |
| Participant 5 | 0.51 | 0.38 | 13.55 |
| Participant 6 | 0.61 | 0.51 | 10.98 |
| Participant 7 | 0.08 | 3.41 | 7.79 |
| Participant 8 | 0.25 | 0.35 | 10.19 |
| Participant 9 | 0.21 | 0.78 | 6.20 |
| Participant 10 | 0.95 | 1.35 | 6.81 |
| Participant 11 | 2.70 | 5.46 | 3.46 |
| Participant 12 | 0.35 | 0.93 | 10.71 |
| Participant 13 | 0.74 | 1.23 | 3.85 |
| Participant 14 | 0.82 | 0.92 | 11.08 |
| Participant 15 | 0.92 | 1.18 | 9.47 |
| Average | 0.71 | 1.28 | 7.89 |
| Share of Total Time (%) | 6.76 | 12.24 | 80.99 |
| Percentage Fixated (%) | 93.33 | 93.33 | 100.00 |
| Variance | 0.43 | 2.08 | 14.11 |
| Standard Deviation (n-1) | 0.66 | 1.44 | 3.76 |

Interestingly, data of Table IV show the opposite results regarding total visit duration's share. Results show that participants spent an average of half the time looking at stock pictures (average = 0.68 sec.) than the text elements of the webpage header (average = 6.33 sec.). Thereby, we can state

that stock photos might be more attractive for the first fixation, but the overall visit duration is much longer on photos in which they recognize their fellow students.

Table V shows a very similar result to Table IV. Students looked at the stock photos for a much shorter average time (average = 0.71 sec, and 1.28 sec.) than the text right next to the stock photos (average = 7.98 sec.). This leads us to two main conclusions. First, students can concentrate on the textual elements of an online marketing message directed at them if there are stock photos used that depict students they do not know. On the other hand, if real university student photos are used, they devote a significantly longer time to looking at the photos than the text. The practical implications of this are detailed in the conclusions' session.

### C. RTA Interview Results

After conducting the eye-tracking research, RTA interviews were used to gain a deeper insight into participants' views. In the interview outline, three main areas were covered related to the website pictures and content. First, students were asked if they remembered which online media of the university they saw. Second, they were asked if they could name the content that appeared on the webpage of the university. Lastly, participating students were asked which webpage content they found more appealing: the one with stock photos or the one with fellow university students. The results of these interviews could be seen in Table VI.

TABLE VI
INTERVIEW RESULTS

| Participant number | What online faculty pages/social media did you see on the pictures? Do you remember them? | Do you remember their content? | Which one was more appealing, the one with stock photos, students that you did now know, or the ones with people you do know? |
|---|---|---|---|
| 1 | Instagram, Facebook, Website | Faculty's color, symbol, interesting pictures form the trips, treasure hunting, application for SH scholarship, research, teachers | where photos were with fun actions going on |
| 2 | Website, Instagram | Does not remember | Does not remember |
| 3 | Instagram, Website | PhD, best university ranking, trip to a city, treasure hunt, scholarship info | In which fellow students were recognized |
| 4 | ranking, university webpage, Instagram | news, events, pictures from events, university information, trip to a city | 'I like real students.' |
| 5 | university website, YouTube | our pictures', red color, logo of the university | students we know are better' |
| 6 | does not remember | university building, rector's office | students and administration are also there' |
| 7 | Website, Instagram | trip to a city, treasure hunt, main building of the university, library | trip to a city and treasure hunt is better, because they were part of it and know the people there |
| 8 | Website, Facebook, Instagram | fountain at the university, trip to a city, mentor teambuilding, scholarship promo | Liked people they knew better on the pictures |
| 9 | Instagram, Website | trip to a city, PhD scholarship promo, treasure hunt, best university in the country | liked people they knew better |
| 10 | does not remember | freshmen trip, scholarship promo, student trip to a city | prefers student pictures |
| 11 | Website, Facebook and Instagram | group of students of freshmen, they are learning and have some kind of activity | prefers student pictures they know |
| 12 | Website | ranking - best university in the country; trips, events, | prefers student pictures they know |
| 13 | Website, Instagram, Facebook | ranking, freshmen trip, mentors, PhD scholarship promo for international students | familiar faces are better |
| 14 | Website | PhD scholarship promo, treasure hunt | trip picture is better, as they were part of it, and it was fun |
| 15 | Website | Trip to a city, mentorship baking, scholarship, Christmas market, university building, repeated pictures | high quality pictures are better |

As for remembering the online pages of the faculty, the majority of the students remembered correctly that the

university website, and the university social media profiles were shown to them. This research is only concerned with the

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topic and content of the university website. As the results show, students mainly remembered those content, in which they were directly involved (e.g., university trip, freshmen trip, mentor team building, and scholarship promotion). They also claimed that those content they could recognize real-life students were more appealing for them. ('I like real students.' – Participant 4) Only one respondent (Participant 15) stated that higher quality stock photos are better in university advertisement.

## VI. CONCLUSIONS

This research is novel in a sense that it uses eye camera tracking in the field of higher education marketing, thereby providing insight into the perception of online higher education marketing for foreign students. The research sheds lights on how first year foreign students perceive the university's online marketing activity directed towards them online.

First, backing up eye-camera literature in consumer studies, participants looked at those pictures more on which they could see faces. The facial area was particularly popular to look at among the participants. Moreover, those pictures that depicted fellow students were the most popular. Interestingly, when it came to first fixation duration, the duration was shorter on friendly faces than on stock photos. However, the total length of fixation on familiar students was almost double than those of stock pictures. Conversely, those text elements that were on the website header of the friendly student faces were read for a significantly shorter period of time, compared to those next to stock photos and faces.

The RTA interviews revealed that participants remembered advertised events they themselves took part in or friendly faces were represented next to the pictures and creative marketing material. Additionally, the majority of participants claimed that seeing friendly faces on the webpage is nicer than stock photos. Only one respondent replied that professional stock photos with high quality pictures are more preferred.

All in all, it can be stated that results of the eye-tracking and the RTA interviews provide us an insight into how the marketing activity of a university is viewed by first-year foreign students. The outcome of the research is particularly interesting for the marketing specialists working to target, attract and retain foreign students at the university. Gaining this particular insight gives grounds for new ideas and practices applied in online higher education marketing.

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