How Did European Universities React to COVID-19? Exemplary Results from Germany, Italy and Sweden

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Abstract—In times of a global crisis with limited social contacts due to social distancing, alternative (digital) communication formats offer a way to maintain sharing information as well as interacting socially. Especially with universities' physical closing, there is a demand especially for students to obtain information digitally. Therefore, the importance of adequate communication via digital channels arises. The pandemic serves as an amplifier towards informational channeling. However, universities vary greatly regarding their process of information sharing. To address these differences, this paper analyzes how European universities reacted to the disruption caused by the COVID-19 pandemic and how they dealt with communication towards students. The focus points towards the question on how universities strategies aim to supplement, substitute or reconfigure social interaction. Besides an overview of the general meaning of communication for universities, the paper presents general and country-specific results on the communication of universities during the pandemic and provides a comparative overview of alternative strategies.

Keywords—COVID-19, communication strategies, media content analysis, European universities

I. INTRODUCTION

Information channels are important to take part in the competitive process to attract students [1]. Even though student enrollment numbers are increasing overall, many universities have to deal with an opposing trend leading to the urgent need of improving their marketing and communication to attract students [2]. To address this, universities have to focus on the student's environment and social demands. Nowadays, students demand a better structure of both communication networks and availability of information via the internet. This leads to a multidimensional meaning of universities internet presence, as this is an important information and communication point with public access [1]. Transparency, flexibility and modular opportunities are key aspects of this approach to develop and promote new study courses (e.g. driven by the Bologna process [3]) and to improve students' mobility [1]. The Bologna process in particular triggered the procedural design of learning contexts, which is oriented towards the needs of students. In addition, it creates a framework that promotes the aspects of flexibility and innovation, while at the same time breaking up established structures and rendering them ineffective [3]. This led to the challenge for universities to implement these criteria in a compatible manner in terms with their established standardized processes and guidelines. To support (perspective) students' aspiration of mobility as well as their career plans, universities had to change their structures and degree programs [3] as well as their digital presence. Especially in dynamic times of crisis, the disruption of structures simultaneously with retaining rigid modular curricula can be challenging. Modularization forces students to achieve certain goals within a prescribed timeline including certain degrees of freedom. This results from the modular system or "á la carte" design, in which students can enroll for modules in a completely flexible way. However, the complex process of organizing the respective study programs is particularly error-prone. The decoupling of the information flow between the administrative level (university) and the operational level (students) can lead to certain frictions. In order to react to external factors, the administrative structures of universities also require certain degrees of freedom, especially at the level of communication and especially for the new enrolling students. A decrease of social relationships as well as a lack of reliable and accurate information increases the likelihood of students to drop out from university [4]. Therefore, especially the exchange within the first week of study and the support provided regarding both information and the opportunity to network are crucial factors for students to successfully adapt to their new circumstances [5]. Due to the pandemic and the importance of social distancing, this kind of support was mainly offered through publically accessible channels such as homepages and social media.

Many universities realized this necessity and importance of homepages as a key communication channel. However, there are still inadequacies regarding the technical implementation and the quality of the information transported [1]. Besides there is often a lack of maintenance of university homepages regarding up-to-datedness and continuity. An example is the maintenance of homepages on projects about digital media usage in different German universities. Even these specific

homepages with their importance of visibility were only selectively maintained after the start of a project and rarely updated at the end of the project [6]. This leads to the question, which channels universities can use to communicate towards students. In the following chapter, we will outline these channels as well as their advantages and disadvantages.

II. THEORETICAL FRAMEWORK

The aim of the theoretical framework is to enable the analysis of the strategic as well as the content dimensions of university communication during the pandemic via their homepages and social media.

As young people tend to use mobile devices, it is a crucial factor for homepages to be compatible with these devices. The more universities use both homepages and social media channels, the better they can be found through a google search [1]. Social media are recommended for universities to communicate information on a regular basis towards target groups whom frequently use these media [2]. This approach includes the need for certain technical solutions to ensure the communication of universities towards this target group. Accordingly, different technical approaches can be compared by using criteria like *availability*, *findability* and *accessibility*. These criteria are essential to ensure a digital web presence and to offer a functional platform for students to get information. This leads to the question how information were provided and which channels were used for the provision of the information.

We divide these criteria of transferring content information from universities to students into two dimensions. The first dimension includes the technical provision of information, whilst the other dimension involves qualitative content-related information. These dimensions mutually dependent on each other in order to pass on qualitative information to students and remain up-to-date, outlined in Fig. 1.
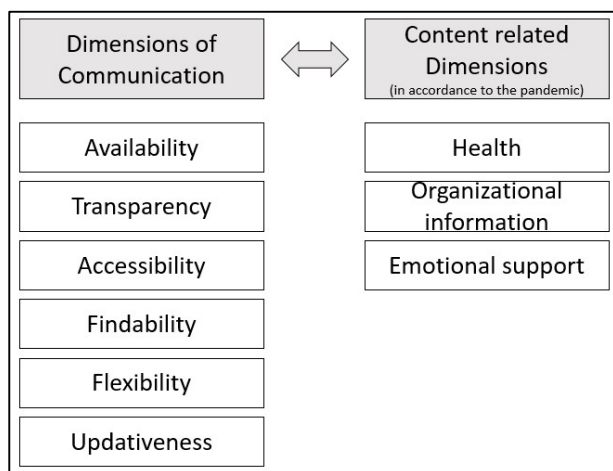

Figure 1. Dimensions of communication and content.

We divide these dimensions into sub-criteria, describing each dimension in detail as seen in Fig. 1. The *communication strategic dimensions* focus on selection and combination of channels and distribution strategies whilst the *content dimensions* focus on the qualitative content of the information given within the analyzed communication channels (homepages and social media). We will outline those two dimensions with their criteria in the following:

(1) Communication strategic dimensions

The communicational dimensions are built upon the criteria of *availability*, *transparency*, *accessibility*, *findability* and *flexibility*. This mainly derives from central questions such as "How were information structured?" and "How many updates were given?" As universities have to meet the requirements of "digital native" students [7], it is crucial that university homepages are *available* in terms of public presence. This requires a general internet presence of the university but also the availability of a specific information page, including the compatibility with common technical devices and using respective channels to reach out to the students [8]. Furthermore, *transparency* in terms of verifiability of the information provided is tightly knot to the availability of information. As students demand trusted information especially regarding COVID-19 [9], the resources of information should be communicated alongside with the information. Aligning with this crucial factor is the *accessibility* of information. Websites e.g. only add value, if they are accessible. However, many universities nowadays do not offer accessible homepages so far [7], which is caused by various reasons such as security issues, client versions as well as mobile accessibility. As students tend to use smartphones more often, the mobile accessibility is a crucial factor [10].

Aligning to that, the *findability* of informational channels, e.g., via google or a social media platforms resulting from defined key words is another important factor of communicational strategies.

To match students' needs and preferences, university need to act with certain *flexibility*. Especially during fast changing times of crises, it is important to be flexible in terms of information gathering and spreading. Agility allows to switch towards a broader network and to break with old habits of authority and processes [11]. This approach is consistent with the need to respond to the flexible life of both the student and the changing environment.

To adapt to this changing environment, universities have to ensure a certain degree of Updativeness. Universities do have a certain degree of social responsibility, they have to manage and communicate information within the organization as well as supporting ethnical behavior [12], forcing them to take an active, *updating* part in the communicational process. However, this can only be realized if the information provided to the outside world is also subject to a certain degree of topicality [13].

(2) Content dimensions

We divided the content dimension into three subcategories: information related to students' wellbeing (Health), information related to the organizational structure of the university (organizational information) and

information regarding the support of students (emotional support).

Especially within a pandemic crisis, students demand information regarding their safety and the current situation as well as changes in their students' life. Trustworthy sources are therefore especially important [14]. This is exactly where universities can function as an information channel to pass on verified facts and references as a socially recognized and trustworthy institution. This would help to reduce the lack of knowledge and serve as a contribution channel towards both students and public. However, the ability to update as well as transparency are key factors in passing on medical recommendations from higher education authorities to students in a timely manner.

Compared to previous crises as well as the increasing digitization of recent years, universities have approached the situation with a certain readiness and have been able to act flexibly. This included the usage of a strategy to shift to distance education. But especially informational enrichment is a crucial factor for students to use a channel for information gathering [15]. Students should be offered structuring information [8] regarding the organization of available tools, the planning of schedule and communication changes as well as the support for teachers and students to adapt to the situation. Especially the latter assumes a certain degree of emotional support. Connection and information are important components to keep both the students drop out rate and psychological negative effects low. According to UNESCO [8], this includes the creation of an offer of communicative support services such as networking programs, but also psychological support by qualified personnel. The quality factors such as the ability to react flexible to changing conditions, the associated ability to update information and a high level of transparency, especially at the level of clear, unambiguous communication determine this emotional level of information.

III. COVID-19 IMPACT ON UNIVERSITY COMMUNICATION

The global COVID-19 pandemic affected all countries around the world and challenged their educational systems. However, the extent to which these countries have been affected by the pandemic and the respective political measures differ greatly. In this section, we outline the global and the country-specific aspects of the pandemics impact.

A. Global Aspects

The situation of the COVID-19 pandemic affected universities all over the world. The closure of some universities and mainly the switch towards remote learning demanded new methods of communication, collaboration and scientific discourse, as education is facing a situation that is incomparable [16]. Nearly all interactions, such as conferences and meetings, switched to a digital format. Activities that could not be digitalized were precluded [17]. Especially during the pandemic, universities' measures like freshman orientation and structuring [18] could not be adapted completely to a digital format. The disruption of face-to-face activities by the COVID-19 pandemic restriction therefore changed towards the form of emergency-remote learning [17].

From a technological view, university used various tools more often due to the pandemic, leading to a huge variety of platforms, technologies and software. Universities often used digital channels such as websites, chats and social media platforms to inform students about the risk of the outbreak and to promote factual accuracy [19]. This offers the opportunity of a supplemental to conventional forms of communication [17]. However, these tools are not suited for the partial communication of student relevant information, such as the spread of information from mouth to mouth. For this purpose, broader channels such as social media and homepages are more suitable, depending on the infrastructure and opportunities each country and each university has.

B. Country-Specific Aspects

Regarding the Pandemic situation, the countermeasures by countries varied deeply within the first half of the year 2020. In Europe, the countries experienced different impacts and therefore reacted differently. One of the most affected countries is Italy with the highest infection rates and the first lockdown from the 9th March until the 18th May 2020. This included the total closure of all educational facilities for two month and a switch towards digital learning, if possible, ordered by the government. In comparison, Germany (medium affected) pursued a lockdown light from 12th of March until 15th of April for one month, where educational facilities had to shut down and switch towards digital learning. Sweden, on the other hand, was the least affected country within Europe in terms of infection rate and pursued no lockdown, which means there were no governmental regulations to switch towards remote learning. Instead, the universities were free to choose whether to switch towards digital learning or not.

To sum up, these three countries state different strategies on how to deal with the pandemic and can be seen as pointed role models [20]. Based on this situation the paper aims to answer the following question:

What differences occurred between Italy, Germany and Sweden in terms of universities' communication and information provision towards students?

IV. METHODOLOGY

In this section, we explain the methodology of this study and the rationales behind it. After an overview of the sample, we describe the methodological approaches of the qualitative content analysis of homepages as well as the quantitative content analysis of social media channels.

A. Sampling

The core aspect for choosing the above three countries in this study is the variation of the country specific impact of the pandemic as well as the difference in reacting towards this crisis. Furthermore, the countries represent three different development levels of the DESI, the digital economy and society Index. The countries vary regarding the criteria connectivity, digital skills, citizen use of internet, business technology integration and digital public

services [21]. Therefore, the DESI clusters into 3 Dimensions: the top four performing countries, the average dimension and the bottom four performing countries [21]. Sweden is ranked second in the overall ranking and therefore within the top four performing countries. Germany ranks 12th, with 28 countries in total nearly within the middle field and therefore tagged as average. Italy is ranked 25th and the first country within the bottom four performing countries [22]. The reason behind choosing these three countries by the comparative study, the DESI, lays within the macroeconomic factors influencing both digital infrastructure and communities behavior, e.g. the basic skills of usage such as the regular use of the internet conducted from the DESI [21]. Overall, we formed the sample of the top 10 universities in the international ranking from each of the selected countries. The analysis pays special attention to the availability of English language versions to evaluate critically the opportunities for English-speaking students. One reason is the international orientation of these students, the other relates to the multinationalism and comprehensive international (exchange) programs such as ERASMUS, which have been affected even harder by the pandemic restrictions (border closures, university closures, travel bans etc.) than the national study programs.

B. Qualitative Content Analysis of Homepages

Within this research, we screenshotted the homepages on desktop computers and stored as a pdf to analyze them by using a qualitative content analysis [23]. To standardize the process, we chose the information provided on the homepages by the first result shown in a google search when using the key words "name of the university and "Corona". To ensure the traceability, we manually saved the first search result containing information towards either students and/or staff. If possible, we switched the webpage found towards an English version to increase comparability. We then exported these PDF generated screenshots into MAXQDA and analysed them by using the criteria defined in the following table, which refer to the above theoretical framework. Due to the multidimensionality of the linguistic passages, we used the methodology of double coding.

C. Quantitative Content Analysis of Social Media

Since students use websites for more in-depth information, while social media are primarily used for rapid changes in information [24], the social media were also included in the analysis to investigate the criteria of flexibility and up-to-datedness. We conducted this part of the study by performing a quantitative analysis of the posts within a period of three months, from 15 July 2020 until 15 October 2020. The university semester start of all three countries was within this period. As Facebook is one of the most frequented social media platforms with availability in all countries, we analysed the Facebook pages of the universities regarding the number of posts within this timeline as well as the percentages of pandemic-related content. We excluded regularly planned activities and information minimally affected by the pandemic from the analysis, such as overall information on scientific

contribution in not-COVID and not-health related fields. Information on health recommendations for students, the organizational structures and information on the course of studies, contact points for problems caused by the pandemic and general information on, for example, research or further sources of information were the object of interest. The analyses of the social media are based on scanning the numerical recording of the pandemic related posts in proportion to the overall posts to gain a certain understanding regarding the communicational strategic dimensions mentioned above. We then combine these results with the qualitative analysis results of the websites to identify trends and specific types of strategies.

V. RESULTS

The analysis provides results how universities design their communication strategy to supplement and/or alternate the provision of information and to facilitate social interaction during the pandemic. We summarize the content analysis of the homepages and social media of the considered universities from a comparative perspective, followed by a country-specific aggregation of the core results. Finally, we will present a cross-country comparative synopsis.

A. Homepages - Central Link to Further Information?

The analysis of the homepages showed a clear tendency towards organizational information and the provision of links to other websites, particularly with regard to the thematic priorities in all three countries. Furthermore, the homepages especially dealt with re-openings and working hours of the libraries, the cafeteria and collegiate sports (the latter especially in Germany). A further result of the analysis is that the universities mainly do not provide any target group specific information, e.g., for ERASMUS students or students with special needs. In this regard, the results indicate that most universities have decided a general communication strategy to the detriment of targeted strategies to cope with the diverse needs of various student groups. Besides, certain information about the current research status or offers of podcasts and similar media were provided. The homepages also invited students to participate in COVID-19-related research programs.

Remarkably, we observed internal links about five times more often than external links. On the content level, the organizational information clearly dominated. However, contrary to expectations, only half of the organizational content contained concrete information for teaching and courses within the distance-learning environment. Instead, they provided further information about the university and affiliated units. This included in particular the opening hours of libraries.

On the other hand, the universities share information on teaching and courses rather equally. Regarding the exams and the respective restrictions due to COVID-19, only a few universities provided information. However, these universities offered a large amount of information on the examination procedures and related aspects, so that the overall count of examination content increased. A similar problem arose regarding the allocation of sources or even

citations to support the pandemic measures taken. Only seven universities dealt with this topic in a rarely manner.

The second most mentioned content were the health aspects. Compared to the organizational content, the universities provided health-related content only half as often. The focal points of information vary between universities, with an overall limited range and depth of the information. They mostly provide information on symptoms of the disease and educational mandate, less on health recommendations (e.g., procedure in the event of illness, avoidance and reduction of infections) and almost no information on university-specific instructions (hygiene concepts, health guidelines). In particular, we could only observe references with regard to health content occasionally at nine universities. This information mostly referred to state institutions such as the Robert Koch Institute in Germany.

Almost no university addressed the content dimension of emotional support. Only sporadically, information regarding potential contact persons and general emotional support were offered, foremost limited to the student office or central student advisory services. These institutions also offered information regarding general problems such as financial aid and students bureaucratically support without referring to the emotional state of the students. Networking opportunities were only mentioned once by a single university, offering the students a digital platform for interactions and questions. However, this special event seemed to have only occurred once.

Since the various content levels have interfaces with each other, particularly frequent links between them can be regarded as systematic dependencies, which are illustrated in Fig. 2. The size of the points represents the frequency within the category itself and the thickness of the connecting line represents the frequency of occurring overlaps of the two connected categories.
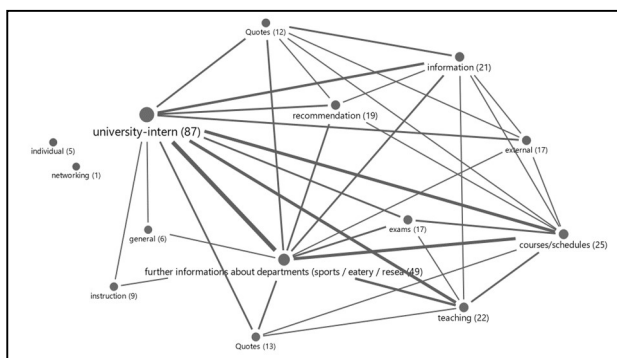

Figure 2. Relations between the content categories.

Considering the overlapping of individual categories under this premise, the frequent overlapping of further information about the department with internal university links stands out in particular. For further information, reference link to the direct pages of the departments. The courses of the digital semester itself forwarded to further information on, for example, opening hours, as well as to the university's internal links. Information on examinations, health information and citations also

frequently linked to internal websites. Furthermore, sources and citation references partly referred to university links. In particular, the health source references linked to the levels of health information, references and recommendations. These sources were in proportion to each other. In most cases, health information served as a basis for information on how to deal with the disease, and reference was made to a possible existing hygiene concept.

The network analysis shows that the information was rarely communicated in isolation, but rather follows a pattern of how and which contents were transported together. This opens up the questions of country-specific distinctions, which we will examine in the following in an exemplary manner.

B. Sweden: Strong Prioritization and Wide Range of Provided Information

Overall, Swedish universities tend to set priorities regarding the content dimensions with a focus on organizational content. They either provided only few health-related references and internal forwarding within the university or informed only sporadically on health issues, with almost no information on emotional support. The level of organizational structure is more strongly represented expect for one university, which offers very broad information on all three content dimensions (health, organization and emotion).

In general, Swedish universities differ regarding information distribution via homepages: Very few universities offered a huge amount of information, while the others mainly offered a very limited amount. Furthermore, Sweden stands out as the least active country with only 468 posts from the ten universities over the three months period of observation. The Swedish universities' social media platforms received an average of 0.51 daily posts per university, which is the lowest number of daily posts compared to the other countries. Regarding the content, only 1% of the posts (6 posts) deal with health issues, 2% each with organizational (8) and emotional (11) issues. With 20 posts (4%), the "non-categorized but COVID-19-related" posts dominate the COVID-19 topics. It shall also be mentioned that only six of the ten Facebook pages were completely or partially available in English, while four universities provided homepages only in Swedish. Two universities use the tool "COVID-19 i update", where messages with a COVID-19 reference are specially marked in the header.

In summary, we identified the focus of communication on homepages and social media channels is very different especially at Swedish universities. Whilst homepages rarely provide information on emotional support for students, foremost social media seem to play an important part in communicating with students. Organizational information is mainly provided on homepages but is relatively hidden on social media channels. The information on health information is distributed more or less equally. However, since the proportion of information from social media channels is clearly below 5% in almost all analysed cases, a clear need for improvement can be identified.

C. Germany: Intense Online Communication Including Emotional Support

German universities are characterized by a relatively equal distribution of information regarding health and organizational content, whereas the emotional support was completely ignored by eight of the ten analyzed universities. This result is similar to Sweden with the homepages mainly containing links to further, internal websites. The universities mainly provided health information regarding the virus and the pandemic situation, followed by the health-related deficiencies. Surprisingly, two universities did not offer any content at all on health issues. In contrast, the other universities mentioned at least one (1), two (2) or all three (4) health categories. Two of them substantiated this with references to further sources.

Regarding the organizational dimension the dissemination of information aspects not specifically related to teaching also dominated. Seven universities addressed the organizational structure of the semester, whereas only two universities dealt with examination topics on e.g. how examinations will take place. Only two universities provided emotional support through individual contact options, which was however limited to naming the external contact addresses. These two universities were also present in the other categories, while other universities only sporadically addressed individual categories or excluded them completely.

Overall, Germany was the country with the most information distributed on homepages. On average, we identified about 0.89 posts written per day and per social media channel. Within the social media survey, Germany had the most health-related posts, which is 2% of the 814 German posts. The 3% share of messages with emotional support (22 posts) exceeded this. Similarly strong represented were organizational information with 27 posts (3%). Within the group "non-categorized but COVID-19", references to COVID-19-related closures or changes in opening hours were particularly frequent. Sports activities and their reduction were also discussed comparatively often, as were research-related results. Furthermore, Germany was the only country in which a university was present on Facebook but did not post anything. Four of the ten universities also had their social media channels in German language only. Looking at Germany as a whole, there is a certain similarity in the orientation of communication both on homepages and on social media channels. Only the organizational information is less represented on the social media platforms compared to the homepages. This indicates a similarity to the Swedish universities.

D. Italy: Limited Linkages on Homepages with Intense Social Media Activity

Italian universities strongly focus on the organizational content. In general, the homepages were less detailed and only occasionally provided links to further internal websites, while external links were not provided at all. Within the health dimension, only five universities provided links mainly limited to just mentioning one aspect. Only one university gave references regarding their procedures and the relevant related instructions for students. Organizational information was concentrated strongly on further information about various departments, but also on teaching and course events. Half of the universities, but only to a limited extent addressed examination problems. Only one university provided emotional support, which mentioned a general contact point. Apart from this university, there were no cross-references to the origin of information, be it health-related or organizational.

Italian universities had the most frequent posts on social media with about 1.64 posts every day per university. In terms of digital communication via social media, Italy had the most information given on social media. Especially on the organizational dimension, Italy had the most posts in comparison to other countries. Contrary to a first estimate, only 3% of all posts were information about organizational content. Furthermore, only 1% of the information given on the social media websites dealt with emotional and health-related content. However, 5% of the Italian posts are coded as "uncategorized but COVID-19 related", which was in the largest quantity of this category in comparison with the other countries. Particularly outstanding was the appeal of moral support for systemically important professions (applause for doctors, police, etc.). From an international perspective, only three websites were entirely or partly in English, while the remaining seven universities provided posts only in Italian. Furthermore, only two universities frequently used the Facebook information button, which offered the chance to mark special COVID-19 information, with content mainly in Italian language.

If one compares the Italian homepages and the social media channels, a heterogeneous picture emerges. Although Italy has the strongest position within the social media channels, this communication strategy seems to be in stark contrast to that on homepages. On the homepages, only little information is given to the students in comparison to other countries. However, the focus of the information quality is almost identical: Italian universities and social media channels each have a clear focus on the organizational level, although a cavalcade of information, especially on Italian university websites, easily overwhelms students.

E. Synoptically Comparison of the Country-Specific Results

The comparison of the countries shows a clear trend. All universities attach great importance to organizational information in particular. Accordingly, this is also the dominant content level. Sweden signals a strong structuring and information reduction. In comparison, Italy relies on a very extensive communication strategy on social media channels, covering all possible areas and virtually filling students with information. There is no sign of structuring here, which is contrasted by the rather sparse homepages with little information. Italy also left a gap on the international language level (especially on social media channels) compared to the other countries. In this country sample, Germany occupies the middle field with a moderate amount of information, which is limited to homepages in particular whilst communication via social

media channels is less. The provision of emotional support is a further positive aspect of the German analyzed universities.

VI. DISCUSSION

Overall, the group of universities offering only limited information (and support) dominates the analyzed sample. Although the results show that universities reacted quite similar within the analyzed countries and globally, a critical review of the findings allows the identification of best practice examples providing detailed information to students. Thus, the results assume that many homepages or landing pages are just a collection of links leading to subpages with more detailed information, as homepages are more navigation-operant than information pages.

Regarding the research question on how universities respond to students in terms of qualitative information, the results reveal a relatively negative picture. Especially in terms of health education as well as emotional support, the universities in general show a considerable lack of sharing information. Organizational information is also limited, even if this statement is limited to the first landing pages due to the methodology applied in this study. Universities seem to put an emphasis on other topics such as research.

Although the results show comparative results for the analyzed countries, we identified substantial differences in terms of informational dissemination towards students. Regarding the health dimension, there is a clear trend: German websites, but especially social media platforms, were richer in content than the other two countries. This could possibly be the case because an above-average number of university hospitals in Germany were affiliated with the universities, as the relevance of health-related content was stronger perceived by these universities. that students have a clear deficit in health knowledge about the effects of the COVID-19 virus, it is necessary to raise awareness and educate through homepages. Due to the versatile use of homepages and their offer as a first point of contact [24], homepages are particularly suitable for passing on health information to students especially in case of a pandemic situation.

This need for information transfer is also evident towards organizational structures. Especially the demand of organizational information is particularly high for students regarding their planning of studies as well as their study progress. Italy in particular stands out with its provided information, possibly due to the Italian lockdown phase, being the longest in Europe with three months. Furthermore, we identified that Italy particularly rewarded health-related and systemic work while increasingly calling for support in their communication. Although this is remarkable from a societal point of view, it addresses students' needs only to a limited extent. In general, the emotional support was extremely limited at all analyzed universities. The support by providing contacts and contact persons was rather strongest in social media. Considering that networking and peer grouping are essential factors for students' wellbeing and success, the results indicate that there is still a huge demand in this area to provide sufficient information. Particularly in the pandemic situation, in which distance learning is the key to success, networking and the transfer of information via digital media is more important than before.

This research outlines that many universities still have a clear deficit and can therefore only meet the demands of students regarding a "COVID-19-adjusted" communication to a limited extent due to their absence to meet fundamental communication criteria for public communication. Although limited research results focusing on the specific pandemic situation are available so far, universities should have a general interest in improving their (digital) public communication, as an improved organizational communication structure will facilitate the learning process of students as well as their study success. Whilst trying to capture the depth of information given, this assumes the need to analyse a broader variety of both homepages and a more detailed analyzation overall. However, in this study, information could be viewed at first glance to a limited extent with options of further research.

Empirical studies are always subject to certain limitations. In the presented study limitations occur which are related to the sampling at both the linguistic and technical levels. Since we analyzed the material in English, the problem of direct translation and information transport into English is virulent. Whether this carried out by the researcher or with the help of digital translation systems, both approaches are subject to the risk of misinterpretation of content. Furthermore, a linguistic limitation occurs due to the researchers' lack of knowledge of the Italian and Swedish languages, which may have led to a certain loss of information.

A further limitation derives from the data basis. By using the first search results, we did not consider additional information from other webpages. Further links on the homepages and social media were also excluded. The reason behind this is the simplicity of the search and the need to make information available to students quickly and easily. The first page found on google in particular is therefore relevant, which is why only considered these first findings. Therefore, this sample was deliberately chosen.

VII. CONCLUSION

Homepages form an essential part of universities' communication. It is important to not only establish a present solution but also rather work continuously on improving the homepage. Especially the usage of CMS offers the opportunity to work steady and fast on this issue [1]. Homepages do not succeed face-to-face interaction, which most of the students prefer, e.g., [11]. However, homepages may be a good starting point to deepen the informational exchange. Possible barriers such as accessibility for the staff to update information are reduced by using open source platforms such as Typo3 [1]. Hence, the question arises why universities still lack the responsiveness and strategies for informational spreading, especially in times of COVID-19 with the necessity to react fast. In terms of responsiveness, many universities already changed towards a digitalized structure of informational exchange. The pandemic just fastened the

process, encouraging university staff to take action, as technology offers advantages regarding a wider range of receivers, e.g., [5].

Organizational nature and structure is directly correlated with the patterns of communication and especially the culture influences these communication patterns [25]. This might be a possible explanation for the different approaches and qualitative differences between the countries within this study. This can be related to Rumbley's findings [19] that especially administrative personnel were given the responsibility of sharing information towards students in times of crisis. Students' agency and direct communicators as well as academic leaders were less often responsible. This could lead to a shift in the information content, as the approach by administrative personnel might be a rather pragmatic, rather than focusing on the individual needs students, lecturers and academics are facing. However, as the personnel responsible for the maintenance of homepages and social media cannot be tracked in particular, this aspect is excluded within this study. Still, communication towards students and communicating achievements (e.g., the publishing of new articles and findings) are completely separated from each other [1]. As academic staff tends to focus on research, they might not see themselves responsible to share information regarding students love on a public channel. This leads to the question of who is responsible for ensuring a good information exchange via homepages on the organizational level, not for individual students within courses but for students in general. Regarding this aspect, a possible recommendation to improve the communication derives from [25] by enhancing the management and solve employee problems by offering internal support. However, this question of responsibility should be analysed in further research.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Silvia Annen wrote the research paper. Sabrina Sailer conducted the collection of data and analyzed the data. All authors have approved the final paper.

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