

Effectiveness of using social media and analyzing its content in the detection of high-interest education technology topics

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Abstract

In today's world social media has evolved as the revolutionary communication tool, where people can share, exchange, comment, discuss and hence create information and knowledge most collaboratively. This study aimed to gauge the effectiveness of using social media and analyzing its content in the detection of high-interest educational topics in Saudi Arabia and Egypt. Thus, to find the effectiveness of social media in education, both qualitative and quantitative analysis has been done. The quantitative analysis involved 400 students from Egypt and Saudi Arabia. The quantitative study was used to understand student patterns of usage of social media for educational topics in educational technology. Qualitative analysis was used to present the perspectives of the teachers. The results of the study show that in Egypt adoption of content detection and analysis software for social media as educational technologies have facilitated students with more accurate and attractive source of information, whereas, in case of Saudi Arabia, factors of access the required information and provision of valuable historical and cultural insights over time through analysis of texts are two prominent reasons that promote students to use social media

Key words:

Education, education technology, social media, content analysis.

1. Introduction

Rapid pace of technological development has not only led to the growth of the manufacturing sector but also the evolution of the knowledge sector of the economy. The traditional education sector was based on the information processing and learning theory, however, with evolution, the behaviorism shifted to constructivism (Koh & Lim, 2008). Experience-based self-learning concept became prevalent and even collaborative learning models came into effect wherein people share their own experience to enhance perspectives of students. Further, with the advancement of technology, classroom education has made way for electronic means of communication and exchange of knowledge. The contribution of information technology is represented in two ways i.e. technology of education, and technology in education. Implementation of technology-based tools in education is technology in education while the complete change of medium of learning by utilizing educational theories with technology is a technology of

education. The effectiveness of the education sector has increased and even students and researchers can access more information by using the internet. Thus, the emergence of educational technology led to an increase in opportunities for students and researchers to learn and understand new things.

The advancement of educational concepts also led to the utilization of communication tools for enriching students or researchers with the knowledge. Social media tools like Facebook, Twitter, or students and researchers for having a conversation or for entertaining themselves mainly utilize YouTube (Aleksandrova, Y., & Parusheva, S. 2017). However, the model education concept included social media in the education system. Herein, social media tools influence the learning process; enhance the learning style and personality profile of users; serve as an online education attainment source; and coverage of more students (Zachos, Paraskevopoulou-Kollia, & Anagnostopoulos, 2018). Although social media is commended as a medium of communication and source of transmitting knowledge among people, it is essential to recognize its contribution towards influencing people's beliefs, attitudes, and values (Lai & To, 2015).

Countries in MENA (Middle East and North Africa) have, for a long time, faced a challenge in education due to limited access, quality, and relevance. However, with the introduction of the social learning concept, usage of social media for educating students has been popularized. In most countries of this region today, the growth of social media can be seen in exponential terms. Egypt has a massive increase in Facebook users while Saudi Arabia has seen exponential growth in Twitter users. (Mourtada, R., Salem, F., & Alshaer) show that Saudi Arabia mainly focuses on video sharing sites and collaboration based tools for education while Egypt uses Facebook or Google+ groups mostly for information sharing. The education system of Saudi Arabia still less focused on utilizing social media as a source of education in classrooms as compared to Egypt.

2. Problem Statement

through considering the evolution of the education sector and the usage of social media for educating students, the researcher believes that there is an increase in the search for academic subjects and about educational technology in higher education institutions in the Kingdom of Saudi Arabia and Egypt, without knowing their feasibility.

The study seeks to answer the main question: What is the Effectiveness of using social media to detection of high-interest education technology topics among students and researchers in Saudi Arabia and Egypt?

3. Objectives

The study seeks to explore and verify the following objectives:

- To determine the effectiveness of social media in teaching and learning experiences on educational technology.
- To examine the usage of content analysis tools and techniques for social media data analysis in the field of educational technology, its benefits, and challenges.

4. Literature review

a) Social media in education

Social media has evolved as the revolutionary communication tool, where people can share, exchange, comment, discuss and hence create information and knowledge most collaboratively. It is a tool that via the internet not only helps in communication but also promotes the interaction of people at any place or at any time. Some of the common sources are micro-blogs, forums, social networking, wiki, social bookmarking, and podcasts (Alshammari, Ali, & Rosli, 2015). Social media has not only transformed the communication landscape but also significantly impacted how the students learn and the way teachers teach. Application of social networking sites in the teaching and learning process offers a positive impact and opens the door to new ways learning and teaching (Devi, Gouthami, & Lakshmi, 2019).

The use of social media has emerged as an effective tool that complements and enhances teaching in traditional classrooms. Applications like YouTube, Facebook, wikis, and blogs provide a huge amount of material on a wide range of subjects that students can use for further explanation and clarification. Moreover, virtual tools such as Moodle act as an effective way through which students can be in touch with their classmates, teachers or the instructors thus creating a participatory environment. This further enables the material taught to become easily

accessible to all the users at any time and anywhere. In this environment, the users and mainly the students can ask or post the questions and queries which can be answered by their classmates or by the teachers (Al-Mukhaini, Al-Qayoudhi, & Al-Badi, 2014).

b) Attitudes of students towards the use of social media in education

Students are using social media to develop skills based on extensive knowledge sharing and communication through networks. Educators, as well as the students, have recognized the power of social media in transforming the learning experience and thus, are integrating these online tools in their studies and instructions thus pointing towards the positive attitude of students towards the use of social media in education. Students use social media in many ways during their studies to reinforce their educational activities and further to increase their academic performance. The social interactions students receive through social networks help students to feel more connected with their colleges which subsequently increases their chances that they will persist beyond the first year. Further, it creates a new perspective in the process of acquiring knowledge for the students. Social networking sites allow students to participate in formal and informal learning conditions thus they can match with the people having a similar way of thinking and exchange information (Zachos, Paraskevopoulou-Kollia, & Anagnostopoulos, 2018).

c) Advantages and constraints of using social media in education

Use of social networking sites have provided flexibility in the learning process thus expanding choice on what, when, where and how to learn, these social networking sites are easy and quick in terms of accessing, reviewing, updating or editing the learning material (Zaidieh & Jalal, 2012). Although teachers and students are using online tools in their learning and teaching process, they may also face certain issues such as unsuitable material, sexual predators, bullying and harassment by the peers (Cosmato, 2013).

Thus, social networks provide both the challenges as well as opportunities in education. Certain challenges that come up well using social media as the education tool could be privacy, taking up time and miscommunication (Zaidieh & Jalal, 2012).

d) Types of social media preferred for research, exploration, and communication in scientific subjects

With the view of increasing student awareness in the educational process along with blended entertainment, social media undoubtedly supports such behavioral patterns, and this seems to be an enjoyable and universally accepted medium in the student's way of living (Zachos

Paraskevopoulou-Kollia, & Anagnostopoulos, 2018). The social media research encompasses the form of research that typically uses the data derived from the social platform. Research gate is one of the social media platforms used by the students and academics to disseminate their work along with extracting data and deciding on the topic of research. This kind of social media platform helps people to connect, share knowledge and expertise (Muscanell & Utz, 2017). Academia.edu also evolved as a major social media platform for information sharing and open dissemination of the scholarly practices that are gaining momentum among the students through these social media sites (Manca, 2017).

e) Content analysis of social media data

Social media enables teachers, students to gather information and make more informed decisions. Thus, converting social media content into appropriate information, key concepts and themes are crucial for generating knowledge and formulating the strategies. This suggests a need for a systematic approach, as it would help students and teachers to understand the commonality in various online text data that appear on social media thus allowing them to use in their education (Lai & To, 2015). As stated by (Showkat & Parveen, 2017) content analysis refers to the technique of making inferences by systematically identifying the characteristics of the messages and thus using the information to gain knowledge. Content analysis of social media data has several advantages. Content analysis of social media data provides the students and teachers with a profound insight into the situation thus allowing new theories and the topics to be discovered (Tänzler, Feil, Krömker, & Eierdanz, 2008). Content analysis of social media data is also useful with the quantitative research projects. Further, the observational approach allows for the opinion of the participants to be taken into consideration (Vlieger & Leydesdorff, 2011).

f) Tools and techniques used by the students for the educational purpose

Instructional technology is the ability to share information using media-based technology such as audio, text, video, and images. This technique is adopted to increase the interaction between the educators and the targeted learners. Keywords that are used on social media for educational purposes can include asynchronous learning, synchronous learning, virtual learning, instructional learning, secondary education, networked learning, learning management x The education sector is changing, and to improve learning outcomes, it is being imparted through the diverse medium. Massive Open Online Courses (MOOC), flipped classroom or learning through online methods and implementation being taught in classed, and methods of gamification or teaching with video game designs are readily being used (Klemke, Eradze, & Antonaci, 2018). Apart from social media as an effective content analysis tool, its modality in

educational technology in contemporary educational settings is also known.

Moreover, as already seen social media provides the most vital platform for information gaining and information sharing. There are some social media tools in use today by students in the course of their academic research in the field of education, particularly for topic search. Some of them are Research gate, social networking sites for the scientists and the student researchers where they share papers, answer questions and find the collaborators. Research Gate is being used by researchers students today to share their study findings, limitations and discussing problems related to research. GITHUB is another web-based platform that is used for version control. GIT simplifies the process of working with other people and makes it easy to collaborate on the projects. It also enables the team members to work on files and easily merge their changes in the master branch of the project (Martin, 2018).

g) Empirical review

(Parusheva, Aleksandrova, & Hadzhikolev, 2018) focused on the usage of social media in higher education institutions. The study focused on the students in Bulgaria. The study tried to analyze whether the higher education institutions in Bulgaria use the benefits of social media in their integrated learning management system. The study showed that social media significantly triggered the changes in the whole spectrum of the learning as well as the education. It was seen that social media emerged as an important tool of information sharing among the students, collecting the data for the research, sharing the personal as well as the academic interest with other people, the formation of the groups for the teamwork.

(Lemoine, Hackett, & Richardson, 2016) studied the impact of social media on student academics in higher education. It was found that the advent of social media has significantly impacted how students learn and the mode of instruction. Social media can significantly strengthen the class material and could positively influence the discussions and collaborative works. Educators have also realized this and have been trying to use social media technologies with the motive of stimulating critical thinking skills, collaboration and knowledge construction among the students.

(Perikos, Grivokostopoulou, Kovas, & Hatzilygeroudis, 2016) studied the educational capabilities of social media. The paper evaluated the approaches of social media utilization in higher education. It was found that the pedagogical approach constituted the significant aspect of social media utilization in the education system. This approach focused on the specific learning aspect based on the characteristics of the course. Under this approach, all the learning material is posted on workspaces. Further, the students are separated into different groups and assigned to different tasks. The main aim was to enhance the learning

efficiency and educational potential among the students through the usage of social media. (Li, 2016) studied the application of social media as the facilitator or the barrier to the learning experience of the management students in the hospitality and tourism industry. The study mainly focused the Chinese university students. The analytical framework employed to guide the discussion was the structuration theory. It was found that social media enabled the students to connect to their family, friends, find and share information with their peers and thus facilitate discussions among the students. However, this positive side was coupled with the feeling of frustration and guilt of being distracted from the formal university education.

5. Research Methodology

In studying the effectiveness of using social media to Detection of high-interest educational topics, the researcher has used a mixed method of qualitative and quantitative primary analysis. Both interviews of specialists in social media or content analysis and survey of students have been employed to examine the usage of content analysis tools and techniques for social media data analysis in the field of educational technology. The method has been preferred in this study as a mixture of both quantitative and qualitative research data allows comprehensibility of the topic for the researcher. The collaboration of method allows offsetting weaknesses that are inherent to either qualitative or quantitative research. Also, mixed-method has the advantage of identifying different vantage points of respondents using different methods and techniques (Bryman, A., 2012). In this line, data type, sampling plan, data collection, and analysis methods have been described further.

Both qualitative and quantitative data have been used in the present study to gain a better understanding of the research problem. Quantitative data was gathered in this study by analyzing responses of 200 students from Saudi Arabia and 200 students from Egypt respectively. The aim was to study to understand student patterns of usage of social media for educational topics in educational technology. The questionnaire was structured and close-ended. Further, qualitative data has also been gathered in this study using the open-ended interview format from teachers in these institutions to understand how students are using social media for their research in education and education technology. The sample size for the qualitative study for the interview was 10 each from Saudi Arabia and Egypt. The respondents, as well as interviewees, were selected using a purposive sampling method. They were contacted via email and their responses were gathered over the telephone. Survey responses were gathered using Google Forms, the link of which was emailed to each respondent. While the interview was analyzed using content analysis,

data gathered from the survey are analyzed statistically and using SPSS to reveal the pattern of correlation and regression between different variables in the further section.

6. Data analysis and Results

This section presents both descriptive and inferential analysis of data gathered through surveys and interviews. Data collected in survey sites of Egypt and Saudi Arabia are presented using graphs and tables. Along with this, this section further presents the analysis of data gathered from the interview.

a) Survey analysis

The demography of 200 students surveyed in Egypt indicates that the maximum number (49.50%) of students belong to the age group of 15 – 20 years. Also, the number of female respondents was higher than male and the survey had more participation from students in higher education courses as shown in chart 1.

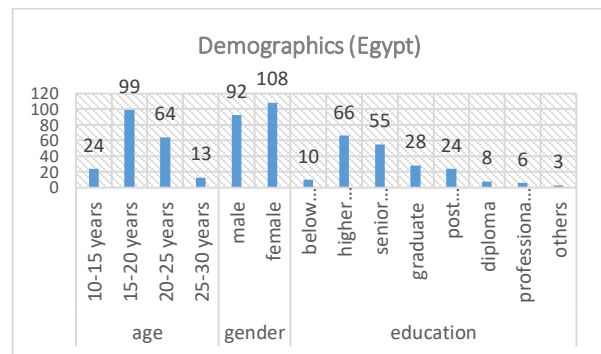


Fig. 1 Demographic representation of the surveyed population in Egypt

In Saudi Arabia as compared to Egypt, the students surveyed belong to the age group of 20-25 years. 48.5% of the student responses gathered are of this age group. Also, male students' participation in the survey was higher than female, 51.5% as compared to 48.5%. The respondent surveyed prominently belonged to higher education degrees (29%) as shown in figure 2.

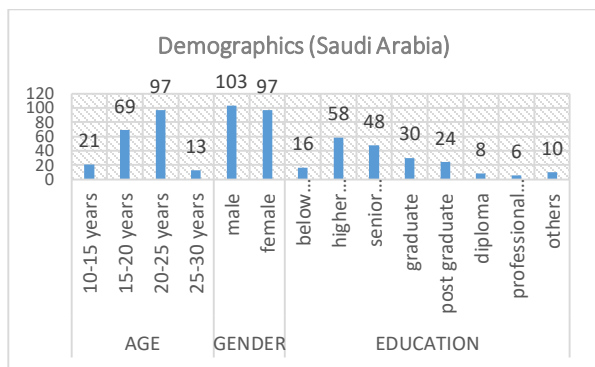


Fig. 2 Demographic representation of the surveyed population in Saudi Arabia (Source: Compiled by author)

As shown in figure 3 below the researcher also enquired on the pattern of usage of social media tools among the students in Egypt. Respondents revealed that they prominently used Wikipedia, Twitter, and Facebook and Google for educational purposes. In Egypt usage of YouTube, audio sharing, and photo sharing are minimum.

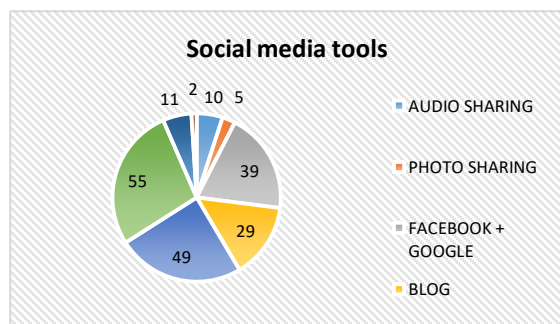


Fig. 3 Pattern of social media tools used in the surveyed population in Egypt

This survey also analyzed the pattern of social media tools usage in educational technologies in Saudi Arabia. It was found that students in Saudi Arabia used social media tools such as Facebook, Google, and different educational blogs. This is represented in figure 4 below

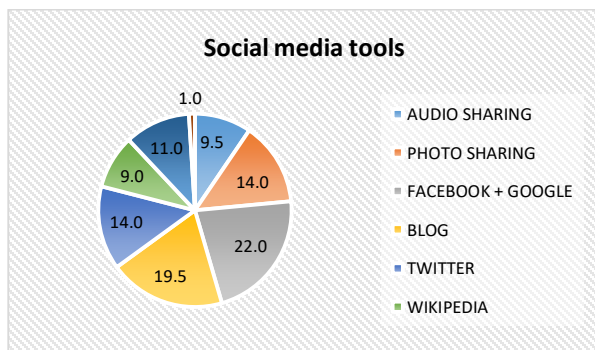


Fig. 4 Pattern of social media tools used in the surveyed population of Saudi Arabia (Source: Compiled by the author).

The survey also highlights the perceived importance of content analysis among student respondents. The survey revealed that maximum students (99%) are aware of the importance of content analysis in context with education. To analyze students' knowledge of content analysis, the survey found that 89% of students knew content analysis. Further, in the survey, it was found that students use content analysis for various purposes including finding background information (11%) and 78% of the students actively use social media for deciding their research topic. This is

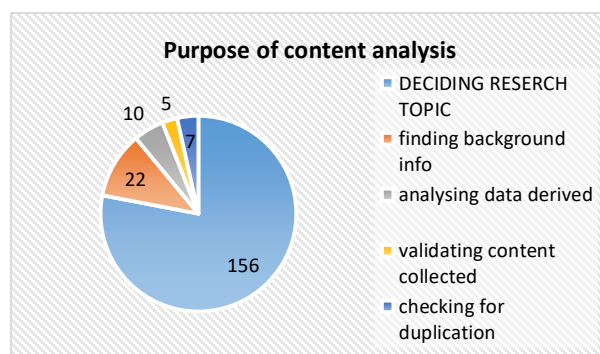


Fig. 5 Use of content analysis among students in the surveyed population in Egypt

While in Saudi Arabia the survey revealed that 91% of the students are aware of the importance of content analysis in education. However, only 67% of the students in Saudi Arabia know content analysis, as compared to Egypt students showed higher knowledge of content analysis (89%). Further, the results of this survey revealed the purpose with which students undertake content analysis prominently includes the reason for deciding on the research topic. Social media tools are used by students as a knowledge source to know what recent topics that can be studied or examined through research (51%). Students also use such tools for finding background information and analyzing derived data. This is presented in figure 6 below.

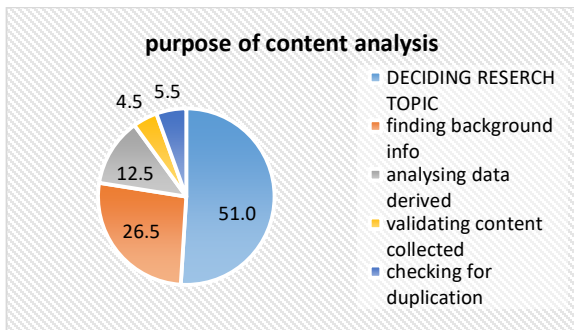


Fig. 6 Use of content analysis among students in the surveyed population in Saudi Arabia

b) Inferential analysis

Social media does not have a significant impact on the teaching and learning process in Egypt and Saudi Arabia.

Table 1 represents the results of correlation coefficients analysis results of both Egypt and Saudi Arabia. The analysis has been used to understand the degree of linear relationship between the impact of social media and teaching and learning processes as the independent variable. All the elements identified in the independent variable

exhibit a significant correlation of p-value less than 0.05 at 95% Confidence Interval (CI) in both the countries.

When considering the correlation results of Egypt it was found that Out of all the variables representing students' attitude towards usage of social media in education, 'Improvement in technology-based skills (.922), Provide an opportunity of knowledge sharing globally (0.895), More accurate and attractive source of information (.899), can help in building connections with students and teachers (.880)' show the highest correlation with the impact on their usage of social media for educational purposes. It means that the majority of the students surveyed believe that these factors enhance the role of social media in their education.

While when considering the correlation results of Saudi Arabia, it was found that All independent variables identified in this study exhibit a significant correlation of p-value less than 0.05 at 95% CI. Out of all the variables representing students' attitudes towards usage of social media, 'Not much information available (0.704) and 'Provide an opportunity of knowledge sharing globally' (0.691) show the highest correlation. The majority of students face that the internet offers the option of global knowledge sharing and is the source of knowledge.

Table 1: Correlation Table – independent variables impacting the use of social media among students in Egypt and Saudi Arabia

Variables	Pearson Coefficient (Egypt)	Pearson coefficient (Saudi Arabia)
Online social media help in maintaining a flexible timetable	.848**	.596**
Can help in building connecting with other students and teachers	.880**	.546**
More accurate and attractive source of information	.899**	.679**
Wide source of information available	.791**	.514**
More effective and comfortable method to implement	.856**	.602**
Helps in utilizing free time effectively	.809**	.623**
Less maintenance of privacy and security	.734**	.606**
Decreases student's morality	.742**	.623**
Complicate the entire process due to the availability of various possible answers	.573**	.590**
Enhance performance due to more information availability	.873**	.599**
Availability of online educational resources	.820**	.628**
Reduction in drop-out of students	.705**	.651**
Improvement in technology-based skills	.922**	.620**
Provide opportunity for knowledge sharing globally	.895**	.691**
Increase in addiction towards using social media for topic search	.824**	.581**
Decrease ineffectiveness of analysis and writing	.779**	.624**
Technical skills required	.887**	.638**
Updated technology required for having adequate results	.791**	.663**
Time consuming practice	.821**	.610**
Increase in chances of error while searching for topics	.790**	.576**
Sometimes lead to meaningless search results	.754**	.600**
Not much information available	.532**	.704**

Besides, regression analysis is used to examine the degree to which the independent variable has an impact on the dependent variable. The dependent variable in the study being the use of social media in student performance and independent variables for this hypothesis is the impact on the teaching and learning process in Egypt and Saudi Arabia.

Table 2 presents the model summary of the regression analysis of students of Egypt and Saudi Arabia. for the sample surveyed. The R square (.972) and adjusted R square (0.969) values are higher than the standardized value of 0.5. The findings of the study indicate that more than 97% correlation in the dependent variable is contributed by the independent variables. The high adjusted R square value also implicates a 96.9% variation among factors contributing to creating a positive impact on the use of social media on teaching and learning processes in Egypt. Further, the sig. value of .000 indicates that the hypothesis i.e. social media does not have a significant impact on the teaching and the learning process in Egypt is likely to be rejected.

While in the case of Saudi Arabia, findings of the study indicate that more than 69.6% of correlation is observed in the data. The adjusted R square value also implicates that 65.8% of variation is observed in data. Students thus believe that there is a positive impact of the use of social media on teaching and learning processes in Saudi Arabia. The null hypothesis H10 is likely to be rejected at a 5% level of significance since the F value is significant at $p < 0.05$. This signifies that in Saudi Arabia, social media helps to create a positive impact on the teaching and learning process.

Table 2: Model summary of regression analysis factors and ANOVA

Model	Country	R	R Square	Adjusted R Square	F value	Sig.
1	Egypt	.986 _a	.972	.969	280.018	.000
2	Saudi Arabia	.834 _a	.696	.658	.84603	.000

Lastly, the coefficients of regression in Table 3 below show that among all the significant independent variables, reasons why social media leads to a positive impact on teaching and learning processes.

Table 3: Regression table of hypothesis 1

Variables	Significance value (Egypt)	Significance value (Saudi Arabia)
Online social media help in maintaining a flexible timetable	.573**	.834

Can help in building connecting with other students and teachers	.508**	.325
More accurate and attractive source of information	.000**	.004
Wide source of information available	.202**	.002
More effective and comfortable method to implement	.000**	.318
Helps in utilizing free time effectively	.478**	.538
Less maintenance of privacy and security	.710**	.048
Decreases student's morality	.001**	.054
Complicate the entire process due to the availability of various possible answers	.000**	.070
Enhance performance due to more information availability	.591**	.681
Availability of online educational resources	.000**	.761
Reduction in drop-out of students	.000**	.162
Improvement in technology-based skills	.000**	.180
Provide an opportunity for knowledge sharing globally	.102**	.002
Increase in addiction towards using social media for topic search	.000**	.093
Decrease ineffectiveness of analysis and writing	.000**	.496
Technical skills required	.000**	.201
Updated technology required for having adequate results	.000**	.039
Time consuming practice	.517**	.619
Increase in chances of error while searching for topics	.396**	.694
Sometimes lead to meaningless search results	.349**	.971
Not much information available	.071**	.000

As shown in the above table in the case of Egypt ten variables in the coefficient of correlation table are most significant since they share the coefficients (0.00) each and are significant at $p < 0.05$. These include, 'More accurate and attractive source of information,' 'More effective and comfortable method to implement,' and 'Complicate the entire process due to availability of various possible answers.' Variables such as 'Availability of online educational resources,' 'Improvement in technology-based skills,' 'Increase in addiction towards using social media for topic search,' are also significant at (0.00). Similar observations were noticed for variables 'decrease in the effectiveness of analysis and writing,' 'Technical skills required,' and 'Updated technology required for having adequate results.' These findings are relevant to the results of the study El-Badawy & Hashem, (2015). Authors in their study reported that when it comes to studying the first category of their research includes the usage of Google, Wikipedia, Dictionary or any similar informational sources. Facebook groups, YouTube, are used for their collection of

explanatory videos that facilitate information sharing between students. Therefore, the null hypothesis is rejected in the case of Egypt.

While focusing on the next country that is Saudi Arabia it was found that Variables like 'more attractive and accurate source of information (0.004), wide source of information available (0.002), less maintenance of privacy and security (0.048) have most significant value. Also, factors such as 'provide an opportunity of knowledge sharing globally (0.002), Updated technology required for having adequate results (0.039), and Not much information available (0.000) also have significant value $p < 0.05$. Additionally, Alwagait & Shahzad, (2014) in a study suggested that social media has a dual impact on students. It facilitates academic performances but also provide a communication channel to students that occasionally might be misused.

content analysis does not have a significant impact on the educational technology in Egypt and Saudi Arabia. Table 4 below represents the results of correlation coefficients analysis results of Egypt and Saudi Arabia.

Table 4: Correlation results of Hypothesis 2.

Variables	Pearson coefficient (Egypt)	Pearson coefficient (Saudi Arabia)
Access the required information	.818**	.729**
Prevent usage of faulty information	.760**	.693**
Preventing duplication	.845**	.665**
Reduction in time usage	.804**	.669**
Understand the sentiment of person	.794**	.663**
Better understanding of the content	.846**	.751**
Determine the quality of content	.790**	.707**
Estimate the reliability of the information	.812**	.755**
Allow for both quantitative and qualitative operations	.811**	.596**
valuable historical/cultural insights over time through analysis of texts	.882**	.737**

The table denotes the degree of linear relationship between the use of content analysis among students and a significant impact on the usage of educational technology in Egypt as an independent variable. All the independent variables exhibit a significant correlation of p-value less than 0.05 at 95% Confidence Interval. The correlation is most significant among the variables of 'Better understanding of the content (0.846)' and 'valuable historical/cultural insights over time through analysis of texts' (0.882)). Also, ease of 'access the required information (0.818)' and 'Preventing duplication' (0.845).

While in the case of Saudi Arabia all the independent variables exhibit a significant correlation of p-value less than 0.05 at 95% CI. The correlation is most significant among the variables of 'estimate the reliability of the

information (0.755),' 'Better understanding of the content (0.751)' and 'valuable historical/cultural insights over time through analysis of texts (0.737)' respectively).

Next, the regression test was conducted, and the findings of Model Summary and ANOVA are displayed below in table 5.

Table 5: Model summary of Hypothesis 2

Model	Country	R	R Square	Adjusted R Square	F value	Sig.
1	Egypt	.907 ^a	.823	.813	87.790	.000 ^b
2	Saudi Arabia	.864 ^a	.747	.734	55.859	.000 ^b

In the case of Egypt, the model summary of regression analysis factors suggests that more than 82% of correlation is observed independent variables and independent variables. The high adjusted R square value also implicates that 81.3% of the variation and demotes that students believe that different variables impact of use of content detection and analysis software for social media differently. Further as shown in the table below the significance value is .000 thus, we can say that the null hypothesis is likely to be rejected. Content analysis does have a significant impact on educational technology.

While in the case of the Saudi Arabia model summary of regression analysis factors suggests that more than 74.7% of the variation in the dependent variable is contributed by the independent variables. The high adjusted R square value also implicates that 73.4% of the variation is found in the data. That means that the students believe that there is a positive impact of using content detection and analysis software for social media. Also, as F is significant at $p < 0.05$ hence the null hypothesis H₂₀ is rejected. Further, the coefficients of regression reported in Table 6 below shows that among all the significant variables.

Table 6: Regression of Hypothesis 2

Variables	Sig. (Egypt)	Sig. (Saudi Arabia)
Access the required information	0.211	0.00
Prevent usage of faulty information	0.549	0.12
Preventing duplication	0.000	0.640
Reduction in time usage	0.652	0.166
Understand the sentiment of person	0.631	0.231
A better understanding of the content	0.684	0.002
Determine the quality of content	0.899	0.305
Estimate the reliability of the information	0.830	0.302
Allow for both quantitative and qualitative operations	0.101	0.004
valuable historical/cultural insights over time through analysis of texts	0.000	0.000

As evident from the above table the variables of, 'preventing duplication' and 'valuable historical/cultural insights over time through analysis of texts' are two most significant variable that contributes to the positive contribution of content detection and analysis software for social media at 0.00 significance. The variables share the lowest variance from significance at $p < 0.05$ stating that the null hypothesis is rejected. This study hence found that content analysis does have a significant impact on the educational technology in Egypt. In this regard, Kapoor et al., (2018) suggested that content analysis enhances communication visibility and increases the sharing of knowledge. This leads to new information circulation and innovative results if knowledge duplication on social media is not considered.

While in the case of Saudi Arabia, it shows that 'Access the required information (0.00)' and 'valuable historical/cultural insights over time through analysis of texts (0.00)' are two most significant variables that contribute to the positive contribution of content detection and analysis software for social media. The variables share

the lowest variance from significance at $p < 0.05$. Other variables 'better understanding of the content' and 'allows for both quantitative and qualitative operations, also positively impact the role of content analysis in the teaching and learning process. Also, the Alsuraihi, Almaqati, & Abughanim, Sultan Adnan Jastaniah, (2016) confirmed that content analysis on social media leads to better integration of information. With enhanced interaction among users, it leads to better dissemination of knowledge than when compared to textbooks.

c) Interview analysis

In Egypt, Ten teachers from across Egypt employed in the educational segment were selected for the study. The demographic survey encompassed most respondents of the age group for more than 50 years. The study has also taken into account the views of 3 department heads and 2 senior lecturers. Teachers teaching courses such as higher education, graduate, post-graduation, diploma, and professional courses were considered.

Interview analysis of teachers in Egypt presents their view of the positive influence of social media in terms of enhancing the effectiveness of education. Interviews also reveal that students have a positive inclination towards the implementation of social media in searching of topics related to educational technology, the respondents also reveal that most common educational topics discussed on social media belong to respective students' semesters. Quoting Interviewee 10, "Students are already using social media for non-academic purposes". This trend can be used by lecturers to develop teaching strategies utilizing social media. This would promote both teaching and learning among students and these interactions would further strengthen teacher-student interaction for better academic achievement". However, Interviewee 7 also suggested that students spend time on social media, indulging in personal activities. Explaining the challenge faced by teachers in promoting social media for educational purposes, Interviewee 10's intercept from interview is used. The interviewee mentioned, "Students are constantly checking their social media. This impacts student productivity negatively. This is not helpful for their studies." Interviewees 2 and 6 also suggest that it is challenging to control the usage of social media in class setup as well. Such behaviors among students contribute to the challenge for the implementation of social media in education and implementation on topics related to educational technology. However, Interviewee 4 stated that "although excessive use of social media might be problematic, content analysis tools on social media, such as Facebook and Wikipedia can be used by a teacher to interact with other teachers and pass on their new-found insights with students. Such tools support multidirectional communication which is required for maintaining a real-time flow of information." Teachers also suggest that research engines such as Wikipedia and Google promote content analysis among students. They also suggested educational videos also learn through content posted on YouTube.

In Saudi Arabia, teachers interviewed belong prominently to the age group of 40 – 50 years. More teachers in the science department were interviewed comprising of the highest number of lecturers. The experts interviewed taught professional degree, diploma, post-graduate, and graduate courses.

Interviewees assert the role of social media in influencing the effectiveness of education. Interviewees 4, 5, and 9 thought that social media has both positive and negative influence on students. However, social connections also affect different aspects of students' lives and can equally be applied to education and learning. The common educational topics discussed on social media include students' course subject and semester studies related matters. In the interview, interviewees 1, 3, and 7 revealed that some benefits of social media and other technological development in the education sector include the exchange

of information, teaching, collaboration, and learning. However, interviewees 2, 6, and 9 believe that students spend too much time on social media, which may lead to a negative impact on the intellectual development of the younger generation. Furthermore, respondent teachers feel that they need to develop a positive attitude in students regarding the implementation of social media in searching for topics related to educational technology. Interviewee 5 thought that "several students have suffered because of social media; they fail to cut down on time spent on such portals. Also, social media is a place where negative comments are easily circulated. Such negative experiences among students might undermine the positives of social media in teaching." Interviewee 2, on the other hand, was of the suggestion, "challenges of using social media as a content analysis tool is high. There are challenges of students exposing themselves to false or unregulated information. Occasionally lectures in the form of media contents might turn out to be inaccurate. Thus, limiting the positive nature of social media in research purpose, such as in case of choosing topics for study or even gathering intelligence on a known topic". Further, interviewees 7 and 8 believed curtailing free access to information in Saudi Arabia presents challenges for students to stay updated with the technologies. Respondents reported that the Research gate, Wiki, Facebook, and Twitter are common tools and techniques used for analyzing the content available on social media. Interviewees 1, 5 and 7 thought that social web content analysis tools that are used by students. According to them, such social media tools through content analysis allow student high accessibility to new information. Interviewee 5 stated that "Google and Wikipedia are novel information source for both selecting research topics and analyzing new information; that too in real-time." Further interviewee 2, 3, and 6 were suggestive that teachers are capable of using social media technologies as a pedagogical tool to gain interact, gather information, and engage with each other. Interviewee 8 suggested, "platforms such as Twitter provide an unconventional platform for teachers and students." Content analysis can be used to motivate and engage students due to their non-traditional and unique features to enhance traditional learning and teaching approaches.

7. Discussion

This study analyzes the use of social media and content analysis tools for academic-related purposes, especially for the detection of high-interest educational topics in Saudi Arabia and Egypt as case studies. The study highlights that Social media tools such as Facebook, Twitter, and Wikipedia are emerging as interactive learning tools. They provide students and teachers with a unique advantage in communication and connection students in virtual

community (Lan, L., Gou, X., & Xi, 2011). Agreeing with the findings of (Bali & Ramadan, (2019) and Alabdulkareem, (2015) suggest that in Egypt and Saudi Arabia faculties were positive about the use of social media and content analysis tool in education.

Also, survey and interview present the findings that all respondents are positive about the usage of social media and content analysis tools for academic purposes. The content analysis tool on several social media sites vary between the mobile and web application, e.g. Wikipedia, Google, Researchgate and Facebook. However, few teachers reported misuse of social media connectivity. Interview of the respondents suggests that use of Wikipedia sources and blogs for teaching and learning have challenges. These include precious wastage of time for the students.

8. Conclusion

The traditional education sector has been significantly aligned with information processing and learning theory. However, the internet and tools of social media with evolution, have led to a behavioral shift in the teaching and learning process in education. Prominent among these are social media tools that offer experience-based learning. Social media has enhanced self-learning among the students and developed a collaborative learning approach for facilitating the faculties. This study presents the advantages of social media in the teaching and learning process. Such as in cases where social media assists in collecting relevant information, analyzing the data derived, understanding the emotion, deducing the results, and validating the content collected. These steps impact the research bent among students. Social media tools such as Google, Facebook, and Wikipedia among others facilitate students in the process of topic selection, research process, and building quality of reference contents.

Further, this study presents an empirical review of studies to help understand the process of detection of high-interest educational topics in the field of educational technology in social media data streams. The studies highlighted that the advent of social media and information availability has strengthened the class material and faculties have realized they can use social media technologies. This is specifically true for stimulating collaboration, critical thinking skills, and knowledge construction among the students.

This study faced certain limitations such as the scale of the study, i.e. sampling was restricted to Saudi Arabia and Egypt. To reflect on the findings a broader sample could be considered in future analysis. Also, the current study focuses on different tools on social media. It can further focus on narrowing the level of focus of the study to any specific educational tool or technology. Further researches

in this field can explore the application of such social media tools in other fields of academia too.

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