SWOT Analysis for Adopting of

Big Data in the Higher Education Institutions

(Yemen)

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ABATRACT

Big Data offers many opportunities to higher education institutions. This paper explores the attributes of big data that are relevant to higher educational institutions, investigates the factors influencing adoption of big data and analytics in higher education institutions and seeks to establish the limiting factors hindering the benefit of the use of big data in higher educational institutions. We review the most important strengths and weaknesses of the higher educational institutions in Yemen in order to make the SWOT (Strengths, Weakness, Opportunities, and Threats) analysis to determine the situation regarding the adoption of the Big Data project. The results from the SWOT analysis indicated that the strengths points of Yemen's higher educational institutions are good and appropriate indicators for adopting Big Data project that will strengthen them, reduce weakness and eliminate associated threats. The paper concluded that Big Data offers higher education institutions in Yemen the opportunities to benefit from their information resources on electronic media to be used to improve educational quality and guide students, colleges and universities; and therefore it is good to recommend these institutions carry out investments in Big Data project and in people to benefit from this project. This is because Big Data can afford education institutions the opportunities to form a modern and dynamic education system.

KEY WORSA: Big Data, Higher Education Initiations, Yemen.

1. INTRODUCTION

Emerging technologies such as mobile application, cloud computing, big data analytics, predictive analytics revolutionized all sectors [1]. Higher education has changed from a knowledge-transfer model to an active cooperative self-directed model by the disruptive influence of technology in today's educational institutions. The goal of an academic analytics programme is to help with strategic planning in a learning environment to measure, collect, understand, report and share data in an effective manner so that operational activities related to academic programming and student strengths and weaknesses can be identified and correctly repaired [2]. Education is one of the most creative topics and themes in Higher Educations and Trainings. Education needs combination of knowledge, technique and exercise [3]. Big Data can provide higher education institutions the predictive tools they need to improve their academic analytics programme for individual students as well ways ensuring academic programmes are of high-quality standards. By adopt Big Data, that collect data at every step of the students learning processes, universities can address student needs with tailored modules, assignments, feedback and learning trees in the curriculum that will promote better and richer learning [2]. There are currently seven categories of technologies, tools and strategies that driving innovation in education: "Consumer Technologies, Digital Strategies, Enabling Technologies, Internet Technologies, Learning Technologies, Social Media Technologies and Visualisation Technologies"[4]. Such systems allow students to explore an environment by using embedded sensors,

QR (Quick Response) codes and other technologies. They can access learning materials and other information from anywhere at any time. Teachers also can use wearable devices and smart phones in the classrooms to improve teaching and learning.

This research focuses on the opportunities of adopting Big Data project in higher education institutions in Yemen for the academic analytics programme. The research will go through the Big Data to understand all the knowledge of Big Data that is related to the higher institutions. The aim of the research is to procedure the SWOT analysis and find out the strengths, weaknesses of the higher education institutions in Yemen that are relevant to the Big Data and the opportunities, threats of the Big Data on the higher education institutions in Yemen.

2. LITERATURE REVIEW

2.1 Big Data

Big Data is the data that is too big to be handled and analyzed by traditional database protocols such as SQL [5]. In this sense, size is just one aspect of these new technologies. The risks and ethical considerations also come from a few related factors [5]. Daniel defines Big Data that it is an emergent field of research that uses data analysis to inform decisions. It is currently being explored mostly in business, government and health care due to the growing surplus of data collected and stored in these environments [2]. However, Poleto said that Big Data is a broad and abstract concept that is receiving great recognition and is being highlighted both in academics and in business [6].

2.3 Characteristics of Big Data

Initially, big data was characterized by the following dimensions which were often referred as 3V model [7] , [5] , [8]:

- Volume: refers to the enormousness of the data that is being generated and collected. It is increasing at a faster rate from terabytes to petabytes (1024 terabytes).
- Velocity: refers to the rate of generation of data.
- Variety: refers to different types of data that are being generated and captured.

The volume is huge, people, devices, and networks are constantly generating data [10]. The increasing size of data, the growth rate at which it is produced and the cumulative range of formats and representations employed formed Big Data [8]. Later, few more dimensions have been added, which are counted below [7] , [2]:

- Veracity: refers to the unreliability associated with the data sources
- Variability: Often, inconsistency in the big data velocity leads to variation in flow rate of data, which is referred to as variability.
- Low-Value density: data in its original form is unusable. Data is analyzed to discover very high value.

From Bhadani et. al. and Berman [10] [6] there as some aspect of Big Data as:

Goals: They are estimated from a scheduled goal and have a greater level of flexibility, considering the context of the problem.
- Data location: The location normally aggregates data spread across different media, which can be in several internet servers.
- Data structure: The structure is usually able to involve unstructured data (e.g., free text documents, images, movies, sound recordings, and physical objects).

- Data preparation: different people in different organizational roles contributes to distribute information.
- Analysis: Analysis is usually done in incremental steps. The data are extracted, revised, normalized, processed, visualized, interpreted, and then analyzed with different methods. Big Data creates value in both within and across disciplines and domains. Value arises from the ability to analyze the data to develop actionable information [11].

2.4 Big Data Ethics

Some light will be spoted on the Big Data' ethics because it is considered as one of the cultural problems in Yemen [12] [13]. There are four elements of Big-Data ethics: Identity, Privacy, Ownership, and Reputation [5]. Davis listed the meaning of these elements regarding the conception of Big Data as follows:

Identity: It is hardly ever summarized or collected our information in whole for making use by a single person or organization. The suggestion is that if our identity is multifaceted, then it is likely that our values and ethical relationship to identity are also multifaceted.

Privacy: If it is true that big data is changing the meaning of word privacy, it should be understood what is valuable about various aspects of privacy, even in light of recent rapid transformations helpful when deciding what action should and should not take to respect individual privacy.

Reputation: The people simply do not know how our historical understanding of how to manage our reputation translates to digital behavior. At a minimum, this is sufficient reason alone to suggest further inquiry.

Ownership: The degree of ownership the people hold over specific information about

their varies as widely as the distinction between privacy rights and privacy interests. Do they, in the offline world, "own" the facts about our height and weight? Does their existence itself constitute a creative act, over which they have copyright or other rights associated with creation? [5].

2.5 Big Data Techniques

It is very important to know that the big data's value does not come from the collection of information; that is just the starting point. The real value comes from the ability to use that stored information to uncover new insights with big data analytics, and then present those ideas to promote better business decisions. However, analysing Big Data would have less value if the results were not implemented in the process of the decision-making [14]. Hadoop as one of the Big Data Technique is an open source, the Java-based programming framework that supports the processing and storage of extremely large data sets in a distributed computing environment. It is part of the Apache project sponsored by the Apache Software Foundation. It is used the Real-Time Analytics. It is designed to scale up from single servers to thousands of machines, each offering local computation and storage [7]

2.6 Big Data in Higher Education Institutions

Drigas and Leliopoulos [15] analyzed how the Big Data can be actually involved education. In addition, they presented how big mounts of unused data can benefit and improve education. They provided some new tools and methods overcome the traditional difficulties and open a new way of education. The Big Data is actually involved to change the way of the education. In the new era of data, the

traditional difficulties will be no longer occurs, keeping the good methods. The education system will be developed with new learning ways, making more efficient and targeted. However, the way of this new era, has just begun and there are many difficulties such as the lack of experienced personnel on the science of Big Data and Data Analytics. Furthermore, the teachers and academics must actually train and involved on them and finally, the students must accept and use these new tools [15]. The huge of data is there, however, data should be collected and then sent to the proper application to be manipulated and analysed and finally present the new knowledge. Only then, this knowledge can improve the education.

Poleto and his co-authors highlighted in their paper [6] the subset of the elements combined to define an integrated model of decision making using big data, business intelligence, decision support systems, and organizational learning all working together to provide the decision maker with a reliable visualization of the decision-related opportunities. The crucial point of their work was to look widely for new sources of data to help make a decision. They indicated that Big Data not only transforms the processes of management and technology but it also supports changes in culture and learning in higher education institutions. Finally, they emphases that Big Data can be very useful if it used sufficiently in the decision-making process, however, its use will not guide the decision itself and it will not generate alternatives or predict the results. For this, the participation of decision-makers is essential, as their experience and knowledge are necessary to collective value over information and the possible knowledge stored.

Many researches have listed in their papers the most important benefit for Big Data in education as follows [16] [15] [11]:

- Improved instruction: Can improve students' performance and learning abilities making the lessons more personal. The courses can be improved from the teachers with the help of analytics.
- Matching students to programs: Big Data is able to help students to find the best educational program.
- Matching students to employment: Companies and candidate employees can discover alternative and more effective tools to use big data to qualify their skills with the needed skills. In addition, students can find and make applications for jobs that can match with their abilities, more efficient than before.
- Transparent education financing: Students can participate in education activities, which previously they don't have the ability. Furthermore being able to choose anything about higher education and to discover the most proper education programs for them.
- Efficient system administration: Education systems are able to develop a skills education supply that can help administrators to allow more effective educational resources. In that way, this secures a high performance and afford to a versatile and smart plan for future education interests.

2.7 Big Data Resources in Education

To understand from where the Big Data has been collected for analytical, we have to understand the repositories of data in the higher education institutions. Daniel said [2] that huge of data are being collected and stored in various institutional databases. Many institutions of higher education are increasingly delivering learning online.

Therefore, there is a widespread availability of online repositories, educational digital libraries, and their associated tools, all of which could be employed as major compounds for change in practice. Data is stored in students' information system, students' social media usage data, learning management systems, student's library usage, individual computers and administrative systems. In addition to this huge growth in data, it comes in different formats of audio, video, text and pictures. All these forms of data can be collected and stored and then explored using the modern techniques to analyse and understand the knowledge behind them [2].

2.8 Big Data Project

The higher education institutions should well understand the best way to adopt the Big Data project. There are two approaches to implement Big Data project. One is the build approach and the other is buy approach [17]. In case of the build approach, there are two identified major methodologies for running a data-oriented project, namely SEMMA (Sample, Explore, Modify, Model and Assess) and CRISP-DM (Cross Industry Standard Process for Data Mining) [18]. CRISP-DM has six steps; Business Understanding, Data Understanding, Data Preparation, Modeling, Evaluation/Assessment, and Deployment. On the other hand, SEMMA has only three steps; Sample, Explore, and Modify. However, for any approach has been selected, many questions should be answered before making the decision as follows [17]: How much time and money will it take to build a team that can build the desired solution? Does the university have the time to hire the right people? Has the university considered ongoing software maintenance costs? Is the university willing to manage three different teams (for integration, analysis, and visualization)?

Does the university have the right people in place to deploy and use this solution?

2.9 Opportunities for Big Data

Students always if they find themselves in successful results, they will really gain a lot of skills, great experience, self-confidence and applicable challenging feelings for other targets [3]. There may be some problems how to support and realize the students' productive courses and how to reduce their reasonable periods for the total length of courses. Many students need different knowledge and materials and they want to face several kinds of target and plans to design and implement their objects [Imai]. When adopting Big Data a lot of analysis would be very important to achieve these targets. These analysis can help to encourage students to more participate in the electronic media and submit their information freely when they realize the benefits of such participation.

With large volumes of student information, including enrollment, academic and disciplinary records, institutions of higher education have the data sets needed to benefit from a targeted analytics. Big Data and analytics in higher education institutes can be transformative, altering the existing processes of administration, teaching, learning, academic work [2]. Many opportunities can be extracted from Big Data in the decision-making process in the higher education institutions. Various advanced reports and highly data analysis can be obtained and can increase the effectiveness of decision-making in higher education institutions, some of them as follows:

- Descriptive analytics: aims at describing and analysing historical data collected on students, teaching, research, policies and other administrative processes. The goal is to

identify patterns from samples to report on current trends—such as student enrollment, graduation rates, and progressions into higher degrees.

- Predictive analytics: provides institutions with better decisions and actionable insights based on data.
- Prescriptive analytics: helps institutions of higher education assess their current situation and make informed choices on the alternative course of events based on valid and consistent predictions.

2.10 Threats to Big Data

Higher education institutions will need to build the capabilities needed to manage big data. The rising volume of data from new sources along the supply chain and from end Big Data requires a new level of storage and computing power and deep analytical expertise if educational institutions are to gather relevant information and insights. There is a shortage of talent with the right experience for managing this level of complexity. Higher education institutions will need not only to recruit new talent but also to remove educational obstacles that today prevent such individuals from making maximum contributions [19].

Wu [20] presented one of the most important threats to Big Data that is the data privacy. In this context, the concept of "privacy" stands for a various set of interests. In order to evaluate those interests, weigh them against competing interests, and design appropriate controlling responses, they need to be separated. The author clarifies the context of big data in particular; it is helpful to think not just in terms of privacy in general, but in terms of specific privacy threats. When faced with a big data practice, the key question is: "How could this go wrong?" Even for a single practice, that question has many potential answers.

Wu [20] considers three broad categories of big data threats:

- Surveillance: It means the feeling of being watched which could result from the collection, aggregation, and/or use of one's information. On this concept, one problem with pervasive web tracking is the possibility that people will avoid certain searches or certain sources of information, for fear that doing so inevitably reveals interests, medical conditions, or other personal characteristics they would rather remain hidden.
- Disclosure: One disclosure threat might be the nosy employee who looks up people he knows in a corporate database. Another might be an identity thief who successfully hacks into a database. Problems of insecurity are in this sense problems of disclosure.
- Discrimination: The problem of treating people differently because of information collected about them. There are many different kinds of discrimination threats. The most obvious might be trying to predict the others based on race or religion, and then discriminating on that basis.

Wu [20] listed these threats to Big Data to make them clear; however, he suggested removing the de-identification will help overcome these threats. This can be effective at balancing privacy and utility, and it can help determine in what contexts the benefits outweigh the burdens of Big Data analysis.

2.11 Higher Education Institutions in Yemen

To understand the situation of the higher education in Yemen regarding the Big Data, the infrastructure of the universities and the Big Data recourse should be investigated. By searching the internet for a number of

universities in Yemen, it was found that all universities have websites, as well as pages on social networks (Facebook), and some of them exist on Twitter. Most universities have student pages on Facebook for each college through which students' activities are widely shared. It also turned out that some universities have an electronic registration and an account for each student. Some universities adopt e-learning and have electronic libraries. Unfortunately, we have not found official sources that officially identify this information except some of the research that has addressed some of these sources in the context of their discussion of specific techniques.

Alshohybe and his co-authors [21] studied the implementation of quality assurance in Sana University according to the standards of the Ministry of Higher Education of the Republic of Yemen. They ended with the facts that physical infrastructure and financial resources have the lowest level of quality assurance's implementation.

Aldowah [13] and her co-authors studied the challenges of using E-Learning in a Yemeni Public University. They inducted that learning and teaching in an electronic environment is still the great challenge in Yemen because of several issues and challenges. Yemen suffers from several economic challenges and still cannot afford wide access to all the latest successes available for learning and teaching; in addition, to the difficulties for the new technologies and e-learning to be used widely in public universities. They listed some of the challenges included problems with access to computers and internet, power supply, poor skills and low computer literacy. Some of the strengths points were listed by the authors such as educational and cultural effectiveness in e-learning, technical support, social support, and technological background.

Aleryani [12] and her co-authors studied the usage of personal cloud storage by the academician in Yemeni universities. The results showed that personal cloud storage is still not well used by many of the Yemeni academic staff. Some of the respondents do not know about them, especially from the Social Sciences and Humanities. The opportunities for using personal cloud storage are still limited. The phobia of sharing information still exists.

Aleryani [22] and her co-authors studied the participation in the academic networking such as Research Gate and Academia by the academician in Yemeni universities, the study showed that this participation is still limited in such academic networking. Some of the academic staff still prefer to read about the others' profiles when they are accessing the academic networking rather than sharing personal information or deploy their own work on academic networking [22].

Tuparova and his co-authors [23] presented the results from a pilot study of students' attitude and readiness towards the implementation of mobile learning technologies in higher education in Yemen. The results from the survey showed that students are familiar with the use of smartphone facilities in daily activities, but they do not use smartphones for learning actively. Students have positive attitude towards the use of e-learning and M-learning, but the universities in the Yemen still do not offer enough e-learning and M-learning resources.

Al-Ragawi [24] and her co-author identified the possible obstacles and opportunities of using M-learning in Yemen. She and her co-author used a survey that focuses on different categories of universities and schools in Yemen. The results of this paper showed the benefit from opportunities was about 80.5%, and

the emergence of some difficulties that hinder the use of smartphones in the learning process was about 76.4%. This is considered a good result to show the readiness of using M-learning in their studies.

3. RESEARCH METHODOLGY

The Qualitative method have been used for this research. It is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem and helps to develop ideas or hypotheses for potential quantitative research [25]. We aim to make SWOT (Strengths, Weakness, Opportunities, and Threats) analysis for adopting Big Data in higher education institutions in Yemen. Our information for this aim will be collected from literature review, reports, searching universities websites and then analysing them and build the SWOT [26].

3.1 Research Problem

It has been realized that the huge benefits of Big Data it is still absent in higher education institutions in Yemen. We would like to mention that the flow of data from electronic sources of universities is many, but it is ignored and is not paid attention. Therefore, we would like to present the SWOT analysis of all the strengths of the higher education institutions in Yemen, especially in the process of data analysis as well as the weakness points of these institutions regarding Big Data. Also identifying and distinguishing, the huge opportunities available from the Big Data project with potential threats that may accompany it. The purpose of this analysis is to have a clear view of the huge benefits of the Big Data project, as well as review and proposals to overcome any threats that may arise.

3.2 Research Question

- Is it worthwhile to adopt Big Data in the higher education institutions in Yemen?

The research aims to answer the research question. In order to answer this question; the SWOT analysis will be conducted:

3.3 Research Contribution

The author sought much research on Big Data in Yemeni institutions but found that it was not exposed to this aspect by researchers. This is considered a new addition in the field of Big Data in Yemen. From this point, the research contributes to the knowledge to investigate and study this new area of interest. The research spot the light to this vital issue for the universities to see how they can benefit from Big Data and what are the challenges that they are facing to improve the higher education. Moreover, our research might encourage the universities to go in the wave of technology to improve their institutions and education

4. ANALYISIS STAGE

4.1 SWOT analysis for adopting Big Data project in Higher Institutions Education-Yemen

SWOT Analysis (Strengths, Weakness, Opportunities, and Threats) is a useful technique for understanding the Strengths and Weaknesses, and for identifying both the Opportunities open to the organization and the Threats it faces. We will work on the SWOT analysis for adopting Big Data project in Yemen universities. We are going to identify the opportunities that the universities in Yemen will have from making use of Big Data in the decision-making process, as well as the and threats which may affect the project. We also are going to find out the strengths in those universities that will help to benefit from Big Data as well as the weaknesses that may

affect Big Data project. The elements of SWOT analysis can be defined as:

- **S**trengths: Internal attributes and resources that support a successful outcome.
- **W**eaknesses: Internal attributes and resources that work against a successful outcome.
- **O**pportunities: External factors that the entity can capitalize on or use to its advantage.
- **T**hreats: External factors that could jeopardize the entity's success.

In this study, we will investigate the strengths that the higher education institutations in Yemen have that can support adopt Big Data, and the weaknesses that may affect that usage. On the other hand, we are going to present the opportunities that will be added from the Big Data to the higher education institutions in Yemen and the threats that may affect the higher education institutions from Big Data project. The below tables sum up from the literature review the internal points inside the higher education institutions in Yemen (strengths and weakness)) & the external points that are provided from Big Data project to higher education institutions in Yemen (opportunities and threats). Table 1, 2, 3 and 4 give the strengths, weakness inside higher education institutions in Yemen and with some comments, where table 5 present the SWOT analysis.

Table 1. List of the strengths higher education institutions in Yemen and their description

The strengths	
Strength	Comments
The existence of technological affairs department.	All the universities have a technological department that deals with all the technological issue. This is considered as one of the most important strengths because it is the unit where all technological issue. It can be a good supporter.
The existence of automated systems for all university process.	All the universities have an automated system of all the university process. It means that all the information about students and their personal information and records are in this system. Therefore, it is considered one of the most important sources for the Big Data.
The existence of Databases Systems	All the universities have their Databases systems for all the information including the graduated' students, academic staff, and administrations staff.
The existence of a website and social media for the university and for each college.	All the universities have their official website, as well as Facebook and some have their twitter. These websites are the vital source of all the university activities and news, including their Journals, conferences and workshops.
The existence of a student's pages on the Facebook for each college	All the information about the students' lives and their opinions, suggestions, chatting, and activities are presented on these social media, Here where the important information is existed to support all the improvement of in the students' lives when they are analysed.

The existence of e-learning system.	Most of the universities have an e-leaning system. This where all the process is really recorded including the lectures and chatting between students and their Professors. It is considered as a vital source for Big Data.

Table 2. List of the weakness of higher education institutions in Yemen and their description

The Weakness	
Weakness	Comments
Lack of the required financial support.	All the big projects including Big Data project need good financial support. It is important to establish the required infrastructures, workshop, training, recruitment of technicians.
Lack of highly skilled technical staff.	All the technical projects including Big Data need a highly skilled staff. This is the only way to make it work properly.
Lack of clarity of the importance of Big Data in academic analysis.	Most of the new technical projects suffered from the lack of understanding its importance and the absence of the top management' support..
Overlap of responsibilities.	This problem also affects any big project and cause it to the delay and fussy about its benefits.
Weak infrastructure and especially the technical.	Most of the universities suffer from the weak infrastructure due to the weak of the technical infrastructure in the country as well as the absent of the financial support.
Lack of high technical training.	Due to the weak of the financial support, the high technical training is not offered easily. Big Data project needs a good technical training.
Lack of experienced personnel on the science of Big Data and Data analytics.	As has been said, the value of the Big Data project is not the collection of the data but is how to work on it and analyse this data in the manner to get the benefit.
Some students do not always accept and participate in the social media.	The information ethic still affects the deploying and sharing information via multimedia. There are still some students especially in the social studies colleges have phobia from the electronic media. They always avoid participation in the social media. This may cause a gap between the availability of the information about the students from different colleges.
Some of the academic staff still do not like to participate e in the academic networking and personal cloud storage.	Some of the university's academics staff do not like to use academic social networking nor personal cloud storage because of worries of their work to be stolen and/or unable to use them.

Table 3. List of the opportunities from Big Data and their description

The Opportunities	
Opportunity	Comments
Advanced and high quality analysis	Improved instruction by: Matching students to programs. Matching students to employment. Transparent education financing. Efficient system administration.
Reliable visualization of the decision-related opportunities.	Reliable visualization of the decision-related opportunities. This opportunity will encourage the top management for the understanding of the Big Data project and support it.
Predictive analytics for better decisions and actionable insights	Top management always needs an effective support for making the decisions. So this will be vital reasons to work hard to make the project works
Prescriptive analytics to assess their current situation	The universities seek development for their current situation. With this analytics, it will help to find financial support for higher training and employed new successful staff.

Table 4. List of the threats from Big Data and their description

The Threats	
Threat	Comments
High cost of equipment	Build the capabilities needed to manage Big Data requires a new level of storage and computing power and deep analytical expertise.
Reservation of participation and exchange of information	Need to remove educational obstacles that today prevent such individuals from making maximum contributions.
Fear of targeting and exploitation of information	The fear of surveillance, disclosure, discrimination by the individual.

4.2 Summary from the tables

The strengths points are good enough to start. There are many sources of data in the Yemen's universities, which can be funding the Big Data to analyse and investigate them. The basic infrastructure exists including automated systems and databases systems. The social media is there as well and will be a vital source to add value to the analysis. On the other hand, the weakness points can be grouped into two sections, financial weakness and cultural impact. The universities in Yemen still suffer from some financial problems due to the country's economic problem. This problem affects the establishment of the infrastructure, the training programs, and the ability to hire qualified employees. In addition, cultural still affects the Big Data project. The resistance of sharing information from the students and universities' academic staff is still considered one of the biggest problems regarding Big Data. When we come to the opportunities that will be provided by Big Data, we see many chances to improve education and develop the decision process and change the way the learning is conduct. The various types of analytics can bring light to the quality of educations. However, the threats, which may affect the Big Data project, can be overcome by putting the project under the responsibilities of the profession. Build and create the

environment that will encourage all students, academic staff from all colleges to participate and make use for all the

multimedia, will be the most way to support Big Data project.

Table 5. The SWOT analysis

Internal inside the higher education institutions in Yemen	
Strengths ✓ The existence of data from several sources. ✓ The existence of technological affairs department. ✓ The existence of automated systems for all university process. ✓ The existence of Databases. ✓ The existence of a website and social media for the university and for each college. ✓ The existence of e-learning.	**Weakness** • Lack of the required financial support for most of the analysis activities. • Lack of highly skilled technical staff. • Lack of clarity of the importance of Big Data in academic analysis. • Overlap of responsibilities. • Weak infrastructure and especially technical. • Lack of high technical training. • Lack of experienced personnel on the science of Big Data and Data analytics. • Some students do not always accept and participate in the social media. • Some of the academic staff still do not like to participate in the academic networking .
External provided from Big Data project to higher education institutions in Yemen	
Opportunities ✓ Advanced and high quality analysis ✓ Reliable visualization of the decision-related opportunities. ✓ Predictive analytics: better decisions and actionable insights ✓ Prescriptive analytics: assess their current situation.	**Threats** • High cost of equipment. • Reservation of participation and exchange of information. • Fear of targeting and exploitation of information

5. CONLUSION

In conclusion, Big Data does not bring new data; it just makes use of what is there and analyses explore and presents the knowledge. This advanced analysis from Big Data brings many benefits to the students, academic staff, and administration staff. We made SWOT analysis to find the strengths and weakness of the higher education institutes in Yemen as well as the opportunities and threats from adopting the Big Data project. From The SWOT analysis, it can be emphasised that the strengths points of higher education institutions in Yemen can be considered as good indicators of the success of the Big Data project. At the same time, weaknesses

can be reduced until they disappear when the Big Data is adapted in well way and the benefits of the advanced analysis are shown to support decisions. The opportunities that higher education institutions in Yemen will gain from adopting the Big Data project can greatly help to strengthen their strengths points and reduce their weaknesses. Each big project has some threats, but threats from the Big Data project can be eliminated with good management and strong support in each technical and cultural aspects. We can confirm that the beginning is possible. The impressive results of the adoption of the huge data will encourage the concerned to invest more in the project and work to increase the participation of information

from all the electronic channels, which will increase the magnificence of knowledge provided as a result of these analyzes.

6. RECOMMENDATION

Some recommendations can be offered as follows:

1. Deploy the information culture among all the university' students and staff is strongly recommended.
2. Encourage students to create pages on Facebook for their college, department, subject and group of interest.
3. Encourage students in the social studies to participate in the electronic media (some training may be provided).
4. Encourage academic staff to make use of the personal cloud storage to share materials and discussions with their students.
5. Develop their technical infrastructure is essential.
6. Train their staff is the very important task.
7. Set policies that encourage adoption of technology in the classroom and its effective integration into curricula are essential.
8. Top management should reduce the barriers to technology adoption and increase its scale.

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