

Strategic Planning for Enhancing the Scientific Research Plan of October 6 University, Egypt

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Abstract:- The main purpose of the study is to identify the strengths, weaknesses, opportunities, and threats in the environment of October 6 University, Egypt. The objectives of the Strategic Scientific Research Plan are developed into strategies and actions to address the weaknesses and threats by effectively leveraging the strengths and opportunities. A recent and effective (SWOT) analysis is carried out and a subsequent development of October 6 University's strategic plan for Scientific Research is conducted. An operational plan is currently being developed, which includes specific corrective actions, strategic objectives, enabling objectives, targets, a timeline for the relevant activities, those who are responsible to carry out the activities, the required resources, as well as the success metrics that figure the level of achievement.

Keywords: SWOT (strengths, weaknesses, opportunities, and threats) analysis, Strategic Planning, Strategic goals, October 6 University.

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I. INTRODUCTION:-

Strategic planning is a forward-looking statement which is based on the analysis of foreseen or predicted performance and scenarios; it is flexible and oriented towards making a reality of vision (Pisel, 2008 & Hinton, 2012). The conception of strategic planning in higher education accentuated its use as a rational tool for systematic management. It has been widely accepted as 'a management practice' in academia lately. (Yu, L 2008) Strategic planning is essential for effective resource allocation at any organization including higher education institutions. Some governments require the submission of a formal strategic plan for funding the approved process (Auld D 2010). Strategic planning was first developed for and used in business-related-organizations in order to increase profits (Piorun, 2011) (Heracleous, et al. 2016). Actually, the effective strategy development process determines a long-term success of any institution. Early research regarding strategic analysis by SWOT has focused on describing how operations are conducted and what activities undertaken for developing plans are carried out (Hsu and Sakai, 2009). In this sense, strategic performance measurement studies have focused on describing how they are designed as a strategic management tool by using a combination of financial and nonfinancial targets and measures (Sinha 2006; Kasperskaya, 2006; Yi Wu a et. al, 2010; Othman, 2008; and Tuan, 2010).

II. MATERIALS AND METHODS:

1-The process of (SWOT) analysis:-

Objectives of the Study identify the strengths, the weaknesses, the opportunities and the threats for the Scientific Research Plan of October 6 University in Egypt. The main purpose of this analysis was to implement the strategic planning activities, and to help establish strategic objectives. Questions and queries raised by participants at workshops will help define strategic directions that are of great importance to the university in the next five years. During the Academic year 2019-2020 the focus group appointed a committee to prepare a strategic plan for October 6 University, which will guide its activities for the next five years. The committee was also charged to evaluate the achievements of the past five years based on the previous strategic plan.

2-Study Design:-

An evidence-based questionnaire was used in many fields of education such as medicine, science, engineering, technology and humanities to obtain quantitative description information, and hence raise the research questions: (a) what are the factors effect on the students and lecturer's intention to use scientific

research? (b) What are the strengths; weaknesses, opportunities and threats (SWOT) of scientific research? According to Liao (2013) (Moses 2019) , the parts of SWOT investigation are: a Strength (S) is an examination of a quality, circumstance or condition revealed by the quality standards of higher education at an organization, and related to the services presented by the university for enhancing the points of strength that of high significance. It is very important in this investigation that each organization or association need to evaluate the qualities and shortcomings are set in contrast with its competitors. A Weakness (W) is an investigation of a shortcoming, circumstance or condition of an association or organization; it is an approach to break down the shortcomings that are considered a genuine deterrent in the advancement of an organization or association. An Opportunity (O) is an investigation of a chance, circumstance or condition that is opened up to outside an association or organization through research in sustainable development and the areas of medicine, treating serious diseases such as hepatitis, Covid 19,..etc; and other engineering and scientific technology such as solar energy, artificial intelligence ,nanotechnology and humanities. This will give the chance of development to that organization or association later on. It is to search for circumstances or leap forward that permit an organization or association to go ahead. A Threat (T) is an investigation of a threat and how to break down the risk or danger that an organization or association may confront. After evaluating some circumstances like the spread of Covid 19 or corona virus, the emergency and crises measures are taken as corrective action; online exams are provided to decrease the significance of the threat.

3-Data Collection and Analysis:-

The data generated by the tools provided was tabulated and analyzed through the statistical Package of Social Sciences (SPSS). According to the research questions, Descriptive statistical techniques (Frequencies, Mean, Standard Deviation) and inferential (Independent sample t-test, one way ANOVA) statistical techniques were applied.

III. RESULTS:-

1-Quick facts and figures of the scientific research plan at October 6 university:-

The purpose of this study was to develop a model that aims to help Egyptian higher education institutions through improving the strategy development process. In other words, it necessitates an exhaustive knowledge of the difficulties and insufficiency of the process of the developed strategy in the higher education. The present study takes into account numerous sources of the first data that evaluated the last strategy from 2014 to 2019, via the reports of all the university faculties. The second data will try to achieve the ideal implementation of reflecting the SWOT analysis of the university's faculties within the strategy development process in order to identify the appropriate method necessary to the developed strategy.

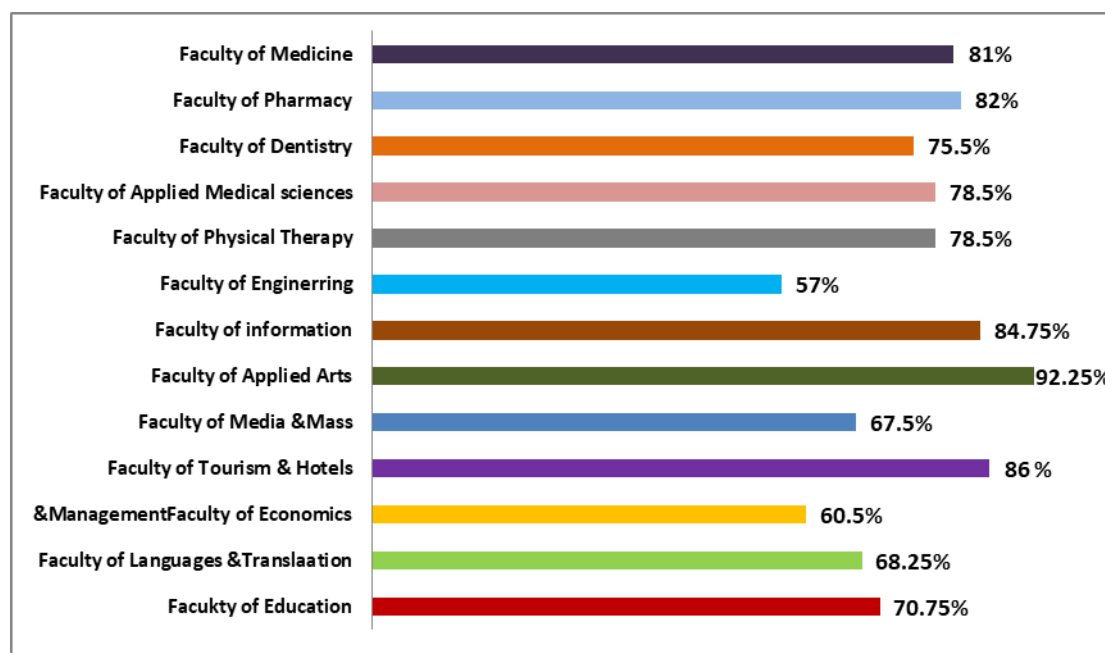


Fig (1): Response of Faculties regarding Scientific Research at October 6 University from 2018 to 2019

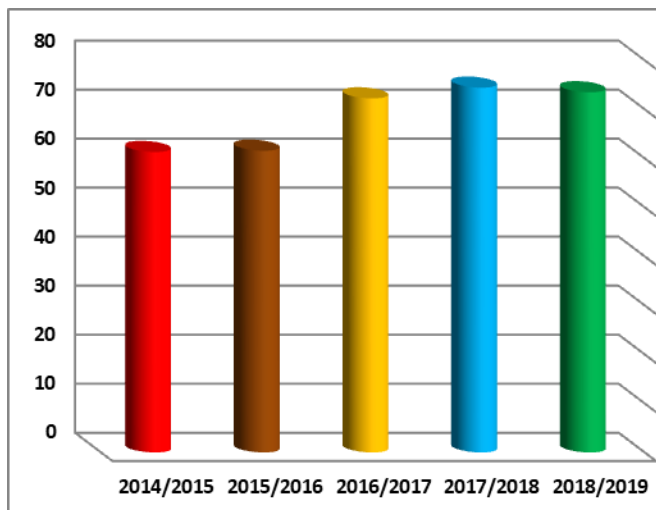


Fig (2): Progress of scientific research by the Faculties from 2014 to 2019

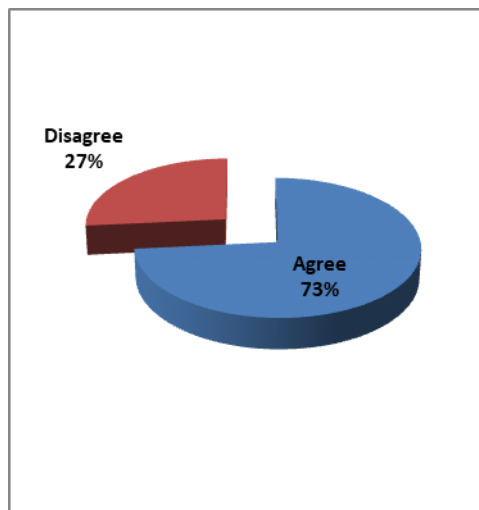


Fig (3): Scientific Research to Faculties ratio at October 6 University from 2018 to 2019

2-Structuring the programs of the strategic plan:-

The strategic objectives, a number of strategies and specific actions are developed to promote the points of strength and opportunities of research (Table1). Furthermore, an operational plan including the strategies, specific number of goals, objectives and targets of the programs, responsibilities, success metrics, and a suggested timeline have been proposed (Table.2). It is anticipated that each responsible party will develop its own operational plan to implement the proposed actions. To implement this strategic planning, required resources should be identified and some possible adjustments need to be made for a realistic timetable. Then, targets were not specified for success metrics. The researchers facilitated stakeholder focus groups on three-hour-sessions per week. In the first session, participants were divided into small groups of six persons to identify strengths, challenges and opportunities. Responses were transcribed and grouped by the researchers. In the second group session, participants prioritized the challenges into focus areas and related goals. In the third session, participants were asked to review the strategies and actions to be implemented. During each session, participants worked in small groups and presented to the whole group the evaluation of their feedback.

Table (1): Summary of the findings in the internal environmental October 6 University for the Scientific Research Plan Points of Strength and Points of Weakness.

Points of Strength	Points of Weakness
<ol style="list-style-type: none"> 1. An academic research plan is provided, which is documented, approved, and activated at the level of the college and scientific departments and linked to the university plan, including research activities, implementation mechanisms, time and success indicators. 2. The university provides joint research among its scientific departments. 3. The teaching assistants, instructors and students participate in research projects. 4. Training Programs to develop the academic research skills of the teaching assistants are provided. 5. There is a set of procedures to monitor researchers' commitment to research ethics. 6. Sets of procedures are available to assist and evaluate researchers in publishing scientific research locally and internationally (a scientific journal of the university, financial support for publication in scientific journals and the participation of faculty members in the arbitration of research) 7. Databases for scientific research are established. 8. The university includes faculty members who have previously received state awards / international awards / patents or others. 9. The Intended Learning Outcomes (ILO's) of the University educational programs include research methodology and ethics. 	<ol style="list-style-type: none"> 1. Lack of financial resources allocated to scientific research needs; such as, the devices, tools and raw materials necessary for the research process. 2. Follow-up of the implementation of the research plan is not sufficient. 3. Low percentage of research published locally and internationally in comparison to the total number of faculty members. 4. Low percentage of the university contribution to joint scientific research with regional or international scientific institutions 5. No commercialization system for applied scientific research is provided and the University's scientific research activities are not utilized to address community problems and development purposes.

<p>10. There is an annual budget appropriate for scientific research activities</p> <p>11. There are various mechanisms and sources for developing the self-financing sources through special units to enhance scientific research.</p> <p>12. The institution organizes or participates in local, regional and international academic seminars, workshops and conferences</p> <p>13. The institution supports the participation of its faculty members and their assistants in local, regional and international conferences.</p> <p>14. The institution has scientific cooperation agreements with local, regional or international research organizations.</p> <p>15. The institution is a member in international bodies, and a representative in national or international organizations or associations.</p> <p>16. Increasing the ratio of active cultural agreements to total cultural agreements during the past five years between the institution and international higher education and research institutions.</p> <p>17. Activating joint academic cooperation protocols to grant scientific degrees to applicants for acquiring a diploma, master's or doctorate degree from another Egyptian university.</p> <p>18. Co-supervision on many post-graduate students is conducted.</p>	<p>6. Underutilization of the scientific research outcomes in developing the educational programs and courses.</p> <p>7. Poor measurement and evaluation of the returns from financial allocations spent on academic research</p> <p>8. No regular university conference.</p> <p>9. Lack of significant contribution of the productive and service private sector institutions in enhancing the institution's scientific research activities.</p> <p>10. There are no mechanisms for exchanging expertise with the corresponding educational institutions locally, regionally and internationally.</p> <p>11. There are no academic degrees granted by October 6 University.</p>
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Table (2): Summary of the findings in the external environment of October 6 University (Scientific Research Plan's Opportunities and Threats)

OPPORTUNITIES	THREATS
<p>1. Easy access to scientific research, whether published in local or foreign periodicals, as well as books and references in digital form at the university library.</p> <p>2. The university grants a financial reward for external publishing, and others for State Encouraging and Appreciation awards, as well as some of the awards that it awards.</p> <p>3. Some research local and international institutions finance the applied researches to provide job training opportunities.</p> <p>4. Increasing development in the means of communication and in the educational aids and technology.</p> <p>5. Some research students and companies need research laboratories and scientific consultations.</p> <p>6. A training center to develop the skills of the teaching staff members and their assistants is established</p> <p>7. The university's interest in scientific publishing in a view for raising the university's scientific ranking and classification.</p> <p>8. The existence of the National Authority for Quality Assurance and Accreditation of Education under Law No. 82/2006 and its executive regulations number 25/2007.</p> <p>9. Providing joint international agreements with universities and international research institutions.</p> <p>10. The presence of opportunities to invite visiting professors enriches the research plan and educational programs.</p> <p>11- The State directs to link between scientific research, industry and society needs to apply the results of scientific research.</p>	<p>1. Insufficient link between the system of scientific research and the needs of society and its link with industry.</p> <p>2. Neglecting to benefit from research results and weak demand for it.</p> <p>3. Rapid technological development, which leads to a rapid aging of research devices and equipment.</p> <p>4. Increasing the number of private colleges and universities and the continuing competition between graduates of public universities and graduates of private universities.</p> <p>5. Local and global economic crises and their effects on development.</p> <p>6. Higher funding of some other universities for researchers.</p> <p>7. The high cost of technologies for communication and educational aids constitutes a threat to scientific research related to developing the education system.</p>

3-Goals, strategic objectives, programs and expected outcomes:

Each goal of the strategic plan refers to a specific program that describes the measures that can be taken to promote the strengths and minimize the weaknesses of the plan (Table 3). Some post-graduate programs have been designed in different areas of research to support the fundamental functions of the university, such as medical applications, digital transformation, e-learning studies, and interdisciplinary studies all related to the Egyptian State's research plan 2030. In addition to research programs, achieving high quality in the educational process represents a pillar for graduating students who enjoy capabilities, skills and values

supporting the post-graduate programs ILO's: knowledge and understanding, intellectual skills, practical skills, and transferable skills. Such skills are needed to enhance the graduate interaction in the Market place and to share his capabilities and points of view. Providing funding opportunities is also a major element for supporting effective scientific research through which the effectiveness of the community partnership can be accomplished. Such elements are combined together in a braid to serve the notion of internationalizing the university education. Consequently, the university can occupy a ranking/classification rate at local, regional and international levels as well.

Table (3): Number of goals, objectives, and targets for the programs

Goals	objectives		Targets
	Strategic	Enabling	
1-Promoting the educational effectiveness for postgraduate studies in accordance with the quality standards of higher education institutions.	3	7	9
2- Improving the quality of scientific research to achieve an elevated level of creativity and innovation	6	13	13
3-Seeking to transform into a smart digital October 6 university.	4	18	22

4-Ensuring the activation and support of implementation of October 6 university strategic plan:-

This can be activated through taking into consideration the following points:

- Developing the resources and providing the financial and incorporeal support for implementing the plan.
- Expanding the partnership with the local, regional and international organizations.
- Enhancing informatics environment as well as providing specific databases in all university sectors. (Table 4)
- Offering professional development programs and building the capabilities of the staff members and their assistance and employees in all university sectors in order to promote their performance.

Table (4): Physical expansion till 2025 (Goals and strategic)

Goals	Strategic Objectives
1-Promoting the educational effectiveness for postgraduate studies in accordance with the quality standards of higher education institutions.	1-Encouraging the building of graduate programs with high scientific academic and professional capacity. 2- Continuous monitoring and evaluation of the educational process. 3-Increasing participation in the global societies of higher education and scientific research.
2- Improving the quality of scientific research to achieve an elevated level of creativity and innovation	1-Developing a scientific research system to enhance sustainable development. 2-Strengthening the university's local, regional and international relations 3-Raising the efficiency and adequacy of the research productive capacity at the university's Faculties. 4-Adhering to the ethics of scientific research and intellectual property protection at the university's faculties. 5-Promoting, diversifying and commercializing the funding resources for interdisciplinary and applied research. 6-Creating diverse and sustainable self-resources to stimulate research productivity.
3-Seeking to transform into a smart digital October 6 university	1-Completing and developing the university's electronic infrastructure. 2-Providing a safe and stimulating learning environment for scientific innovation and creativity. 3-Developing and scaling up the digital content system. 4- Occupying high-ranking positions in various regional and international classifications.

October 6 University strengths, weaknesses, opportunities and threats (SWOT Analysis) were identified by members of the University Strategic Goals and Priorities Committee during a brainstorming session.

Administrators, members of staff, and students reviewed the analysis and provided input during work. Background information on the strengths and weakness in relation to the opportunities and threats the university faces can be useful in considering strategic issues.

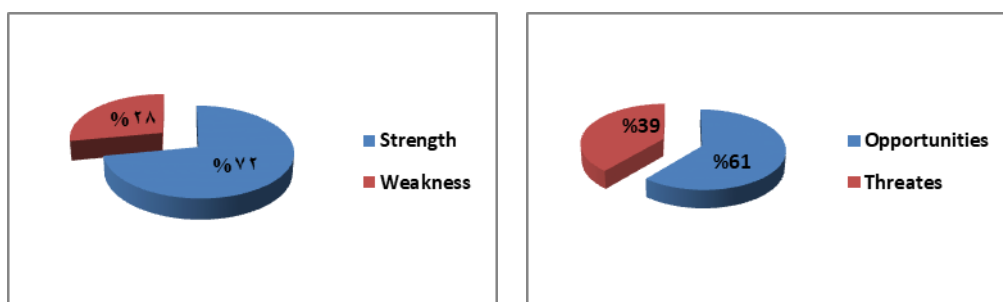


Figure (4): Internal & external environment for October 6 University's Scientific Research Plan

IV. DISCUSSION:

The main aim of this paper was to analyze the strengths, weaknesses, opportunities and threats (SWOT) for the Scientific Research Plan of October 6 university. We can state that the strategy does not have a unique definition; however, it generally involves setting goals, objectives, actions, and resources needed to be implemented. A strategy, therefore, describes how the ends (goals) will be achieved by the means (resources). Furthermore, it can be oriented in different directions, related to the university itself or to its external environment. In other words, the strategy represents an action plan to manage research activities and to reach the very goal that the university has set (Cortese, F. 2017). Figure 4 is a statement that shows the mean and standard deviation of the responses about the strengths, weakness, opportunities and threats of October 6 university. Mean value (M = 5.77, S.D = 2.205) of the statement shows that all faculties agreed that the institution provides chances of scientific research plan to the researchers. Table (5) indicates a significant increase in strengths as compared to the points of weakness (p<0.05). On the other hand, the Standard deviation (S.D) is presented in table 5; i.e., the strengths and weakness standard deviation levels of (19.77±8.12,23.09±8.91 mean, S.D) respectively. These indicate a significant increase in strengths as compared to the points of weakness (p<0.001).Thus, the statistical analysis reveals that COV of (0.25 ± 0.22. 0.9 ± 0.05 mean, S.D) respectively.

Table (5): An independent sample t-test to identify the differences between strengths and weaknesses of the Faculties of October 6 University.

Items	Strength	Weakness	P
Mean			
Min. – Max.	27.54 – 114.70	118.05 – 247.89	<0.001*
Mean ± SD	74.12+ ± 24.80	218.45 ± 25.52	
Median	76.44	226.91	
SD			
Min. – Max.	6.31 – 39.18	8.44 – 47.95	0.001*
Mean ± SD	19.77 ± 8.12	23.09 ± 8.91	
Median	10.37	22.04	
Median			
Min. – Max.	11.0 – 114.0	120.0 – 252.0	<0.001*
Mean ± SD	72.43 ± 27.31	221.90 ± 26.38	
Median	75.50	228.50	
COV			
Min. – Max.	0.07 – 0.87	0.04 – 0.26	0.003*
Mean ± SD	0.25 ± 0.22	0.9 ± 0.05	
Median	0.13	0.10	

p: p value for Student t-test for comparing between the two studied groups.*Significant at level< 0 .05.** Highly Significant level<0.0001.*** Not significant level >0.05

Table (6) indicates a significant increase in opportunities as compared to threats points (p<0.001). On the other hand, the Standard deviation (S.D) is presented in table 6, the opportunities and threats standard deviation levels of (65.55±25.03,177.3±25.91 mean, S.D) respectively. These indicate a significant increase in

opportunities as compared to threats points ($p < 0.001$). Thus, the statistical analysis reveals that COV of $(0.26 \pm 0.12, 0.9 \pm 0.05$ mean, S.D) respectively.

Table (6): An independent sample t-test to identify the differences between opportunities and threats of October 6 University on the basis of all faculties

Items	Opportunities	Threats	P
Mean			
Min. – Max.	20.36 – 113.93	128.35 – 235.89	<0.001*
Mean ± SD	65.56 ± 24.03	178.76 ± 30.63	
Median	63.20	175.88	
SD			
Min. – Max.	7.09 – 29.19	13.20 – 44.44	0.001*
Mean ± SD	15.68 ± 5.39	24.43 ± 6.89	
Median	16.09	25.03	
Median			
Min. – Max.	20.0 – 112.0	126.0 – 251.0	<0.001*
Mean ± SD	65.55 ± 25.03	177.3 ± 25.91	
Median	63.0	184.50	
COV			
Min. – Max.	0.13 – 0.57	0.06 – 0.22	0.001*
Mean ± SD	0.26 ± 0.12	0.14 ± 0.04	
Median	0.23	0.14	

p: p value for Student t-test for comparing between the two studied group . *Significant at level < 0 .05. ** Highly Significant level < 0.0001. * Not significant level > 0.05**

V. CONCLUSION:

The present study was an attempt to evaluate the environment of October 6 university internally and externally through SWOT analysis (strengths, weaknesses, opportunities and threats). The subsequent development of a strategic plan for the Scientific Research Plan of October 6 University has been presented as well. Strategic objectives have been developed into strategies and actions to address the points of weaknesses and threats by effectively leveraging the strengths and opportunities. If significant changes are detected, adjustments should be made in the strategic planning document.

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