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Universities' Role in Developing Vocational Education in Jordan

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Abstract: This study examined the role of universities in developing vocational education and transforming TVET in developing workforce towards globalization. To achieve the objectives of the study, a scale of the role of universities in developing vocational education was developed. The study population consisted of all faculty members at Al-Balqa Applied University who were (1400) faculty members. The study sample consisted of (50) members of the teaching staff who teach vocational courses who were selected randomly. The results of the study showed that the role of universities in developing vocational education came to a medium degree. Considering these results, the study recommended universities to continuously update the vocational education equipment and workshops.

Keywords: Vocational education, Universities, Jordan

1 Introduction

The scientific development, the information and communication revolution, and their advanced and renewable applications in the twentieth century have brought about many challenges imposed by those changes and developments on the local and international arenas alike, which can simply refer to globalization and advanced technology, media openness, knowledge explosion in the field of information technology, the Fourth Industrial Revolution, and economic and cultural coalitions [1, 2, 3]. These developments have posed heavy challenges that different countries, including Jordan, must deal with according to mechanisms and strategies that stem from realistic and practical visions that focus on the fields that can probably play an important role in confronting these challenges [4, 5, 6, 7].

Societies are grounded on education because of its importance in refining and developing individuals to be able to face challenges, keep pace with developments, and invest all of their economic and social capabilities [8, 9, 10]. Vocational education has emerged as the cornerstone of modern educational systems because of its connection to people's social and economic lives [11]. Through vocational education, modern societies can develop their human resources in accordance with their demands and needs in order to ensure their development and continuity.

Universities are among the most important educational institutions and have a great and effective role in the development of societies. The mission of universities is to create minds that produce and innovate in all fields. They direct their activities towards all members and institutions of society in order to improve the conditions of economic, social, and cultural life [12, 13, 14]. Al-Momani (2016) stated that universities, especially vocational ones, bear a great responsibility towards public services in the community because they provide societies with experts who are trained on the latest technologies [15]. Furthermore, universities are constantly working to establish a genuine partnership with the

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local community and its institutions. According to [16], universities and vocational colleges have become among the most important educational institutions because they are scientific environments entitled to provide various society institutions with efficient human resources capable of achieving progress in all areas of life. As a result, many universities around the world have focused on vocational education, which provides society with manpower trained to use the most up-to-date machines that rely directly on modern technology in order to achieve the principle of integrated growth of individuals, which makes them supportive of various industries. This affects national income growth, individual welfare levels, and the sustainability of human and financial resources.

In the early twentieth century, the Arab World's educational sector suffered from a number of issues, including society's negative perception of this type of education and a lack of alignment of vocational education outputs with labor market needs, which did not meet all of its needs [17]. In addition, the intermediate university colleges were either university colleges or a crossing point for universities through unregulated bridging, so that bridging became the primary goal of many programs in colleges, which further distorted the employment hierarchy and increased the percentages of unemployed university graduates [18]. To meet this reality, a greater and increasing amount of attention must be paid to the education sector, especially the vocational education system, because it plays a vigorous role in facing challenges and shaping the future of society, as the future of all its domains and challenges depends on the preparation of productive and creative individuals. Rehabilitating individuals efficiently and effectively enables them to consciously interact with scientific and technical progress that directly affects economic and social reality [19].

Vocational education is an important source of skilled technical labor trained for various sectors to meet the aspirations of the society in which they live. Depending on the nature of the viewpoint, the concept of vocational education has different definitions. It is defined as a program designed in colleges and universities aimed at providing students with basic skills related to a profession [20,21]. As for [22], she defined it as theoretical and practical education based on empowering students and raising their competence in the profession they desire or practice, whether the education and training are inside or outside a formal educational institution. Al-Sikhan (2018) defined vocational education as "the education that is based on the development of the individual's basic skills for job readiness in his working life" [23].

The importance of vocational education, as seen by [24], emerges in the economic and social responses because it provides all sectors, whether industrial, agricultural, medical, or engineering, with qualified human cadres. The development of society occurs through qualified and trained individuals. Oftentimes, upgrading and developing the economic level depend on the availability of technical expertise that enriches the fields of trade, industry, and agriculture. Vocational education helps in providing a competent technical labor force that is trained to work efficiently in different sectors to increase production and develop the workers' ability to keep pace with technological development and confront political, social, cultural, scientific, and economic changes.

Ahad et al. (2021) asserted that vocational education aims at meeting all the needs of the labor market through students' acquisition of many skills and knowledge that meet the needs of the market in various sectors [25]. Vocational education has become the main source for the provision of technical manpower with sturdy technological backgrounds. Therefore, universities and vocational colleges seek to contribute to the economic and social development of society by attracting the largest possible number of human resources with the aim of securing the local market with trained manpower in various vocations, which in turn leads to reviving the economy and reducing unemployment. In this regard, Fakhri et al. (2020) pointed out that education and vocational training in this era, the twenty-first century, have become necessities of social and civilized life [26]. This type of education is credited with establishing many ancient human civilizations; however, in most developing countries like Jordan, the general view is still limited due to the lack of efforts made to improve this type of education in theory and practice. Therefore, this issue must be reconsidered at the political and economic levels, especially in light of the continuation of the policies of dependence on others [27,28,29].

Also, Schröder (2019) stated that in order to keep pace with the rapid developments and changes and deal with them successfully, developing countries should pay attention to vocational education by preparing human resources and training them in various professions and skills in line with the nature and needs of the local and regional labor market [30]. And they should ensure their response to scientific and cultural changes, social transformations, and emerging economic conditions. As for [31], he emphasized the need to develop vocational education programs in light of the developments facing the world in vocational education by paying attention to quality vocational education and providing students with the skills and knowledge they need in various sectors. As such, this helps in providing qualified and trained vocational labor to meet all of the needs of the labor market. Mohamad et al. (2020) identified the most important requirements for vocational education programs, which are represented in properly designing and coordinating programs, preparing students for them, defining resources dedicated to those programs, and providing highly qualified teachers [21]. The functions of vocational education, as highlighted by [30], are to direct members of society to the vocational work represented by industry, science, and technology and all the ideas and concepts associated with that, making vocational education an essential part of the society's culture, and exporting the trained manpower to the local market with various skills and professions for the growth and development of society. At the local level, Jordan has faced several structural imbalances in all aspects of life, which are represented in three basic domains: the education system in its relationship with labor market institutions, scientific

and technical research development bodies, and societal and cultural values and behaviors [32,33,34]. There are influence and mutual interaction relationships among these three domains [30].

To develop the technical education system in Jordan, the concerned ministries and institutions have taken several measures in this regard, starting with an educational conference for the development of education that was held in 1987 and ending with the National Strategy for Human Resources Development (NSHRD) for the years 2016–2025. One of NSHRD's strategic goals was to reform technical education and improve its outputs. In Jordan, Al-Balqa Applied University (BAU) had a prominent role in this field, being the authority supervising this type of education in all Jordanian public and private community colleges. Within the framework of BAU efforts, efforts include developing technical and applied education and achieving the lofty royal visions to empower young people and provide them with job opportunities by providing appropriate education and training. The university has prepared its strategy for the years 2017–2021, and it is currently working on preparing its strategy for the years 2021–2025 to advance its academic programs at the undergraduate and intermediate university or college degrees, develop the technical and applied education system, and improve its outputs to become a model for development in Jordan and the neighboring countries [35].

There will be a failure of education systems when they do not respond to the needs of individuals and populations [36]. This requires great efforts to reform and develop education. Although many higher education institutions in Jordan agree on the importance of preparing human cadres in the various fields required for development, the policies they follow have not lived up to the required level in terms of application, and they lack seriousness in implementing clear plans and strategies for acquiring science and technology and what they require for application and development [26,37]. Therefore, reconsidering educational and training programs in accordance with global and technical developments has become a strategic duty that must be carefully planned, and discussion about it should be deepened at all levels in order to formulate effective educational policies to reach specific executable programs. In light of the foregoing studies, the current study sheds light on the role of BAU in developing vocational education in Jordan.

2 Literature Review

Some studies have been conducted in the Arab World in this field, including the study of [38], which aimed to examine the vocational role of Algerian universities in its three domains: teaching, scientific research, and management, on the one hand, and the depictions of lecturers practicing these roles through their representations of the vocational role of the university, on the other. The teaching staff understood the significance of teaching as the primary function of the university. The results showed that the faculty members have different views of the vocational role of the university according to the domain of administrative management. Arman et al. (2022) studied the role of vocational and technical education in enhancing job opportunities for graduates of vocational and technical education institutions in Hebron Governorate, Palestine [39]. The results showed that vocational and technical education played an intermediate role in enhancing job opportunities for graduates. Also, it showed that the relationship between vocational and technical education institutions and the labor market, which enhances job opportunities for graduates, was medium. And it revealed that vocational and technical education service providers and employers do not benefit from the opportunities available to each of them. Al-Khazaleh (2019) studied the role of community colleges in enhancing the importance of vocational education from the point of view of faculty members [40]. A questionnaire was developed to collect data. According to the study's findings, community colleges play a moderate role in increasing the importance of vocational education in the eyes of faculty members.

3 Method

3.1 Study population and sample

The study population consisted of all faculty members at Al-Balqa Applied University (BAU), who totaled 1,400 faculty members for the years 2020–2021. The study sample consisted of 50 members of the teaching staff who teach vocational courses at BAU and were selected randomly from the study population. Table 1 shows the distribution of study members according to the study variables.

3.2 Study tool

In order to obtain the primary data and achieve the objectives of the study, the researchers developed a questionnaire for the current study consisting of three areas to reveal the role of BAU in developing vocational education in Jordan: the

Table 1: Distribution of the sample members according to demographic variables

Variable	Category	Repetition	Percentage
Sex	Male	33	66%
	Female	17	34%
Academic Rank	Doctor	29	58%
	Professor Dr	21	42%
Years of Experience	5 years or less	4	8%
	5-less than 15 years	26	52%
	15 years and over	20	40%

administrative side (8 items), the theoretical side (8 items), and the practical side (8 items), which measure the role of BAU in developing vocational education. After reviewing some previous studies, such as [41], some items were adapted and formulated in line with this study. The scale, in its initial form, consisted of 24 items. In order to answer the questionnaire, the study participants were asked to determine the degree of agreement according to a five-step scale (strongly agree, agree, agree, neutral, disagree, strongly disagree).

3.3 Content validity

The validity of the study tool was verified by presenting it to a group of fifteen (15) experienced and specialized faculty members in the disciplines of educational administration, pedagogy, psychology, and psychological counseling at BAU with the aim of expressing their opinions about the accuracy and validity of the study regarding the content of the tool in terms of the clarity of the items, the linguistic formulation, its suitability to measure what it was developed for, and its affiliation to the field to which it belongs. The proposed amendments, additions, modifications, or deletions, which were agreed upon by (80%) of the reviewers, were taken into account, and the scale in its final form consists of 36 items.

3.4 Construction validity

The study tool was applied to an exploratory sample consisting of (30) individuals from the study community and outside its real sample. In order to verify the construction validity indicators, the inter-correlation coefficients were calculated for the domains of the scale, using Pearson's correlation coefficient, as shown in Table 2, where the correlation coefficient between the domains of the scale was (0,89).

Table 2: The correlation coefficients values of the items with their domain

Item	Correlation with domain	Correlation with the tool	Item	Correlation with domain	Correlation with the tool
1	.39	.27	13	.28	.31
2	.67	.37	14	.76	.61
3	.70	.45	15	.55	.51
4	.49	.43	16	.81	.66
5	.44	.26	17	.77	.73
6	.45	.27	18	.70	.58
7	.67	.51	19	.67	.53
8	.57	.59	20	.58	.54
9	.25	.35	21	.40	.32
10	.36	.27	22	.68	.59
11	.56	.48	23	.53	.60
12	.72	.59	24	.76	.71

It is noted from the results in Table 2 that the values of the correlation coefficients of the scale items with the domains to which they belong to were high, ranging between (0.25-0.81), and the values of the correlation coefficients of the items with the tool as a whole were also high, ranging between (0.27-0.73).

The items were accepted based on the following criterion: the correlation coefficient between the item and each of the domains and the tool as a whole should not be less than (0.20). Based on this, all items of the scale were accepted. The

values of the inter-correlation coefficients for the domains and the correlation of the domains for the tool as a whole were also calculated as illustrated in Table 3.

Table 3: The values of the inter-correlation coefficients for the domains, and the correlation with the tool as a whole for the level of ambition scale

Domain	Administrative side	Theoretical side	Practical side	Total
Administrative side	1.00			
Theoretical side	.64	1.00		
Practical side	.82	.75	1.00	
The tool as a whole	.63	.65	.87	1.00

It is clear from the data in Table 3 that the values of the correlation coefficients between the domains were high and ranged between (0.64-0.82). The values of the domains correlation coefficients for the tool as a whole were also high ranging between (0.63-0.87).

3.5 Stability of the tool

Researchers calculated Cronbach’s alpha coefficients to verify the internal consistency of the items listed in the study tool [42,43,44]. These coefficients also provide a reasonable estimate of stability. Although there are no standard rules regarding the appropriate values of Cronbach’s alpha coefficient, in practice (Alpha \geq 0.60) is valid in research related to management and humanities and Table 4 illustrates this.

Table 4: The internal consistency coefficients (Cronbach-alpha) for the domains of the study tool and the tool as a whole

Domain	Internal consistency	Number of items
Administrative side	0.80	8
Theoretical side	0.81	8
Practical side	0.87	8
Scale as a whole	0.95	24

Table 4 shows the internal consistency coefficients for the scale as a whole on the results of the pilot sample. The value of the Cronbach-alpha coefficient for the scale as a whole was (0.95), and the Cronbach-alpha internal consistency coefficients for the sub-domains and the overall scale ranged between (0.80-0.87).

3.6 Statistical standards

The study adopted Likert’s five-point scale as a measure to correct the study tool by giving each of its items one point out of five degrees (strongly agree, agree, neutral, disagree, strongly disagree), which are digitally represented (5, 4, 3, 2, 1) respectively. The following scale was adopted for the purposes of analyzing the results:

- 1.From 1-1.8 very few
- 2.From 1.81-2.6 Low
- 3.From 2.61-3.4 medium
- 4.From 3.41-4.2 large
- 5.From 4.21-5 very large

4 Results and Discussion

The data collected from the questionnaire was compiled in an excel sheet for further analysis using SPSS software. To strengthen the findings, the results obtained were compared by using different statistical tools.

Q1. What is the role of universities in developing vocational education in Jordan from the administrative, theoretical and the practical sides?

Table 5: Means and standard deviations of the domains of the scale of the role of universities in the development of vocational education

No.	Domain	SMA	S.D	Rank	Class
1	Administrative side	3.85	0.971	1	High
2	Theoretical side	3.51	1.12	3	Medium
3	Practical side	3.65	0.991	2	Medium
	Scale as a whole	3.67	1.03	—	High

To answer this question, the researchers calculated the means, the means, and the standard deviations of the items of the scale of the role of universities in developing vocational education as illustrated in Table 5.

The results of the study showed that the means ranged between 2.84 and 3.42, with a medium degree, whereas the administrative side came first with a mean of 3.85 and a standard deviation of 0.971, with a high degree. The practical side came in second with a mean of 3.65, a standard deviation of 0.99, and a medium degree. The domain of the theoretical side was ranked third and last, with a mean (3.51) and a standard deviation (1.12) of a medium degree. The mean of the scale as a whole was 3.67 with a standard deviation of 1.03 at a high degree.

These results may be attributed to the fact that the focus of the members of the study was on the need to create the infrastructure for the educational vocational workshops and the various educational facilities it included because that structure is the first pillar of any educational institution to provide public safety measures within the vocational workshops. Also, their focus was on updating and developing the university's infrastructure requirements because it positively affects the continuity and excellence of the educational learning process. The findings of this study agree with those of [40], who found that community colleges played a moderate role in increasing the importance of vocational education in the eyes of faculty members. In order to give a more detailed picture of the role of universities in developing vocational education, the researchers calculated the means and standard deviations of the estimates of the study sample members for the items of each domain of study as discussed below:

4.1 The administrative side

The means, standard deviations, and ranks were calculated for the items of the "administrative side" as shown in Table 6.

Table 6: Means, standard deviations, and ranks of the administrative side items

No.	Item	SMA	S.D	Rank	Class
5	The university provides modern and advanced vocational tools and programs to apply the practical side.	4.31	0.81	1	High
6	The university provides public safety procedures within vocational workshops.	4.23	0.81	2	High
3	The university is working to develop vocational training workshops within international standards.	4.00	0.88	3	Medium
8	The university's graduates are able to open their own businesses.	3.91	0.94	4	Medium
4	The university seeks to meet the requirements of the labor market.	3.72	1.05	5	Medium
1	The university is working on developing plans and objectives for the advancement of courses.	3.60	1.06	6	Medium
	Domain as a whole	3.85	0.971	—	Medium

Table 6 shows the means, standard deviations, and ranks of the items of the domain of obstacles related to the female students, where the means ranged between (3.52-4.31). Item (5), which states "the university provides modern and advanced vocational tools and programs to apply the practical side" was ranked first with a mean (4.31) and a standard deviation (0.81), at a high degree. And in the last rank came item (2) which states that "the university attracts students from the various governorates of Jordan Kingdom" with a mean (3.52) and a standard deviation (1.15), at an average degree. As for the mean for the domain as a whole, it was (3.85) with a standard deviation of (0.971), with a medium degree. This result may be attributed to the fact that universities are keen to provide modern and advanced vocational tools and programs, and the appropriate place and time for students. It may also be attributed to the fact that universities cooperate with labor market institutions for the purpose of employing graduates with the aim of highlighting the skills of their graduates who are vocational students. It was also attributed to the keenness of the faculty members at universities to provide public safety for students within laboratories and vocational workshops in a way that achieves public safety for students and society.

The results of the current study are in agreement with [39] results which showed that vocational education plays an intermediate role in promoting job opportunities for graduates, and that the relationship between vocational and technical education institutions and the labor market, which enhances job opportunities for graduates, is medium. And that vocational and technical education service providers and employers do not benefit from the opportunities available to each of them.

4.2 The theoretical side

The means, standard deviations, and ranks were calculated for the "theoretical side" items as shown in Table 7.

Table 7: Means, standard deviations, and ranks of the theoretical side items

No.	Item	SMA	S.D	Rank	Class
6	Theoretical vocational courses have proven to be effective during distance learning.	4.03	0.95	1	High
5	Vocational courses contribute to raising the efficiency of the teacher.	3.69	1.08	2	Medium
2	The vocational courses are consistent with the goals, vision and mission of the university.	3.66	1.12	3	Medium
7	Vocational courses have kept pace with globalization, modernity and current developments with vocational training.	3.66	1.01	4	Medium
8	Vocational courses link theoretical and practical studies.	3.41	1.21	5	Medium
1	The applied university courses contribute to the development of students' cognitive abilities.	3.24	1.2	6	Medium
4	The method used in offering vocational courses is based on attracting and stimulating students to learn.	3.24	1.17	7	Medium
3	Vocational courses meet the requirements of the labor market.	3.11	1.25	8	Medium
	Domain as a whole	3.51	1.12	—	Medium

Table 7 shows the means, standard deviations, and ranks of the items of the theoretical side, where the means ranged between (3.11-4.03). Item (6), which states, "theoretical vocational courses have proven their effectiveness during distance teaching" came in the first rank with a mean (4.03) and a standard deviation (0.95), at a high degree. In the last rank came item (3), which states that "the vocational courses meet the requirements of the labor market" with a mean (3.11) and a standard deviation of (1.125), with a medium degree. As for the mean for the domain as a whole, it was (3.51) with a standard deviation of (1.12), with a medium degree. This result shows the extent of the keenness of universities to have a continuous update of the vocational training curricula and to link the theoretical side with the practical side to ensure satisfactory results. This may be attributed to the fact that universities have worked to improve their capacity through their own websites in order to ensure effective communication between the teaching staff and students in theoretical vocational courses during distance teaching.

4.3 The practical side

The means, standard deviations and ranks were calculated for the "practical side" items as shown in Table 8.

Table 8 shows the means, standard deviations, and ranks of the items of the practical side, where the means ranged between (3.44-3.77). Item (8), which states that "there is a link between the theoretical side and the practical side in the various subjects of the plan" came in the first rank with a mean (3.77) and a standard deviation (0.95) at a high degree. And in the last rank came item (6), which states that "vocational courses develop interaction between students about the practical subject" with a mean (3.44) and a standard deviation (1.05) at an average degree. As for the mean for the domain as a whole, it was (3.65), with a standard deviation of (0.991) at a medium degree. This result may be attributed to the universities keenness on the necessity of practical application of students on the ground for the purposes of preparing them at the theoretical and practical sides and providing them with practical experiences on the ground.

5 Conclusion and Recommendation

Universities have continuously worked on strengthening the public infrastructure for technical and vocational education and training (TVET) by providing vocational colleges with modern facilities, equipment, and appropriate laboratories.

Table 8: Means, standard deviations, and ranks of the practical side items

No.	Item	SMA	S.D	Rank	Class
8	There is a link between the theoretical side and the practical side in the various items of the plan.	3.77	0.95	1	High
3	Vocational courses involve students in field exercises according to their abilities.	3.74	0.95	2	High
2	Plans for vocational courses are reviewed periodically to match the labor market.	3.73	0.98	3	High
5	Employers indicate the high abilities of vocational students during the field training course.	3.66	0.96	4	High
4	The teacher follows modern methods of evaluating students' vocational work.	3.64	0.97	5	Medium
7	Vocational courses provide a variety of activities and field exercises.	3.62	0.99	6	Medium
1	The workshops have tools and equipment that are suitable for vocational education courses.	3.58	1.08	7	Medium
6	Vocational courses develop interaction among students around the practical subject.	3.44	1.05	8	Medium
	Domain as a whole	3.65	0.99	—	Medium

Compared to other educational programs, TVET programs usually require special equipment and facilities. Accordingly, universities have directed some investments towards vocational education in order to provide students with the technical skills required by the labor market. However, there is a need to improve career counseling and other mentoring services by expanding opportunities for students to discover their interests and how to match them to the right job. Many factors, such as family attitudes, past experiences, youth interests, mental health, and gender, influence the choices of young men and women for the majors they wish to study.

Universities have revised curricula according to the requirements of the labor market. There are major changes taking place in the labor market and the emergence of new types of jobs away from traditional jobs; therefore, it is necessary to introduce personal skills and digital skills to keep pace with the progress of society and technical and digital developments. Universities have restructured their funding and allocated more resources to developing and activating vocational guidance and counseling systems and programs to increase the effectiveness of these programs. Counseling should be a continuous process that starts in the early stages of students' lives to help and encourage them to define themselves and their personalities, physically and mentally. Students' knowledge must be expanded in order to better align their tendencies and desires with available educational and employment opportunities, develop their personalities in order to better define their choices, and raise their awareness of the need to bridge the gap between required jobs and labor market needs.

The study also recommends that the Ministry of Education in Jordan modify the admission mechanisms of educational institutions to allow students to freely choose the specialization they prefer and radically reconsider the mechanisms of admission to universities, community colleges, vocational schools, and vocational training institutes so that they become dependent on students' inclinations and abilities and not on their grades and academic achievement based on the traditional skills prevalent only in the educational system in Jordan. Also, the Ministry of Education should give grants to students to complete their education in the intermediate and professional tracks. The ministry needs to launch awareness campaigns targeting the culture of shame about vocational education and provide information about the current needs of the labor market in all economic sectors in Jordan to reduce people's traditional low view of jobs related to vocational education and handicrafts. Moreover, awareness campaigns should disseminate information relevant to the reality of the labor market in Jordan among students and their parents, business sectors, and employers.

Additionally, the study recommends that universities introduce new specializations that provide the opportunity for those who have completed training in a particular craft or profession to complete their studies. Among these proposals are a bachelor of beauty, a bachelor of fashion design, a bachelor of carpentry, and many other such professions that open horizons and job opportunities for young men and women not only in the local market but also in global markets. The current study recommends future research to study employment trends and promising sectors in Jordan, with the aim of creating a national database on available job opportunities and stagnant job opportunities. Such studies will not only be important in supporting young people in their academic and career choices but also in guiding the creation of new educational programs. They can provide information about the reality of the labor market and be easily accessible and available to everyone. This information can be constantly updated by placing it on a national database through the websites of the relevant national institutions.

Conflicts of Interest Statement

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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