

Industry Perspective About Policy Issues in University-Industry Linkages

¹Mian Shakeel Ahmad, ²Sunbal Taj, ³Sahibzada Yaseen Ahmad, ⁴Asia Shah, ⁵Bibi Ranra

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ABSTRACT

The study was conducted to find out why, in spite of all the talk, there are no visible benefits of linkages between universities and industry in Pakistan. We concluded that all the three parties, i.e. the industry, the academia, and the government somehow fail to play their roles: the government lacks a clear policy in this regard; the industry has little problems which can be solved by the academia, but there is a lack of interest on their part. In spite of all the problems, there is a little progress with the possibility of some policy pitfalls. We have identified four of such pitfalls, and have asserted that two of these are predominant in Pakistan.

INTRODUCTION

The paper will delve into the question of why, despite the talks about university industry linkages, there is no sign of the outcomes that we want to see. We have considered various policy scenarios in light of the triple helix model.

The Problem

Although there is a lot of talk in the government about linking industry and university, there is, however, very little progress in spite of all the plans and efforts to implement them. In other words, there seems a decoupling between policy and practice, as well as between goals and outcomes (Bromley & Powell, 2012) which needs to be addressed.

For this purpose, we conducted a study of the industrial estate in district Abbottabad. Members of the Abbottabad Chamber of Commerce & industry were interviewed; the interviews were analyzed to find out the participants' perceptions of the causes of the hurdles in the development of the industry.

¹Assistant Professor, Department of Management Sciences, Abbottabad University of Science and Technology shakeelx1@gmail.com

²Teaching Assistant, Department of Management Sciences, Abbottabad University of Science and Technology sunbtaj@gmail.com

³Lecturer, Department of Management Sciences, Abbottabad University of Science and Technology syaseenahmad@yahoo.com

⁴Lecturer, Department of Art & Design, Hazara University Pakistan, asiashah.gfx@gmail.com

⁵Lecturer, Department of English, CITY University of Science and Technology. ranra.rahman789@gmail.com

University-industry linkages: Ideals versus Ground Realities

Globally, universities are going through a transition: from being traditionally considered as seats of theoretical knowledge and research (first generation and second generation university) to becoming institutions involved in research and commercialization (third generation university), and now playing active part in meeting social needs and contributing to regional development and competitiveness especially in declining regions (fourth generation) (Lukovics & Zuti, ,2015, 2017). In Pakistan, however, the traditional view of the universities still lingers on in the public imagination, and despite a huge growth in research activities in our universities, the view of university as an engine of socio-economic development has still not gained traction. Universities in developing countries can help in advancement of industries by enhancing the technical level of the people and by sharing new scientific insights. Marotta, Mark, Blom, & Thorn (2007), while studying industries in Chile and Colombia, have found that businesses that have linkages with universities, and where employees' knowledge and education levels are high, are more likely to innovate.

Problems in Accepting the Concept

Every new idea takes time to be accepted; university-industry-government linkages is no exception. There are many reasons for this: First, there is a lack of awareness among the stakeholders about the concept, and the general public still thinks of the university as a place for getting theoretical knowledge. Second, there is a lack of understanding among policy makers; they either don't realize the need for such a policy, or if in some places there is a policy, it is not intended for implementation. Finally, in cases where there is a policy, it does not target the right outcomes.

With the rise in numbers of Offices of Research, Innovation and Commercialization (ORICs), there is a realization of the need for such a policy, at least at the universities' end. On the industry and government's end, however, there is still an absence of such structures. With the formulations of policies, like research and commercialization policies by various universities, there is some progress in the implementation of the concept. However, in the absence of such departments in government and industry, implementation cannot be effectively carried out. There are at least four scenarios: no policy scenario, policy-practice decoupling, means-end decoupling and unintended consequences. Below we will discuss all these scenarios.

LITERATURE REVIEW

Scenario 1: No Policy

As the name shows, there is no policy and neither is there any realization of the need for such a policy. This will be in cases where the universities are first-generation, the government is apathetic and the industry is primitive, feeling no need for R&D and innovation. Most underdeveloped countries will be in such a situation. But this, after all, may not be as bad as it seems; studies show that most public policy interventions fail or have a limited impact (Pack & Saggi, 2006)

Scenario 2: Policy-Practice Decoupling

In this scenario, there will be a policy, but most probably it will be formulated due to some pressure from outside, and the policy formulators will not be serious about the implementation. So, the policy will not be taken seriously by the people involved, and will not be implemented, or poorly implemented (Bromley & Powell, 2012).

Scenario 3: Means-End Decoupling

In this scenario, the importance of policy will be realized and all the efforts for implementation will be put in place, but the policy will not be the right policy in that the intended outcomes will not result from the means adopted i.e. the policy makers' beliefs about the relations between policy and outcomes will be not be well-founded (Bromley & Powell, 2012).

Scenario 4: Unintended Consequences

There is a policy, it is implemented, and the link between the means and ends is clear, but there are some unknowns which are giving rise to some unintended consequences (Merton, 1936; Behrens & Gray, 2001). This will be closely related to the Cobra problem, where incentives given can have unintended consequences, which will worsen the problem they were trying to cure (Newell & Doll, 2016).

In Pakistan, we theorize that the scenarios that are prevailing are most probably scenario 1 and scenario 2.

Theoretical Framework

Here discuss different models and especially the triple helix model, and tell why triple helix is the most appropriate in this situation. Since academia and industry have different motives for collaborations, it is important that the government comes into the equation in order to guide, regulate and fund such collaborations (Larsen, Bandara, Esham, & Unantenne, 2016). Many models have been proposed for understanding the university-industry-government relations but the most popular among them is the triple helix model proposed by Etzkowitz and Leydesdorff (1997, 1999 & 2000).

Triple helix refers to interactions and networks among three interdependent institutional spheres of university, industry and government as a source of innovation and development. The functions specified by model are wealth generation by industry, knowledge creation & innovation by university, and normative control by the government (Etzkowitz & Leydesdorff, 2000).

Initially, Etzkowitz and Leydesdorff (2002) suggested that the strength of these interactions and networks depends on the component which is the driving force in the framework. Three distinguished models of triple helix were presented. First is the Statist model, where the state is controlling and directing universities and industry (underdeveloped countries); second is Laissez-Faire, where three institutions are separated from each other and interact modestly across strong boundaries (as is the case in developing countries); third is balanced triple helix, which involves tri-lateral networks and hybrid organizations (developed countries) (Kimatu, 2016).

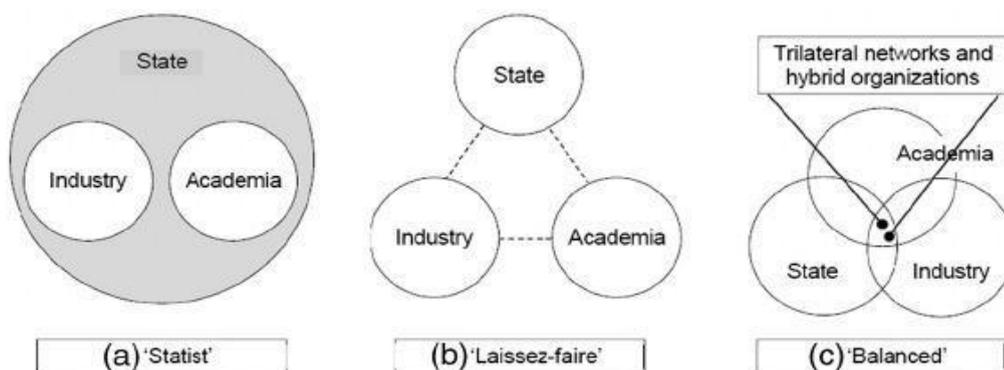


Figure 1 Source: Bellgardt, Gohlke, Haase, Parzonka, & Schicketanz, (2014)

We propose that the three models of the triple helix will correspond with different scenarios that we proposed in section mentioned above.

- The Statist model will correspond to high likelihood of scenarios 3 and 4 , and medium likelihood of scenario 2. This situation will occur in authoritarian states where the state exerts its power so the policies are likely to be there and will be implemented but there will be issues in ends-means linkage, or the chance of unintended consequences will be high.
- The Laissez-faire will correspond to scenario 1. Where the governments don't exert its authority, there will be a high likelihood of no policy scenario.
- The Balanced model will correspond to scenario 3 with low likelihood and to scenario 2 with very low likelihood; the correspondence with scenario 4 will be unknown. In case of networks and hybrid organizations, there will be low chances of ends-means

decoupling; the chances of non-implementation of policies will be still lower; the unintended consequences will be unknown as everything will seem to work so well. The diagram below depicts this graphically:

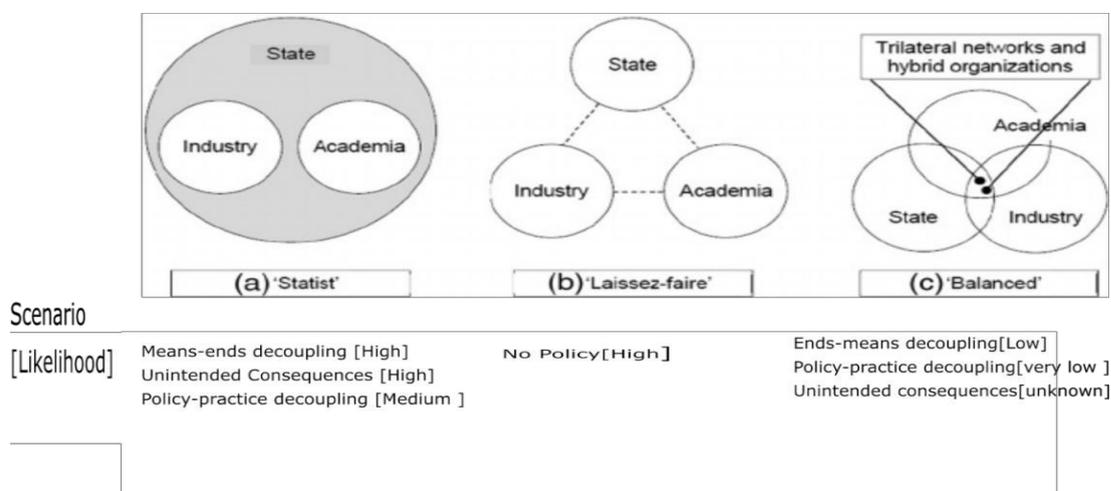


Figure 2: correspondence of the four scenarios with different forms of triple helix model

RESEARCH METHODOLOGY

We conducted detailed in-depth interviews (IDIs) with six industrialists who were members of the local Chambers of Commerce and Industry. They were contacted using a snowball method, starting with the president of the Chamber of Commerce. We used a judgmental method by first making sure that the persons we are interviewing are educated, have experience with university-industry linkages either by being active in fostering or having attended seminars, workshops related to it. The personal experiences and acquaintances of the authors was of benefit as all the authors are related to the Office of Research, Innovation and Commercialization at the Abbottabad University which deals with forming industrial linkages for the university faculty.

They were all interviewed at their place of business and after getting their permissions the interviews were recorded using a smartphone. The interviews were transcribed and analyzed using thematic analysis approach. After the analysis the themes clearly fitted into the triple helix model of the university-industry linkages.

ANALYSIS

The analysis is related to three entities of the triple helix model i.e. government, industry and the university.

Perception about Government Officials

In the opinion of our respondents, government officials do not understand the ground realities; they are unapproachable, and it is very difficult to communicate with them. In the words of respondent

“log jo upar baithay huway hain” Respondent C

Trans: the people sitting in upper echelons

Industrialists think the system to be too bureaucratic and fraught with red-tapism

The courts do not provide justice, and taxmen are a source of anxiety:

“...is waqt jo indusry hay, industrailist hain saray khaufzada hain , aor sachi baat bolon kisi ka kaam karnay ko jee nahi chah raha hay..” Respondent E

Trans: at this time, the industrialists are afraid and nobody wants to work.

Other causes of anxiety mentioned were unforeseen events like government changes and the resulting policy changes, tax issues etc. one example of policy change with the change of government is when one government had given relief in electricity bills but the next government withdrew it suddenly

Another very important issue is taxes. All our respondents thought the taxes were too high, too many, and cumbersome; there are hidden taxes in electricity bills.

Our government does not support the industry; in contrast, the Chinese government takes responsibility and helps businesses in finding markets and distributing goods as well as financing inventories.

Most of them expressed dissatisfaction with the government and claimed that there is no support from the government. They expressed dissatisfaction with government policies and policy makers and stressed the need for reform.

About Industry

Entrepreneurs, their Outlook and Backgrounds

Successful businessmen had experiences in other businesses before starting their current ones. According to our respondents, the entrepreneur's success requires diverse experience as he/she has to play different roles in business. The respondents did not hop from one business to another just for the sake of experience; mostly it was because they started one business to find that the raw materials and labor were not available, or the competition was cutthroat; so they had to start some business where inputs as well as markets were available.

Generally, they thought of themselves as confident, independent-minded, persistent and patient, as making a business successful and the tasks required therein are time consuming. Setting up a plant takes years; success takes time:

“poori ek pusht ka safar hay” Respondent D

Trans: it's a journey of a generation.

Other crucial ingredients described by them are integrity and honesty which are important for customer satisfaction and success of a business.

They were found to be aware of their contribution to the society and were proud of the fact that they provide employment.

Most of our respondents thought that their know-how is through their personal experience; they had to work while there was no one to guide. The knowledge they acquired was through trial and error. As the availability of reliable data has always been a huge problem. All our respondents belonged to business families and counted on support from their families, especially their fathers.

First, they were practical men and believed in hard work. They complained that we, as a nation, believe in supernatural and miracles and are not practical.

“..duaon se tau mulk nae chalta..” Respondent D

Trans: prayers cannot help in running a country

Second, the progression of their businesses seems very natural; they belong to a business family, when they realize there is need in the market which becomes a motivation to start their own production; then they start supplying to everyone; face challenges in the beginning but through their persistence and patience they surmount them. They think that in the start of a new business, loss in the beginning is rule rather than exception.

Moreover, they thought that a new investor should know answers to the right questions.

“may os ko mashwara day sakta hon keh bahi ap investment q kar rahay hain aor kis sector may kar rahay hain, raw material hay os ke hawalay se, local market hay market hay, provincial hay , national market hay?” Resndent D

Trans: I can advise him about why he is investing and in which sector he is investing, is there a local market, is there a provincial market, is there a national market?

If they don't know answer to crucial questions, then loss will result, which has a pervasive effect:

“khanadaan bhe sath barbad ho jata hay, jis alaqay banda reh raha hay wahan pe bhe khushi kharab ho jati hay” Respondent D

Trans: families are destroyed and where one lives, the happiness of that area is also destroyed

Threats to our Industry

They felt threatened by the low priced, high quality Chinese products. They thought that Chinese are more efficient and have better work ethic than us. They were aware that the

Chinese are adding value to our raw material and selling it in international markets, while we cannot add that value to our own raw material. Another advantage the Chinese have is that their industries are in clusters.

In contrast, we still have our traditional, old ways of doing things:

“Jo Desi tareeka hota hay ham tau abhi tak phansay huway hain ” Respondent B.

Trans: we are still stuck in our old ways of doing things

They had thought about exports but were not confident of their industry's abilities and product quality. Manufacturing requires uninterrupted power supply, while unreliable availability of electricity and power outages result in losses due to missed opportunities and low productivity.

Ingredients of a Successful Business

The elements that are very crucial for the success of a business are raw material, labor, technology, and the availability of market.

If **raw material** is unavailable locally it can put the business at risk in case of supply chain disruptions. Presence of a big and reliable raw material supplier locally is considered as a blessing.

Skilled labor is very important but there is a scarcity of skilled labor in the area due to which they have to “import” labor from other provinces. They look for experience when hiring labor. The workforce, in their opinion, is uneducated and lacking technical skills. Most of them were aware of the importance of new **tech** and wanted to upgrade their technology; they were especially interested in automation but complained of the unavailability of skilled persons who could do that. They were confident that technology can increase efficiency, and were especially interested in electricity efficiency, electricity bills being a big contributor to costs. They attributed the rise of China to technology and admitted that our technology is backward as compared to China.

Apart from these three, the **availability of market** is crucial for success, local demand being the big contributor in sustaining a business, as for non-local markets logistics is an issue that can lead to failure because we have **location disadvantage** as compared to businesses in Karachi or Punjab.

Other things that add to the cost of doing business are taxes, electricity bills, salaries and costs incurred in training labor.

Perceptions about Universities

University as ivory tower:

Our respondents felt that in the universities they are disconnected from the external environment and the educational institutes have no linkage with the industry; it is their responsibility to reach out to the industry, which they do not fulfill. That's why the number of graduates has increased but the economy has not picked because the quality has not gone up. Most of the respondents were willing to work with educational institutes, but were not happy with their lackluster response. They suggested that universities should approach industry and share problems.

Since universities don't play their role, industry has to train their employees. The industry has its own educational/ awareness activities and there is an opportunity for mutual learning through combined seminars, training, and workshops of university and industry.

They identified process improvement and efficiency improvement as areas for universities to work on. Other than that, they suggested that university faculty can help industry in finding markets for their goods.

Perception of Teachers

Teachers pursue their self-interest, that's why they don't focus on their students. Moreover, what they teach is either theoretical or outdated.

"hamaray ustaad nae hay thek" Respondent D

Trans: our teachers are not right.

Skills important for graduates

Graduates should be able to contribute to business but the workforce that is available is not properly educated and lacks skills, as a result the industry has to train them on the job. The labor is apprehensive of new technology and automation, as they don't have the knowhow to handle it. Moreover, as compared to our competitors in China, our workforce is unprofessional. Due to these factors, the quality of products is low, as a result, we cannot export our goods.

Technical education and the ability to understand machines is important but labs in colleges have outdated equipment with which they train students. They felt that education should be according to market needs. Graduates should be able to have analytical skills and practical experience. They considered a student's practical experience more important than their theoretical knowledge. Among soft skills they mentioned confidence and communication; business acumen; understanding customers; honesty and integrity; and problem-solving;

education should teach students how to deal with routine issues like taxmen and electricity problems.

They felt the need for degrees to be in narrow specializations, as currently, graduates come with irrelevant degrees and have no technical knowhow; it is no surprise that persons with relevant experience get jobs while those with degrees fail to do so.

They nonetheless admitted that it is easier to train the educated ones.

In order to reduce the skill gap, the industry is willing to help students learn by offering paid internships and visits to factories.

Discussion

Here we will discuss the significance of our findings and how they relate to previous literature:

Although the purpose of the interviews was to find out issues in the university-industry linkages and to discuss possible, being human it was impossible not to talk about persons and their hopes, struggles and aspirations; after all, what we are, what we do, and where we come from, cannot be separated. Our respondents discussed with us about their personalities, their struggles, their feelings about government and universities, all of these we included in our analysis in order to come up with a true picture of the situation. Below we discuss all these points:

Successful business people have never given up attitude, in other words we call it grit, which is defined by Duckworth, Peterson, Matthews and Kelly (2007) as “*perseverance and passion for long term goals*”. All our respondents exhibited a lot of grit, which is the cause of their persistence in the face of all failures. Studies by Cope and Watts (2000) and Minnianti & Bygrave (2001) support learning by doing, and trial & error add experimental learning to entrepreneurs' knowledge (Nicholls-Nixon, Cooper, & Woo, 2000). All our respondents were experienced business persons and their experience was the outcome of trial and error in absence of any guidance and reliable data.

Family business background is perceived to be the motivation to start and succeed in business. (Fairlie & Robb, 2007; Carr & Sequeira, 2006). Self-confidence, and family had been their only motivators and supporters. According to Lazear's theory of jacks-of-all-trades, entrepreneurs must have some knowledge of every business area (Lazear 2004, 2005). Experience diversity measured in terms of both skills and knowledge is found to be positively related to performance (Spanjer & Witteloostuijn, 2017). Since our respondents had diverse experiences in various businesses, that all added up to their repertoire of skills. Our findings about the inconsistent policies of government is corroborated by previous studies as literature

on government support to SMEs finds that instability and inconsistency in policies, poor interest of government, and high taxes are the barriers causing sickness in small industries (Tinarwo, 2016; Rahman & Rahman, 2017).

In reference to the world bank's "Doing Business 2019" global ranking of countries, Pakistan is positioned 140th among 183 economies. EODB measures ease of doing business in relation to different government regulations. Each country is ranked against 10 indicators. Pakistan's low ranking of registering property, getting electricity, dealing with construction permits and getting credit, reflects the role of bureaucracy and red-tapism in industrial sickness (World Bank Group, 2019).

Load shedding causes disruption in the production process, spoiled inventories and machines malfunctioning (Cissokho, 2015). The industrialists' claim that their competitiveness can be improved if electricity availability is made consistent is not far from the truth. Electricity outages place smaller industrial units at greater competitive disadvantage than large units (Institute of Public Policy Beacon house National University, Lahore); in some cases the firms lost lucrative contracts in foreign countries. Most of the problems of the industry are indeed as result of the failures on the part of the government; our universities too cannot be set free of the blame as these days, universities are, around the world, considered an integral factor of regional and economic development.

Our universities are nearly "Ivory Towers" that works in isolation from the surrounding. Academicians and academia are isolated from real-world issues. Academicians' primary motive is their personal growth and high paper qualification. This detachment from the community results in the research output that has no practicability (Oyugi, 2017). But the changing world demands the transformation of universities from traditional knowledge creation to an entrepreneurial hub. In this context Triple helix has paved the way to transformation of traditional universities into entrepreneurial entities.

CONCLUSION

In this study we looked into the constraints in establishing U-I linkages with the perspective of industry in Abbottabad region. Based on our analysis and study of literature we have come to the following conclusions. The government still has to realize the importance of working in collaboration with industry and universities, as the desired U-I linkages can only be achieved by the right input from all the three actors. As a result, we are stuck in scenario 1 (no policy) and scenario 2 (policy-practice decoupling). The industry has a myriad of little problems like energy efficiency, process automation which academia, if involved in the right

way, can solve for them with very little resources. However, establishing linkages does not seem to be the priority of university faculty as they only pursue their personal goals. Our universities lack entrepreneurial culture, and there is a lack of mechanism at the part of university management to facilitate linkages. U-I linkages mainly depend on the academic components and characteristics. Our universities' poor academic record, research limitations and administrators' lack of interest are the real hindrance to U-I linkages. In spite of all the issues and bad feelings, there is a hope that in the near future all the parties will sort things out and work as a group towards a new economy which will be characterized by 4th generation universities, industry 4.0 and a responsive government. Currently there seems to be a progress from no policy *laissez faire* approach to a balanced one (figure 2). However, we have to be careful when devising and implementing a policy, lest we should fall into scenario 3 and 4, while trying to avoid scenario 1 and scenario 2.

Recommendation

Although we do not suggest any additional helixes in the triple helix model, we have looked at the three elements of the triple helix from the point of view of the industry and have identified little things which, if addressed, will lead to big improvements. We suggest following recommendations to the parties involved in university industry linkage:

Recommendation to Universities

Our recommendations to universities pertain to curriculum and trainings, structures, and hiring the right faculty

First, universities need to revise curricula according to industry needs, as industry needs cutting edge research, trained labor, and skilled graduates especially in areas like automation, machinery up gradation and problem-solving skills. Seminars, conferences and symposiums should be arranged in collaboration with industry to create awareness among students and build relationships with industry. Second, a specialized department for U-I linkages should be set up in universities to facilitate linkages and proper incentives and facilities should be given to the department. Incentives should be given to increase the interest of researchers and faculty in U-I collaborations. Universities should encourage and facilitate the faculty and students to establish start-ups which provide solutions to the industry. Third, as universities and especially the newly established universities are short of qualified experienced personnel. They should hire staff with industry experience.

Recommendation to Industries

The Chambers of Commerce and Industry (CCIs) should have a specialized department/person responsible for U-I linkages to ensure strong ties with academia, share

ideas and develop human resources according to market needs. Moreover, there should be regular exchange of trained and experienced personals within the university and industry. For developing the future workforce, industry should offer internships for university students, arrange workshops, seminars and symposia in collaboration with universities.

Recommendations to Government

Since the current approach seems like a laissez faire one, we would recommend a balanced approach, as being a democratic state, the static approach is not suitable either (see figure 1 and 2). Hybrid organizations should be formed with members from all the stakeholders and with fuzzy boundaries (Alice Lam, 2009), government should ensure that appropriate policy is formulated and implemented. For this, all stakeholders should be taken onboard. Moreover, generous support in the form of research grants, startup grants and grants for the new hybrid organizations should be provided.

Limitations

The study was based on qualitative data and was focused on district Abbottabad only. Moreover, all our respondents were old men and there were no women, the reason being that the industry here is dominated by men. The purpose was to understand the relations of different factors and the problems faced in bringing about collaboration among the actors, so the findings should be applied with care. Moreover, a quantitative study consisting of a bigger sample will be beneficial in devising generalizable findings.

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