"Perceptions of SMEs Regarding the Knowledge-Based Economy in the Context of Higher Education"

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KEY WORDS	**ABSTRACT**

Developing nations Executives from many companies have varying views on the knowledge-based economy in higher education. Industry, geography, and experience may affect these impressions. Thus, this study examines SMEs' executives' knowledge-based economy and higher education views. Higher education and the knowledge-based economy share several themes. The study used qualitative methodologies and semi-structured interviews with 15 manufacturing SMEs to understand the research problem.

The study found that SMEs recognize the importance of knowledge, innovation, and higher education in driving economic growth. However, concerns were raised about the suitability and accessibility of higher education programs to SMEs' needs. The study suggests that higher education institutions should work more closely with small and medium-sized enterprises (SMEs) to understand their needs and tailor programs to meet them, especially in adopting modern and skill-oriented curricula and technologies. Most SMEs also believe that government funding and incentives are vital for promoting the knowledge-based economy using the triple helix model, particularly in light of ongoing economic and energy crises.

INTRODUCTION

In a knowledge-based economy, small and medium-sized businesses (SMEs) are often the main sources of new ideas and new jobs. When discussing higher education, SMEs' views on the knowledge-based economy vary by industry, company size, and geographic region.

The role of HEC in Pakistan has changed in the last decade in connection with implementing new to cope with global challenges postured by the universal knowledge economy. In addition to instructing and learning, higher education institutions are hardly launching technological know-how centers and innovation centers at the regional level. Pakistan, on the other hand, has struggled to overcome developmental obstacles and ranks quite low in terms of social and technological advancement in the world rankings (GCR, 2017-18). In the past, reforms implemented under the auspices of various development plans, education policies, and science and technology initiatives were criticized for being foreign transplants that were not compatible with the socio-cultural processes currently in vogue in the country (Qadeer, M.A., 2006). As a result, science and technology were unable to fully realize their enormous potential for assisting the country in catching up with gainful knowledge applications (Government of Pakistan, 2010; Khawaja & Khan, 2009; Mukhtar, Islam & Siengthai, 2011).

This study seeks to answer questions about how existing conceptions of the purpose of higher education in Pakistan are being challenged by stakeholder perceptions. In the absence of compelling regional models, it also investigates the priorities for higher education reform in Pakistan. This dissertation examines the evolution of the KBE in Pakistan, as well as the function, perception, and perspectives of the industry within the context of this evolution.

OBJECTIVES OF THE RESEARCH

1. To explore how SMEs view the knowledge-based economy and its implications for their firms, including opportunities, difficulties, and impediments.
2. To identify the skills, knowledge, and competences SMEs need to flourish in the knowledge-based economy and assess how higher education institutions provide these needs.
3. To evaluate present and potential collaborations between SMEs and higher education institutions in knowledge sharing, innovation, and workforce development and identify factors that support or hinder them.

LITERATURE REVIEW

Recent studies have identified that knowledge is no longer created within Academia's structure but is increasingly produced through laboratories, industries, and innovative ideas by think factories. The UNESCO report (2005) differentiates between traditional universities and commercial-style universities; accordingly, traditional type universities mainly emphasized transforming theoretical knowledge instead of producing novel and innovative knowledge. On the other hand, commercial-side universities primarily intended to make market-oriented human capital.

Higher Education in the Context of Knowledge Economy

Higher education plays a crucial function in modern economies. Colleges and universities are primary centers and generators of professional and scientific knowledge, particularly from the perspective of knowledge management (KM) (Bratianu & Vătămănescu, 2016; Vătămănescu et al., 2016; Vătămănescu et al., 2015;

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Vătămănescu et al., 2016). Moreover, these institutions provide an environment conducive to augmenting students' capacity to engage in personal learning processes and broaden their knowledge base, allowing them to remain current and adapt to a society that increasingly requires advanced skills (Eid & Nuhu, 2011). To meet the challenges of swiftly changing societies and markets, universities must develop new skills (Deem et al., 2007; Robertson, 2005; Stukalina, 2008). Numerous researchers (Bratianu & Vătămănescu, 2016, 2017; Chalmers & Fuller, 2012; Nicolescu & Păun, 2009; Pelau, 2015) advocate for educational programs and pedagogical methods that embody the interdisciplinary nature of contemporary knowledge fields, are more rooted in real-world contexts, and foster creativity, problem-solving skills, and the capacity to communicate and exchange knowledge in a globally connected world that relies on interpersonal and cross-cultural communication.

In addition, research suggests that universities should implement practices that enable students to make independent life decisions. New educational practices are anticipated by Chalmers & Fuller (2012), Bratianu & Vătămănescu (2016), and Sense (2007). In the knowledge economy and in light of the global resurgence of neoliberalism, increasing economic viability through higher education is viewed as a solution for individuals who receive less assistance from welfare states or labor unions. Lazzarato (2009) argues that the forceful surge of neoliberalism, particularly since the end of the Cold War, has led to "the redistribution of risk and protection, leaving the individual increasingly at the mercy of the market" In the late 1980s, Margaret Thatcher's neoliberal policies strengthened the connection between higher education and the economy in the United Kingdom (Yorke, 2004), positioning education for employment

as a strategy to combat rising unemployment (Haasler, 2013). Employability has become a central concern, affecting individuals, organizations, and societies simultaneously (Harms & Brummel, 2013), and its importance is growing. Therefore, universities should equip students with knowledge and abilities that are more closely aligned with employer needs. Higher education should also provide opportunities for long-term career advancement within the context of continuous learning (Nilsson & Ripmeester, 2016; Vătămănescu et al., 2016). A curriculum that emphasizes critical thinking, deductive reasoning, and writing can better prepare students for careers that require oral and written communication skills as well as the ability to adapt to shifting cultural, technological, and political landscapes. According to numerous studies, universities are liable to market dynamics. Critically speaking, the university as an edu-business transforms higher education into an apprenticeship factory for the post-Fordist labor market (Barnett, 2012). According to Trow (2007), for instance, mass higher education is strongly linked to the knowledge economy and employability. As part of its 2020 strategy, the European Union has emphasized the need for a higher education system that is more closely aligned with the labor market (European Commission, 2010a). This framework assumes that effective knowledge transfer is encouraged, with educational methods helping students acquire general skills that will serve as foundations for their future careers (e.g., data, information, and knowledge collection and organization; problem-solving; creative and strategic thinking; learning to learn; etc.) (Bedford et al., 2016). According to Pelau et al. (2011), "evaluating how students perceive and apply this knowledge in their future professions is the optimal way to measure the quality of knowledge flow from teachers to

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students." This viewpoint is supported by additional researchers.

Nonetheless, the process of aligning higher education with market demands is ongoing, with some universities and nations having made substantial progress while others are still in the early phases. Consequently, it is essential for all stakeholders, including governments, university administrators, students, and employers, to recognize the crucial role that higher education plays not only in the labor market (economy) but also in the advancement of society as a whole.

Students' job expectations and the Demands of prospective employers

Numerous studies have indicated that learning is frequently undervalued (Lucal, 2014) due to the prevailing belief among students that the primary objective of education is to secure a diploma leading to employment opportunities (Tuchman, 2011). Moreover, in a context characterized by intensified competition within the educational service market (Pelau, 2015), universities are inclined to operate like corporations, with professors adopting entrepreneurial roles and students assuming the position of consumers who incur tuition expenses in exchange for anticipated future gains. Consequently, students are inclined to perceive their degrees as transactions in which their future income has been exchanged, creating conditions that are not conducive to fostering a liberated, critical mindset (Ross, 2012).

Researchers must study students' perceptions of employers' demands to discover how labor market expectations affect their anti-intellectual attitudes toward university offers. Despite the potential of college theory, research, writing, and critical evaluation practices to develop critical thinking, problem-solving, and employer-desired communication skills (as corroborated by studies like Brewer (2013) and Saad & Majid

(2014), which emphasize the importance and relevance of students' social (soft) skills in employment-related contexts), students' expectations continue to be anchored in the perceived authenticity of the As a result, the university's traditional role in promoting personal enrichment through culture (Symes, 1999) is often seen as outdated and irrelevant.

A mismatch between the skills gap and the current student population is compounded by a mismatch between the curricular design and the current student population. College students are no longer under the age of 18, are enrolled full-time, and are expected to complete their degree within four years. The majority of college students today are older and are attempting to balance work, family, and school while also seeking an education that is directly related to employment opportunities. Because of their obligations, many of these students are attending school part-time (National Center for Education Statistics, 2021), extending the time it takes to complete their degrees or completely abandoning their studies (Bombardieri, 2017). Furthermore, an Unbalanced undergraduate curriculum is designed to meet the needs of an industrial economy and an undergraduate curriculum is required to meet the needs of a knowledge economy in rapid transition (Selingo, 2013). It is less dependent on the production process and more dependent on intellectual capital in today's knowledge-based economy (Powell & Snellman, 2004). People must learn to adapt to a changing workplace that changes with the introduction of new technology and new information (Closing America's Skills Gap, 2014), and they must do so quickly. Employers require employees who can think critically, solve complex problems, analyze data, work in a team, and communicate effectively, in addition to those who have core foundational knowledge (Closing

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America's Skills Gap, 2014; Occupational Outlook Handbook, 2014).

According to the opinions of leaders in the business world, the regrettable reality is that graduates of postsecondary institutions lack the requisite abilities. According to one study (A Work in Progress, 2017), a "significant number of college graduates" lacked the competencies essential to execute their professions because they were unable to do tasks such as apply basic math, communicate well, read technical manuals, work well in teams, and solve intricate problems. Over two-thirds of business leaders surveyed in 2019 expressed disagreement with the statement that "higher education institutions in this country are graduating students with the skills and competencies that my business requires." Wilkie (2019).

Gibbons (1998) revealed that the transformation in the Organization of universities was characterized by two perquisites: the requirement for mutual partnerships and alliances; and the need to establish the quality of the services specifically with industry.

University-Industry Collaborations

Universities—industry collaboration (UIC) is defined as collaboration between any component of the higher education system and industry with the primary purpose of facilitating knowledge and technology exchange (Bekkers & Bodas Freitas, 2008; Siegel, Waldman, & Link, 2003). In recent years, university-industry partnerships and alliances have increased significantly. According to the most recent report by Natural Index (2017), university-industry partnerships nearly doubled between 2012 and 2016. In their research, Turk-Bicakci and Brint (2005) highlight university-industry partnerships as the dominant area for recognizing the dynamic role of academia in American settings. Numerous past works have concentrated on the best Collaboration between Academia and University. However, Turk-Bicakci and Brint argued that findings based on a high number of associations may not apply to conventional universities. Since universities involved in the relatively low-level partnership are qualitatively distinct from other top collaborated universities in several ways, highlighting these characteristics, such as the size of the control, investment in science & technology coupled with investment in value-added institutions has the greatest impact on university-industry ties and ultimately leads to the production of high-quality knowledge.

As a result, the persisting tendencies of global financial crises and other emerging crises. Thus, a theoretical form of degree no longer guarantees employment, and the market value of a degree appears to be diminishing. By 2025, many faculties were deemed inapplicable, resulting in the closure of courses, as a result of the decline of university offerings by 2020. Those that survived in a competitive environment, however, manifested themselves within the industry's requirements and primarily offered courses that meet those requirements.

On the other hand, new economies of scale support institutions struggling to attain a competitive advantage in the international market. As a consequence, Collaboration has become the primary tool for addressing institutional challenges (Demircioglu and Audretsch, 2019; Mendibil Telleria et al., 2002; Alonso et al., 2010; Mendibil Telleria et al., 2004). De Wit-de Vries et al. (2019), Magdaleno et al. (2011), and Borrelli et al. (1995) note that despite the importance and benefits of cooperation being acknowledged, many businesses still struggle to encourage and develop collaborations. There are increased efforts to facilitate collaborations between industry and organizations, and the literature identifies numerous types of collaborations.

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Enterprises and universities continue to face difficulty in identifying the most effective methods for establishing and maintaining Collaboration. Consequently, the importance of delineating specific standards and principles to govern the formation, implementation, and success of a corporation has increased.

Academic leadership's emphasis (Edmondson et al., 2012; Rahm et al., 2013) on long-tun strategic relationships with flexibility and a shared vision and plan to achieve the goal are crucial factors for a successful collaboration with Industry (Calder, 2007; Edmondson et al., 2012).

2.5.1: University-Industry Collaboration Best Practises

Several studies provide evidence in the existing literature of efforts to formulate best practices for successful university–industry partnerships from diverse perspectives (Edmondson et al., 2012; Tornatzky et al., 2002; Cyert and Goodman, 1997; Prigge, 2005; Greitzer et al., 2010; Sandberg et al., 2011). In order to surmount obstacles to university–industry partnerships and enhance their chances of success, administrative initiatives at universities are emphasized.

Academic administrators must maintain an environment that is conducive to the academic objectives of teaching, research, and service, preserves financial and academic integrity, permits technology transfer while maintaining public interest, and ensures objectivity and stability in support of university–industry collaborations (Zinser, 1985; Prigge, 2005).

Four 'policy goals' have been proposed to assist UIC in addressing some of its challenges: long-term growth of industrially relevant academic R&D resources and improvement of communication between the university and industry (de Wit-de Vries et al., 2019).

Long-term policy success is determined by its compatibility with the current academic system. Institutions can accomplish this by adopting a unified policy for dealing with conflicts of interest among their professors and organizations (Angell, 2004).

(Barbolla and Corredera, 2009; Rahm et al., 2013) From an industrial perspective, a healthy commitment that leads to ongoing interest in the project throughout its development phases and outcomes is a crucial component of a successful collaboration.

Barbolla and Corredera (2009) and Rahm et al. (2013) note that on the industrial side, a strong commitment that results in ongoing interest in the project during its development phases and in its outcomes is essential for establishing successful collaboration. It is anticipated to lead to substantial participation by industry personnel in the development of the research agenda and an evaluation of the research's progress and outcomes.

The corporate partner's confidence in the skill of the team's knowledge, as well as the corporate partner's strong desire in utilizing the project's outputs, are decisive elements for the success of a collaboration (Barbolla and Corredera, 2009). These characteristics have a significant impact on an industrial partner's commitment. This acknowledges the importance of the industry's participation, as well as the reality that academia and industries provide complementary parts to the combined effort (Awasthy et al., 2020).

Collaboration between universities and businesses is motivated by several factors. In the first place, the shift from a labor economy to a knowledge economy implies transformations in how industries compete. Forgoing in view, a knowledge economy demands novel ideas and innovation and academia may be acknowledged as valuable resources in this sense (Porter, 2003).

The second element is the tendency toward 'open innovation,' or corporations enlisting outside help instead of keeping all R&D operations in-house (Chesbough, 2003). Both

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discussed factors were examined in the Lambert Report, which investigated university-industry partnerships in the United Kingdom in 2004 (Lambert, 2004). The research emphasized the importance of collaborating with universities (see Table I below) and recommended that for UK businesses to remain competitive, they must acquire to absorb value from universities. According to the report, UK institutions excel in basic science and are frequently at the top of indicators such as articles published in renowned journals, but the industry to a large extent faces difficulty while generating value from this research. Specific suggestions were made:

i. Industry must learn how to capture value from university-generated new ideas.

ii. In the domain of knowledge transfer and management, a set of "best practices" for university-industry partnerships should be developed.

These recommendations are highlighted in tabular form as:

Table 1.1: Benefits to Companies that Collaborate with Universities

	Benefits			
	Increased range of goods and services	Opened new markets or increased market share	Improved quality of goods and services	Reduced unit labor costs
Enterprises that do not use universities as a partner	42%	40%	46%	33%
Enterprises which use universities as a partner	82%	81%	85%	65%

Source: Lambert Review (via Community Innovation Survey, (UK), DTI/ONS,2001.)

In addition, the exciting studies releveled six main areas are followed for efficient university-industry partnership in open innovation (Draghici et al., 2015):

i. Existence of a well-defined framework at the University that efficiently supports research projects.

ii. The existence of good project management, particularly in terms of communication and monitoring, is widely established.

iii. Participation of young scholars in the identification of economic environment features.

iv. Evolving new collaborations while backing new schemes and projects to create new prospects.

v. Organizational culture plays a crucial role in Academia's willingness to collaborate with Industry.

vi. The dissemination plan should be reinforced to share research and incorporate marketing components to induce new allies.

These directives reaffirm the need for a framework between business and academia, signifying that a standardized framework model of suitable practices and for active management of academic-industry collaborations, therefore, would provide tangible guidelines that could be exercised to imminent research projects established in collaboration.

Furthermore, following other existing literature, six important areas were identified for the construction of a model framework (Draghici et al., 2015) for effective university-industry collaboration in open innovation.

i. The Existence of a well-defined structure within the university that efficiently supports research projects.

ii. The existence of effective project management, particularly in terms of communication and monitoring, is widely established.

iii. Active participation of young scholars in recognizing the economic environment's features.

iv. Launching new prospects, new collaborations are being formed and existing projects are being supported.

v. Organizational culture plays a crucial role in universities' willingness to collaborate with industry.

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vi. To recruit new partners, the dissemination strategy should be reinforced to share research and incorporate marketing components.

These directives reaffirm the need for a framework between business and academia, stating that a standardized framework model of valuable practice for efficient management of academic-industry collaboration would offer real principles that could be used in collaborative research endeavors in the future (Ehrismann et al., 2015).

Universities' organizational culture is centered on following research directions based on discovery, with the goal of creating knowledge and educating the labor force. It is argued that public universities might be regarded as having a mission that benefits society. In terms of knowledge and expertise, industry / industrial partners, on the other hand, are on the opposite end of the spectrum since goods and services are produced. Instead of knowledge transfer, the main emphasis is on intellectual property (Banal-Estanol, 2010; Moraru et al., 2010).

METHODOLGY
Population

This study's population is comprised of small and medium-sized manufacturing companies (SMEs) located in the Hub industrial zone of Lasbela District and two industrial estates of Quetta City. Despite being the largest province in Pakistan by geographical area, Balochistan has the smallest population and is rich in natural resources. Comparatively, Balochistan has fewer industrial estates than other provinces. Hence, this study's information was gathered from industrial estates including Hub Industrial and Trading Estate, Marble City Gaddani, Sirki Industrial Estates Quetta, and Eastern Bypass Industrial Estates Quetta.

Sampling Strategy

In this qualitative research, a non-probability sampling method was employed as the primary strategy for selecting participants. This approach was particularly useful when conducting interviews with small and medium-sized enterprises (SMEs). Among the various non-probability sampling techniques, the convenience sampling method was utilized for data collection.

The sampling frame was unavailable (Wiesner, 2016), so researchers initially contacted potential participant firms by phone to verify whether they met the criteria to be considered SMEs. Data was ultimately collected from a total of fifteen SME manufacturers.

Gathering in-depth understanding from a large sample size can be challenging. Therefore, a smaller sample size was deliberately chosen to effectively address the research question and achieve the study's objectives (Patton, 2002). By opting for a limited number of participants, the research allows for "enhanced validity of the fine-grained" (Crouch & McKenna, 2006). This facilitates the researcher's ability to better understand the respondent's perspective within a natural context, thus providing more accurate and valuable insights.

Furthermore, a smaller sample size enables the researcher to focus on the quality and depth of information obtained from each participant, allowing for more meaningful data analysis. This, in turn, can lead to more comprehensive findings and conclusions, ultimately contributing to the development of valuable recommendations and insights for the target population of SMEs.

Data Collection Strategy

The data was collected from various sampled industries. Interviews were performed with executives from indigenous SMEs mainly located in HUB and Quetta Industrial Zones. This series of interviews sought to extract the

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role and status of higher education from the perspectives of business leaders and to explore whether the existing role and reform are in line with supporting the human resource demand from the industry sector. Thus, this collection of interviews illustrated the differing perspectives of local business organizations towards the reform of higher education in less-developed nations likewise Pakistan and highlighted the roadmap in promoting a based economy. The data was collected from major Balochistan cities, including Hub, Quetta, and Gaddani.

RESULTS
Perceptions of Executives from Selected Industries Regarding the Knowledge-Based Economy

In this section qualitative analysis of the Perceptions of the Knowledge-Based Economy in Executives from Selected Industries and practices is presented. The process of developing the keywords that were used to extract interview segments from the Executives of SMEs involved first compiling a comprehensive list of concepts that were discovered to be linked with the knowledge-based economy. Hence, categories were developed for the interview segments, these were sub-categorized according to linguistic characteristics to come up with sub-distinct terms that were thought to encompass the majority of the references that would be brought up in everyday business discourse. Table 1.2 is the frequency table for qualitative analysis. In the following table, there are major themes emerged in the results including:

Table 1.2 The Opinions of SMEs Regarding the Knowledge Economy

S.No	Theme	Responses	Small firms	Medium-size firms
1	*Creation of Knowledge*			
	a.	Knowledge is a source of competitive advantage	1	5
	b.	The wealth of knowledge is concentrated in very few people	2	2
	c.	There is no system culture and network of solid knowledge sharing.	3	6
	d.	There is no System of Solid Intellectual Rights	2	4
	e.	Experience and Use of Knowledge	2	3
	f.	HEIs support for R&D	4	5
	g.	Innovation and Value addition	4	7
	h.	Role and Responsibilities of SMEDA	2	3
	i.	Do not know	3	2
	j.	Not applicable	0	0
2	*Industrial Competitiveness and Technological Advancement*			
	a.	Progress in Information Systems Technologies	0	4
	b.	Technology is a Threat and Challenge	2	3
	c.	Lack of government financing and incentives	2	2
	d.	Value of Technology	3	0
	e.	Technology is uncontrollable and hard to manage it.	5	7
	f.	Adaptation of Modern Technologies	2	3
	g.	Highly Qualified and Skilled Workers	5	6
	h.	Adequate Government Support	3	5
	i.	Competitiveness and Higher Education	5	6
	j.	Don't know	0	0
	k.	Not applicable	5	5
3	*Partnership and Collaboration*			
	a.	Proactive Role of Universities	3	4
	b.	The creation of a knowledge economy is not the main priority of the Government	4	3
	c.	Establishment of Separate Industry-University and Govt. linkage Cell	3	4
	d.	Higher Education Curriculum GAP	2	4
	e.	Industries are not in the Academic Bodies of the University	0	4
	f.	Knowledge Creation and Social Capital	2	2
	g.	Don't know	0	3
	h.	Not applicable	6	1

Theme one
Creation of Knowledge

Table 1.2 provides deep insight into how business practitioners and senior executives from a wide range of industries and firm sizes perceive the knowledge economy and the influence or effect of characteristics of the knowledge-based economy on their respective businesses. In other words, "What does it truly mean for senior business managers to have an economy built on knowledge?" According to Table 1.2 five medium-size and three small-size firms are of the view that there is a favorable association between knowledge and a competitive advantage.

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According to the managers of motorcycle manufacturing and food processing firms:

"Integrating the specific knowledge and expertise of individual employees is one of the factors that contribute to a firm achieving a sustained competitive advantage. Integration is necessary for knowledge since the process of organization causes it to emerge from the individual brains of those involved. Knowledge integration entails a variety of practices, such as merging the expertise of a wide range of workers to increase profits and fusing one's personal experiences with those of one's professional life to render strategy more dynamic".

It is believed that there is a severe deficiency in performance management system implementation in Pakistani small and medium-sized enterprises (PMS). SMEs are less competitive and efficient due to their lack of PMS adoption. In addition, they discovered that SMEs do not implement human resource policies during recruiting, instead opting for conventional techniques of selection. According to the majority of small and medium-sized enterprises (SMEs)

"Pakistan's good markets face significant obstacles, such as entry barriers and the fear of accessing and doing effectively on overseas markets. Due to a lack of competencies, SMEs are unable to compete on a national and global scale."

From the perspective of the majority of SME executives, there is neither a culture nor a structure in place for the solid exchange of knowledge. The companies interviewed state that they attend seminars and industry conferences. More than a quarter of them claim to attend specialized conferences on specific subjects, but they are not a source of fresh knowledge for the company. According to opinions expressed by nine representatives of small and medium-sized businesses as cited below:

"In Pakistan, there are no such [seminars and conferences and training sessions]. Although I've been involved in a few, not helpful for acquiring new information or knowledge."

During interviews with administrators of small and medium-sized enterprises, it was discovered that their day-to-day actions are based on their own experiences (obtained numerous times through the trial-error-success procedure).

Internalization and use of knowledge take place because of comments made on the experiences of other coworkers and through informal discussions. These three factors have all been subjected to a phase of knowledge osmosis among coworkers who have more experience and who are very familiar with the company's facilities.

Furthermore, the development of small and medium-sized businesses is the responsibility of a national institution in Pakistan called the "Small and Medium Enterprises Development Authority" (SMEDA). The primary task that falls within this authority's purview is the formulation and conception of policies as well as the establishment of facilities for entrepreneurs. In addition to that, this government organization also provided training for the business owners. Nonetheless, a few small enterprises (02) and medium-sized firms (03) expressed concerns regarding the functions and responsibilities of SMEDA, particularly its role in financing Pakistan's socioeconomic stability. As indicated:

"In Pakistan, Small and Medium-Sized Enterprises (SME) do not have adequate access to finance and valid information or knowledge for sustainability. In a significant way, SMEDA fails to provide support for gaining access to and sharing reliable knowledge, as well as for formulating and devising innovative policies in connection with the promotion of a knowledge-based economy."

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Currently, Pakistani law still states that the government holds ownership and rights to the outcomes of government-sponsored cooperative research. If industrial firms cannot own intellectual property rights, they may lose their competitive advantage.

Theme Two
Industrial Competitiveness and Technological Advancement

Most of the small and medium size enterprises explore the appeal of the economic narratives of technological change and competitiveness, that constructs knowledge-based economy with special reference to higher education.

It has been argued that there are several elements, some of which may be categorized as technical factors. For the people who were interviewed, the use of ISTs should result in quality choices that enable them to take part in the formation of an organizational structure that is more appealing. The most important takeaways from these interviews are the amount of time saved, the company's image, the level of data security, the improvements in results, the ease of use, the data accessibility, the quality of decision-making, the job compatibility, the reasonable cost of acquisition, the turnover/cost ratio, the high cost of maintenance, and the confidentiality of the data. In light of these technical considerations, several of the managers of SMEs were quoted as saying the following:

"We must set up an information system that is adequate to our needs".
"If given the choice, I'd rather use my time wisely on a system that gives me accurate data upon which to base sound judgments."

In addition, the interviewees provided several elements that could be classified as technological factors in response to the question: What are the major trends, challenges and uncertainties currently affecting your industry There are highlighted as:

According to small-size enterprises (02) and medium-sized firms (03), technology is a threat while staged as the most dominant factor that poses the greatest challenge for their organization.

"We don't know how to deal with technology, which is a big problem. A technological threat is one of the most common types of crises the industry is facing in Pakistan, which is caused by how people use science and technology. Incompetence in industries happens when technology gets complicated and connected, and something goes wrong with the whole system."

The adaptive behavior of small and medium-sized enterprises is their capacity to adjust to their environment. This capacity necessitates that the SME comprehend their surroundings and be able to adapt to them. It might be essential for their sustainability and success.

The responses highlighted that the existing culture of industries is great extent fails to adopt modern technology and there is no motivational environment to accept day-to-day changes.

"We have a difficult time keeping up with the rapid evolution of technology, even though we believe we are adept at doing so."

It has also been learned from several SME representatives that classical thoughts and practices are the greatest obstacles to companies adopting modern and sophisticated technology, as noted:

"The new ICTs are less popular among the elderly staff. They often represent opposition to change." (Small Firms (02) and Medium Size Firms (03))

"The Small and Medium-Sized Enterprise (SME) sector is stuck in an old way of thinking that is mostly focused on meeting daily order demands instead of focusing on technological changes that could help them cut costs and increase productivity. That's the biggest problem right now that needs to be

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solved. (Small Firms (01) and Medium Size Firms (04))."

The representatives of SMEs interviewed expressed their concerns and fear about using technology, in general, owing to a lack of understanding or confidence, as well as perceived risks associated with technical equipment.

"Technology is hard to handle because it is always changing, and sometimes in ways that are hard to predict. Technology management is a set of policies and procedures that use technology to build, keep, and improve a company's competitive advantage based on its unique knowledge and experience."

Public investment in appropriate technical and general education, as well as the development of public R&D activities, would go a long way toward providing the kind of government backing necessary for a competitiveness plan to succeed.

When "competitiveness gaps" are found, there are specific policies that can be used to close the gaps. One of these is articulating and remaking knowledge to make more valuable products and services. Higher education is seen as a key place for making, spreading and transferring knowledge in this way.

Theme Three
Partnership and Collaboration

Participants agreed that universities should take the initiative to profit from scientific discoveries and research findings. They need to promote their research outputs and show how their research may be used in industry. They need to learn more about the needs of local businesses and end users first. For universities, this means coordinating their research in the line of collaborative actions for promoting a knowledge-based economy.

The trust, shared obligations, common understanding, access to information, and opportunities that make up social capital are all valuable assets. To ensure the success of the collaborative enterprise, all stakeholders involved must be able to trust one another.

According to Table 1.2 four medium-size and two small firms expressed deep concerns about the curriculum thought in Higher Education Institutions /Universities. They further viewed that graduates with higher qualifications are not in line with their working environment. The HEC and universities should implement remedial measures in the form of specialized training and courses to better prepare students for the actual world of employment.

"University-industry links must be established to determine the requirements of the industry sector and implement those requirements into the university's curriculum."

Collaborations between universities and businesses can take many forms, including the establishment of joint research centers, research contracts, shared publications, consulting agreements, and student training or secondments in industry. Five medium size companies concluded that it is the government's responsibility to bridge the knowledge gap that exists between universities and businesses. However, these activities require an initial beginning point where both academic and industry partners are willing to engage in joint projects. Whereas the importance of social capital assets such as trust, morality, cooperation, and commitment are extremely significant in the development of the knowledge-based economy.

On the other hand, several CEOs working for small and medium-sized businesses have commented that social capital activities are essential even within companies.

Every department and division in a company has its own culture and language. When comparing the perspectives of the product development engineers and the marketing department, it becomes clear that each group has a unique understanding of the company's

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product developments. Collaboration between product development, design, marketing, service, and management is essential for a product's success in the marketplace. The difficulty for a business then lies in coordinating the various communities of practice and bringing them into harmony with one another. In this case, social capital is important.

On the other hand, the majority of SMEs, which consisted of three small firms and five medium-size firms, were dissatisfied with the existing partnerships between industry and university:

"How successfully we create goods and come up with concepts that people want will determine our country's future. Industries and universities cooperate because active academic advancement can only happen in a thriving industrial community, which relies on university production for a substantial portion of its workforce. Universities and corporations show a wide range of apathy. There is also a lack of comprehension of each other's goals and intentions, and occasionally even antagonism."

CONCLUSION AND POLICY IMPLICATIONS

This study explored the perceptions of SMEs regarding the knowledge economy in the context of higher education. From the above analysis, it may be concluded that the perceptions of SMEs regarding the knowledge-based economy in the context of higher education are complex and varied. While many SMEs recognize the importance of knowledge and innovation in driving economic growth, they also face significant challenges in accessing and using knowledge. Executives from various industries tend to perceive higher education as a critical driver of the knowledge-based economy and also have a crucial role to play in developing the skills and knowledge needed for the knowledge-based economy, but there is also a

need for greater collaboration and engagement between higher education and SMEs to ensure that graduates are equipped with the skills and knowledge needed to drive innovation and growth in SMEs. They believe that educational institutions should focus on developing specialized skills, fostering lifelong learning, encouraging interdisciplinary education, and promoting entrepreneurship and innovation. Additionally, executives often emphasize the importance of developing soft skills and fostering collaborations between academia and industry.

The present situation has limitations. First, data were collected only from the manufacturing sector of Balochistan's small and medium-sized businesses (SMEs), disregarding the service sector. To expand the scope of the study and enhance the applicability of the findings, data from both the manufacturing and service sectors could be collected.

Second, the research was conducted exclusively in Balochistan, which has fewer industrial estates than other provinces in Pakistan. Future research could be conducted in the main industrial estates of all Pakistani provinces, encompassing both the manufacturing and service sectors of SMEs, to increase the generalizability of the data.

Thirdly, data were collected from the administrators who presented the organization's sustainability practices. To improve the accuracy of the data, business owners and CEOs can present their sustainability practices with greater conviction.

Fourth, Due to time and financial constraints, only fifteen organizations' data were collected. To improve the reliability and validity of the research, data can be collected from a significant number of industrial estates.

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