

Factors Affecting Career Choice of Graduates in Pakistan

Kanwal Syeda

PhD Scholar, Department of Public Administration,
Shah Abdul Latif University, Khairpur Mirs, Sindh

Email: kanwal@bbsutsd.edu.pk

Prof Dr Syed Muneer Ahmed Shah

Shah Abdul Latif University, Khairpur Mirs, Sindh

Email: muneer.shah@salu.edu.pk

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Abstract

This study examines the factors influencing career choices among graduates in Sindh, Pakistan, focusing on the interplay of academic activities, environmental factors, job opportunities, and personality traits. The research aims to provide insights into how these factors shape career decision-making in a collectivist society, contributing to the theoretical understanding and practical application of career development frameworks. Using mixed methods, the study combines quantitative data with qualitative insights collected from 391 respondents using structured questionnaires. Key techniques used for the analysis were Structural Equation Modeling (SEM) and exploratory factor analysis, which were carried out through SPSS and SmartPLS tools; the results show that academic activities were the most important determinant of career-related choices, supported by environmental variables. While job opportunities and personality make a marginal contribution. Gender disparities and regional inequities further complicate the career decision-making process, with rural graduates and women facing unique barriers to accessing education and employment opportunities.

Keywords: Graduate, Career Development Career Choice, Career Counselling, Academic Activities, Environmental Factor

Introduction

1.1 Background of the Study

Career choice is a defining decision that profoundly impacts individuals' lives, shaping their personal, economic, and social trajectories. Pakistan is a part of the world where there exists an intricate range of forces affecting what career prospects graduates pursue or avoid; where structural and cultural factors combine, often alongside socioeconomic factors, to complicate the search for optimal work. The barriers are a serious matter because the choices that can be made in our career will affect us later as well such as depletion of interest, financial security, and other aspects of

life, and many Pakistani graduates lack opportunities due to societal hedges. Although a well-fitted vocation provides many benefits (and befits), poor fit results in job dissatisfaction, under-performance and little or no progress up the career ladder (Gecikli, 2002).

Environment is one of the factors that influence career choice. Such professions like medical, engineering and government services are highly mandated in the Pakistani society. Therefore, postgraduates are subjected to immense pressure by their near ones (Ajufu, 2013; Ibrahim et al., 2014). Family expectations constrain especially greatly, since parents often consider some professions as safer and more respectable and thus direct their children toward types of target fields that may not suit the children's individual interests or capabilities (Guerra & Braungart-Rieker, 1999; Mickelson & Velasco, 1998). As a result, many Pakistani graduates directed away from the arts, social sciences or vocational trades they may actually wish to pursue and/or possess the skills. Concerned about their children's future, many parents offer guidance but often unknowingly limit the paths available to them by pressuring them to pursue stricter career choices which further impacts their personal development.

The external job market subject to many economic forces that often make career paths seem insurmountable. Due to high unemployment rate, graduates of Pakistan strive for secure future which often comes at the cost of personal satisfaction (Pasha & Siddiqui, 2020). Due to the limited job market situation in the country, a large number of students have no option but to opt for practical decisions by choosing such fields that ensure their employment rather than following according to what they dream of (Brown et al., 2014; Zeb et al., 2020). However, a lack of alignment between chosen careers and personal interests results in dissatisfaction, graduates stuck doing jobs they neither enjoy nor benefit from any proficiently.

Career choices are also markedly influenced by educational experiences and exposure to career guidance. The education system in Pakistan considers theoretical knowledge more important than practical skills. Therefore, students are not well equipped to join industry or have any knowledge of the warring job opportunities available (Fouad et al., 2009; Weng & McElroy, 2010). The absence of internships, career counseling, and practical exposure leaves students without realistic access to the experiences needed to make informed career decisions (Xie et al., 2013). The difference gets larger due to the limited supply of structured career guidance programs in Pakistani universities, and as a result, the students often have to decide about their careers independently with minimum professional assistance (Afaq Ahmed et al., 2017).

There are also gender disparities that make career decision-making in Pakistan apart from trends worldwide. Although commendable progress has been made in gender equity of education and employment, there are still considerable obstacles to career opportunities for women in Pakistan.

Even after attaining educational qualifications, women tend to lag behind in terms of work-force participation due to societal norms and expectations (Alam et al., 2021). The gendered lens of career roles thus makes it even more difficult for Pakistani graduates, especially women, to aspire to unconventional and/or high-demanding careers. However, attitudes in Pakistan about this kind of career decision-making are slowly changing.

Literature review

2.1 Career Choice and Development

Numerous research highlight that in traditional value-based societies like Pakistan, family interest rather than individual choice often guides career decision (Mickelson & Velasco, 1998; Mudhovozi & Chireshe, 2012). Some professions, mainly medicine, engineering and law are often perceived to be socially distinguished and in demand (Ibrahim et al., 2014) leading parents to judge their offspring into those directions regardless of personal preferences. This trend can be limiting in that it holds young adults back from pursuing fields that are better suited for their interests and natural abilities, leading to a discrepancy between personal competence and professional role (Gokuladas, 2010). Similarly, Kazi and Akhlaq (2017) reported that cultural norms and the expectations to meet family aspirations in Pakistan force graduates to take on socially accepted careers later as profession paths are seen from societal lenses related to superior fields of work. Though this kind of pressure might create a sense of financial security or social status, people whose passions do not align with these domains will find it most unappealing and feel empty inside.

Pakistan's labor market conditions add another layer of complexity by constraining the breadth of potential pathways. With the high unemployment rate of the country, most of the graduates tend to take on careers which are less personally satisfying and more economically stable; they prefer this option because it rewards them with a better-paying job (Fu, 2019). Studies identify job opportunity and economic constraints as leading factors that deter students and graduates from pursuing their career path but rather tend to the professions assuring a stable income (Ahmed et al., 2022; Zeb et al., 2020). Now a days, a lot of people are forced to choose jobs that provide instant cash instead of what they want to become. This leads to a situation in which the job market for Pakistan finds candidates oversupplied in certain fields whilst other sectors that are likely more yielding often do not have enough staff. Such mismatch between the demand of laborers and distribution of workforce restricts career diversity hampering Bangladesh's potential to respond flexibly towards the global changes in economy or demand for labor (Islam et al., 2021).

In Pakistan, personality traits potential to influence career choice is lost among societal pressures. An instance might be a graduate who is creative, which puts them towards art fields, but given that their family

values traditional career paths that generate higher incomes they may push the student away from those potential careers (Roberts et al., 2003). As a result, graduates frequently find themselves in professions that do not match their personality traits and this leads to dissatisfaction (which can generate no motivation towards self-improvement or growth) (Oyebanji & Aliyu, 2020).

Educational experiences are indeed having a stride role in career development; however, this is underutilized phenomena in several developing countries including Pakistan as well. Ensuring students develop an appreciation of the ground realities of various professions and other aspects related to career decisions require guidance through career counseling, internships, and practical training. Research suggests that these programs can give students exposure to various fields and serve as an early opportunity for them to experience a potential career thus making a concrete decision about what classes/majors/careers they would want to pursue (Fouad et al., 2009). However, most of the Pakistani universities failed to provide structured career guidance that is essential to guide students making crucial career decisions (Weng & McElroy, 2010). In the absence of career development resources, students often look to family advice or peer pressure which may only partially match their unique strengths and professional needs (Xie et al., 2013). The absence of systematic career guidance could lead to unrealized career capabilities as the graduate's step into various fields without awareness of expectations, opportunities, and skill requirements.

Career choices and the aspirations behind them are also influenced by exposure to how much is touted through media and society's eyes as success. In Pakistan the media has created an image of high status with some professions making the profession seem like a perfect career choice (Otto, 2000). Certain professions like medicine, engineering and business are often glorified so much that many graduates pursue these streams unaware of the other enabling careers which suit better to their skillsets. Portrayals such as these affect students' guidelines about success and can lead to career choices made by prestige rather than personal fit or genuine interest (Mudhovozi & Chireshe, 2012). While these societal preferences make it difficult for the genuinely committed and talented in these fields to stand out from the crowd (Pasha & Siddiqui, 2020) by fostering intra-occupational competition.

These issues regarding career not only highlight the challenges but also require a way in terms of structural changes in education and career guidance lines to be drawn at a feature level in Pakistan. This implies the need for a dedicated support system consisting of counselling, internships and skills-based activities that can help students make better informed choices (Arnold et al., 1998). Such resources provide a connection between education and the workforce, making it easier for students to move

seamlessly from academic learning experiences into applied career development (Ajufo, 2013). Also, providing career-focused workshops and mentorship programs in educational institutions could bridge the gap between factors required by employers and the skills or expertise of professionals. Programs like these would help students identify and understand many career pathways early in their training, giving them the opportunity to select paths based on individual skills and alignment with professional goals (Iroaganachi et al., 2021)

Career choice framework must also consider particular cultural, economic and institutional challenges of Pakistani Graduates. In explaining career choice Borchert (2002) argues that it needs to provide holistic explanation that comprises on both individual and environmental variables. This becomes a talking point in Pakistan specifically where graduates constantly having to deal with the friction between their own desire, financial constraints and immense pressures from friends and family. Investigating culturally-specific perspectives of the career decision-making process could inform reforms that better meet these challenges whilst enabling graduates to balance personal desires with the realities of viable employment pathways (Nguyen & Duong, 2022).

2.3 Environmental Influences on Career Choice

Career choices are influenced greatly by all the environmental factors surrounding an individual, especially in contexts where social, familial and cultural dynamics heavily influence personal decision making. Numerous research suggest that it is external variables and not internal choices or strengths, which have a big influence on career decisions in many countries. Such impact is more seen in Pakistan where family expectations, culture, economic standard and Education resources act as a combined force to limits the career paths of the graduates and sometimes push them towards a field which may not be in accordance with their interest (Guerra & Braungart-Rieker, 1999; Mickelson & Velasco, 1998).

Family expectations are among the most impactful environmental factors influencing career choice. Pakistan is a collectivist society where family opinions and preferences are not only significant in determining the education and career paths of individuals, but also have important implications for career success which is perceived predominantly as an indicator of family pride and status in society (Ahmed et al., 2022). In Pakistan, most families perceive higher professions like medicine and engineering to be prestigious due to their stable and financially rewarding nature leading parents to push their children towards these fields regardless of whether this is aligned with the child's interests or not (Pasha & Siddiqui, 2020). Such pressure restricts the freedom of individuals to choose a career according to their own capabilities or liking and they tend instead to opt for family expectations. Some studies suggest that this focus on family pride

and community recognition frequently compels individuals into professional occupations that are attended with a great deal of social prestige without concern for their natural aptitude (Ahmed et al., 2022).

Environmental Influences on Career Choices Centre-based and environmental influences like family expectations, cultural socialization processes, economic conditions, educational resources (measures to prepare for a future career), media portrayals (like gender discrepancy), labor market pragmatics, as well as cultural belief in success of certain disciplines over others are specifically quite relevant aspects that affect career decisions among the Pakistani graduates. Expand full text Such external factors can strongly restrict or guide the options of individuals, often resulting in careers that are more socially accepted or economically secure but may not be fulfilling. These environmental influences serve to give stability and support, but at the same time, can limit free will in particular regarding career choice when societal or familial expectations do not match with personal interests or abilities. The current study intends to explore these environmental aspects in detail for personality career decision within the unique socio-cultural setting of Pakistan where individual career autonomy is usually embedded with collective values and societal expectations.

2.4 Job Opportunities and Market Conditions

Job opportunities and market conditions play a significant role in shaping career choices, especially in regions with limited employment options and high economic uncertainty. In Pakistan, economic considerations prevail over personal interests or intrinsic motivation, with the state of job market along with availability of stable employment being largest influencing factors in their post-graduation career choices (Fu, 2019). Graduates tend to pursue careers they know provide them with reliable income and security, but while this approach to career choice is practical, it can have a considerable impact on personal fulfillment and long-term professional success.

Unemployment in Pakistan is high and it is one of the major factors affecting choice of career. This leaves students and graduates with painful choices once they enter the workforce, where competition for a handful of desirable jobs is increasingly fierce. This competitive scenario has compelled the graduates to focus on careers which are commonly reputed to ensure stability and are need-based, i.e. medicine, engineering, finance and IT - fields filling not only a high demand for them but also promising better employability (Islam et al., 2021). While these industries receive thousands of applications every year, other fields especially in the humanities and social sciences often struggle to garner attention despite providing rewarding livelihood opportunities. Such a market-driven decision has led to an oversupply in certain industries, consequently

resulting in millions of graduates working areas that do not align with their interests and/or competencies, but instead offer greater employment security (Zeb et al., 2020).

In Pakistan, these trends have not become fully entrenched yet, and most of the jobs here are still from global marketplaces. Remote work has made it possible for people in foreign lands to search a wider variety of jobs, but digital infrastructure and access to stable internet are limited for many areas across Pakistan which limits graduates from entering the international job market. Furthermore, culture and tradition still play a deciding role in the selection of careers since the remote job may provide less stability or status (Ibrahim et al., 2014). As a result, many Pakistani graduates are unable to take advantage of the remote work opportunities that would allow them to pursue careers better suited to their talents (even if those careers do not exist locally).

2.5 Personality Traits and Career Preferences

The idea of personality traits rests on the assumption that people have consistent characteristics, such as openness, conscientiousness, extraversion, agreeableness and emotional stability relatively stable tendencies to react in a certain way based on their preferences and behavior with others. The Big Five personality traits have been the subject of a wide range of research on its relationship with career preference. Because these personality dimensions define core traits in human personality and possibly point to appropriateness (or lack thereof) for various careers (Costa & McCrae, 1992). For example, people who are high in openness to experience tend to be more interested in creative or adventurous occupations such as art or science that enable them to participate in novelty and discover new ideas. With that preference being consistent with Holland's Artistic and Investigative personality types, openness is one of the major motivators for job satisfaction (J. Greenberg & Baron, 2008).

Personality influences even career adaptability, which is how well an individual can flex in response to changing job demands and work environments. In a constantly evolving job market and the current trends indicate this will be an even more salient feature of labor markets going forward as we continually see technological developments impacting work career adaptability may thus be increasingly critical to successful career outcomes. Past studies found associations between greater adaptability and specific personality characteristics, for example, openness and emotional stability are characteristic of more adaptable persons as they tend to welcome new experiences in life as well as cope with transitions (Savickas, 2013). In Pakistan, where the economy and the job market are often a challenging playing ground for many individuals as they have to switch careers quite frequently with changing landscapes of jobs if career paths are made beneficial by such personality traits that help characters in stirring

adaptability, then it works for them to render lifelong resilience against any disruption or adaptation requirement without losing their satisfaction.

People see high or low values in distinct personality traits, and cultural attitudes towards specific types of traits can also play a role in how career preferences are shaped. Because collectivist cultures prioritize social harmony and cohesion, they are more likely to endorse prosocial traits, such as agreeableness and conscientiousness that can lead individuals to work together rather than individualistic traits, such as assertiveness or creativity (Iroaganachi et al., 2021). This cultural predilection can help direct people into professions where these traits are more prized, thereby stifling the actualization of underemphasized traits like agreeableness or extraversion. Such a person with high creativity will not chase career in arts and media if the culture she lives considers this to be less stable among all careers available. Consequently, the aspect of personality that might steer one towards a satisfying career is overcome by cultural pressures that push one into more socially acceptable lines of work.

2.6 Role of Educational Activities in Career Decision-Making

Career decision-making is an important transition between academic knowledge and career experience, for which educational activities are crucial. Careers counseling, internships, mentorship programs and workshops are instrumental in giving students a glimpse of future careers so that they learn skills needed for the jobs they hope to get and ultimately can make informed career choices. On the other hand, students in Pakistan have limited access to comprehensive career information through experiential learning opportunities and are often ill-prepared for the job market, thereby limiting their chances of entering college with a career that interests or suits them (Ahmed et al., 2022; Fouad et al., 2009).

Educational institutions play an important role in career exploration and decision making because schools and universities can create a culture around career aspirational behavior. Institutions that understand the importance of career services (counseling, internships, mentorship, skill-building) allow students to make informed and empowered choices related to careers. Unfortunately, most of the educational institutions in Pakistan do not have a dedicated career development department, especially when it comes to secondary education. The lack of institutional support implies that students must undertake the process of making career decisions without guidance, resulting in choices based on recency or affect rather than self-assessment and exploration (Islam et al., 2021). Moreover, this lack of institutional support leads to a mismatch between the skills taught in these institutions and what is required by employers, as students are not adequately prepared for success in their careers.

Career decision-making comes from educational activities, which helps students acquire the skills and experiences necessary to explore interests of a possible career path. They give students exposure to knowledge and equip them with necessary skills through career counselling, internships, mentorship, workshops and exposure of other diverse fields for optimal path for the future that align with their skills. Yet this access can be limited in Pakistan, inhibiting students' career choice behaviors. Often, they end up following social pressures or family expectations instead of more promising avenues aligned with their abilities. By ensuring that more Pakistani students have access to educational activities through which they can explore all of their options, this gap may be closed while generating a satisfied and skilled workforce. To better understand the role of educational activities in these decisions, this study adds more detail to the framework by considering how enhanced access to these resources could provide value for students throughout Pakistan, but especially regions where career support is limited.

2.8 Conceptual Framework

This framework suggests that explains the interdependencies of these four categories of factors affecting and determining career choices of Pakistani graduates. The strongest suitable high criteria such as environmental influences and market conditions apply many pressures where career choices follow social norms or economic stability. On the other hand, personality traits and educational activities act as a counterweight when appropriately enabled through family resources and opportunities for exposure individuals direct their choices to be consistent with personal strengths and interests. It exemplifies the multifaceted and often conflicting powers of influence that consider career choice and points to a better career outcome when both subjective factors lead us to pursue our aspirations where external factors support them.

Research Methodology

In this study adopted a deductive research approach were started with theoretical frameworks leading to hypotheses. In this approach, basic propositions of existing theories, e.g. Holland's Theory of Career Choice and Social Cognitive Career Theory (Holland, 1985; Lent et al., 1994), are used as a basis for hypothesis formation. The hypotheses are subsequently tested by collecting data and analyzing them. The use of deduction, which makes it a suitable approach for this study because the aim is to test a hypothesis when working with knowledge and confirming or disapproving known theories are needed within career decisions' context among Pakistani graduates.

A quantitative research approach is deemed appropriate because it needs to investigate the relationships between various variables in a systematic way. Quantitative approaches are accurate and reliable measures

of the various determinants affecting career choices, or establish causality where applicable (Creswell & Creswell, 2017). In this study use statistical techniques (regression analysis and SEM) to determine the strength and direction of observed relationships between independent/dependent variables. This method provides data-driven evidence to understand the factors behind graduate decision-making.

3.5 Population and Sampling

(Krejcie & Morgan, 1970) table was used to determine the sample size for the study with its high acceptability in calculating an appropriate sample size for a given population. According to this methodology, 600 questionnaires were distributed to the graduates of various universities in Sindh. This sample size was considered large enough to provide a statistically valid basis for hypothesis testing, and ensure that a broad range of responses were captured. Out of total distributed questionnaires, 391 questionnaires were returned achieving an exceptional response rate by 85%. This is high response which leads the interest of the target population and increases the trustfulness of data collected.

Using Krejcie & Morgan (1970) table, it ensures that the sample size is not too small-to- make study under power to some extent nor too large - will lead to wastage. With a sample size of 391 valid responses, it is considered an appropriate data set for performing advanced statistical analyses (e.g. regression and structural equation modeling (SEM)) which require large samples in order to create significant results with dependable outputs (Hair et al., 2014). The sample size has been almost masterfully calibrated to match event frequency model drop-out heuristics so one can speculate that the study will be both reliable and generalizable.

Although random sampling reduces selection bias, it does not mean that non-response bias is absent the respondents might be systematically different from those who did not respond (and indeed they often are). In order to overcome this problem, the study incorporated making the questionnaire more user-friendly and enjoyable to elicit responses. Moreover, with a response rate of 85%, concerns regarding non-response bias are lessened as the sample is likely to be fairly representative of the target population.

The targeted population and sampling strategy used in this study show a careful planning of data collection process. The representativeness and generalizability of results is assured by targeting graduates from the universities located in Sindh using the method of random sampling. Using Krejcie & Morgan (1970) table to determine the sample size introduces additional rigor to the methodology, illustrating that the study is based on underlying statistical proficiencies to yield robust results with meaning. It demonstrates that the sampling framework was carefully designed and followed, thus ensuring the validity and reliability of research.

3.6 Data Collection

The data collection process in this study has been approached rigorously based on the purpose of the present research as well as the methodological alignment. The use of a structured questionnaire allows for the organized collection of primary data, and the literature review supplements this data by providing more context to it through existing research. The integration of both methods allows the paper to offer a mix of solid empirical analysis backed up by theoretical discussion, finding relevant determinants for why graduates in Pakistan choose their career paths.

3.7 Survey Instrument

The survey instrument is a carefully drafted tool that fuses theory and validation. This study used a 5-point Likert scale using validated measurement items, and performed reliability testing (Cronbach's alpha) and exploratory factor analysis to ensure the validity of its primary data collection process. It serves as an indispensable tool to fulfill the goals of the study, providing solid data upon which to perform a deeper analysis on deciding factors and motivations with regard to career choices among graduates across Pakistan.

3.8 Data Analysis

The data analysis is more holistic and rigorous through the combined use of SPSS and SmartPLS. SPSS is utilized for descriptive and preliminary reliability analyses, while SmartPLS is employed to perform further tests such as validity tests and structural equation modelling (SEM). These combine the strengths of both tools and ensure that the study meets quantitative research standards.

The process of data analysis in this study is methodologically sound and strategically aligned to ensure the research objectives fulfilled. The results that come through analysis i.e., descriptive statistics, reliability and validity tests followed by SEM, provide a solid ground for meaningful conclusions relating to factors affecting career choices of Pakistani graduates. Such a systematic approach guarantees that the findings are statistically valid as well as practically relevant for stakeholders interested in facilitating career guidance and decision-making processes.

3.10 Limitations and Delimitations

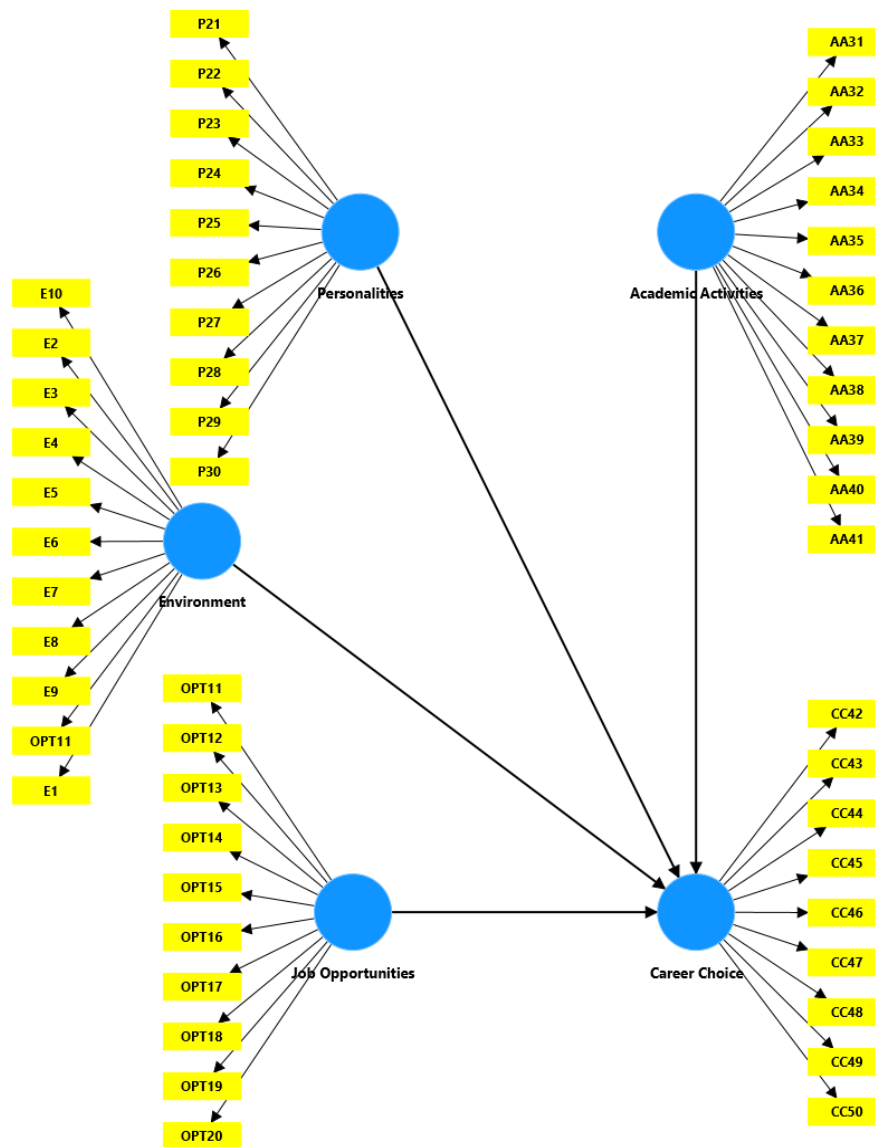
Despite some limitations which may restrict the generalizability of this research, it carries significant implications for appropriate human capital planning in Sindh and further studies. Limitations, such as time, geographic scope of the research, sample size, and ability to generalize results emphasize the need for further studies to compliment the entrees study contributions. These limitations can be further addressed to offer a more holistic and universally applicable understanding of career choice processes in future research.

Results and Discussion

Research Model

The diagram illustrates a Structural Equation Model (SEM) depicting relationships between latent constructs—Academic Activities, Career Choice, Environment, Job Opportunities, and Personalities—and their observed variables. Blue arrows show measurement paths, while green arrows show structural links. SEM tests hypotheses about unobserved (latent) variables and evaluates validity, reliability, and model fit. Constructs like Academic Activities and Environment may

Figure 1 Research Model



influence Career Choice. Factor loadings, AVE, and fit indices (e.g., RMSEA, CFI) assess model quality. AVE above 0.50 confirms convergent validity. High factor loadings (above 0.60) indicate strong indicators. Poor-fitting models can be refined by adjusting indicators for better construct measurement.

Table 1 Total Effects

Total effects	Total effects
Academic Activities -> Career Choice	0.473
Environment -> Career Choice	0.261
Job Opportunities -> Career Choice	0.018
Personalities -> Career Choice	0.091

Results indicate that Career Choice is most significantly affected by Academic Activities (total effect = 0.473). This shows that exposure and learning through the avenues of one academic engagement is a key contributor to an individual's career decision. Next is Environment with a total effect of 0.261, which is also a moderate influence. This highlights the role of external factors in influencing career choices, such as institutional support and social conditions.

The effect of personalities is 0.091 at least, which indicates that individual traits and characteristics can play limited but positive roles in affecting career decisions. Lastly, Job Opportunities demonstrates almost no total effect 0.018—suggesting they have a negligible role in career choice in this analysis. That may indicate that factors that influence careers are more deeply rooted in the preparation and development (i.e. academics and environment) than what happens right after college with some jobs so influenced by market conditions.

Table 1.1 R-Square

R-square	R-square	R-square adjusted
Career Choice	0.453	0.448

It explains Career Choice reasonably well an R-square of 0.453. It shows that factors Academic Activities, Environment, Job Opportunities and Personalities contributes to Career Choice with 45.3% R², which means that those factors can be explained by approximately 45.3% variance of Career Choice. Such a large total explained variance is usually fine for social sciences, where human behavior is complicated, and a very high R-square value are difficult to achieve. For example, usually in some research areas R-square values ranging from 0.30 to 0.60 considered reasonable depending the context and objectives of the study (Field et al., 2012).

Reliability and AVE**Table 1.2 Construct reliability and validity**

Construct reliability and validity	Cronbach's alpha	Composite reliability (rho _a)	Composite reliability (rho _c)	Average variance extracted (AVE)
Academic Activities	0.876	0.882	0.903	0.539
Career Choice	0.765	0.774	0.842	0.517
Environment	0.711	0.722	0.821	0.536
Job Opportunities	0.788	0.801	0.850	0.535
Personalities	0.810	0.853	0.856	0.500

The model demonstrates strong reliability and validity. All constructs have Cronbach's alpha values above 0.7 and composite reliability (rho_c) above 0.8, indicating internal consistency. AVE values exceed 0.5, confirming convergent validity. Academic Activities show the highest reliability (rho_c = 0.903, AVE = 0.539). Career Choice, Environment, and Job Opportunities also exhibit strong metrics, while Personalities meets the minimum AVE threshold (0.500). These results validate the measurement model's robustness. Cronbach's alpha and composite reliability together confirm that the constructs are consistent, non-redundant, and effectively measure the intended concepts, supporting the model's use for further analysis and interpretation.

Discriminant Validity**Table 1.3 Heterotrait-monotrait ratio (HTMT) - Matrix**

Heterotrait-monotrait ratio (HTMT) – Matrix	Academic Activities	Career Choice	Environment	Job Opportunities	Personalities
Academic Activities					
Career Choice	0.742				
Environment	0.562	0.674			
Job Opportunities	0.087	0.081	0.158		
Personalities	0.332	0.358	0.414	0.079	

The HTMT matrix assesses discriminant validity, ensuring constructs in a model are distinct. It compares correlations between different constructs (heterotrait) and within the same construct (monotrait). HTMT values below 0.85 indicate acceptable discriminant validity. In this study, values like 0.742 (Academic Activities–Career Choice), 0.674 (Career Choice–Environment), and 0.414 (Environment–Personalities)

confirm construct separation. Job Opportunities shows low correlations (0.079–0.158) with others, highlighting its distinctiveness. HTMT offers a stricter test than traditional methods like Fornell-Larcker, enhancing model reliability. All values fall below threshold levels, confirming constructs are conceptually unique and the model meets satisfactory validity standards for meaningful interpretation.

Fornell-Larcker criterion

Table 1.4 Fornell-Larcker criterion

Fornell-Larcker criterion	Academic Activities	Career Choice	Environment	Job Opportunities	Personalities
Academic Activities	0.734				
Career Choice	0.617	0.719			
Environment	0.445	0.504	0.732		
Job Opportunities	0.011	0.055	0.113	0.731	
Personalities	0.300	0.318	0.327	0.023	0.707

The Fornell-Larcker criterion tests discriminant validity in SEM by comparing the square root of AVE (diagonal values) with inter-construct correlations (off-diagonal values). A construct should share more variance with its indicators than with other constructs. In this study, diagonal values—Academic Activities (0.734), Career Choice (0.719), Environment (0.732), Job Opportunities (0.731), and Personalities (0.707)—are all higher than their respective correlations with other constructs (ranging 0.049–0.231). For example, Academic Activities (0.734) exceeds its correlations with other constructs. This confirms that all constructs are conceptually distinct, satisfying the Fornell-Larcker criterion and supporting strong discriminant validity in the measurement model.

Discussion

This study highlights key factors influencing career choices among graduates in Sindh, Pakistan. Academic activities were found to be the strongest determinant, aligning with Afaq Ahmed et al. (2017), who emphasized the role of education in shaping career paths. However, the lack of practical exposure in Pakistan's education system, as noted by Alam Zeb (2016), limits its effectiveness. Environmental factors, such as family and societal expectations, were the second most influential, consistent with Malik et al. (2022) and Hussain et al. (2024), who described Pakistan's collectivist culture where parental influence often overrides personal preference.

Job opportunities and personality traits had minimal impact, contrasting with trends in developed countries. This reflects structural issues in Pakistan's labor market and reinforces the dominance of external pressures over intrinsic motivation, similar to findings by Abe & Chikoko (2020). Gender and regional disparities further complicate career decisions, with women and rural graduates facing significant barriers.

The study recommends integrating formal career counseling in education and addressing equity gaps. Though focused on Sindh, findings underline a broader need for systemic reforms in education and employment. These insights can guide policymakers and educators in creating an inclusive and supportive ecosystem for career development among Pakistani graduates.

Conclusion and Recommendations

Conclusion

This study discovers the multifaceted factors influencing career decision-making among graduates in Sindh, Pakistan. Academic activities emerged as the most dominant, revealing that students rely comprehensively on educational institutions to shape their career paths. However, gaps in practical skill-building highlight the need for reforms aligning curricula with industry demands. Environmental factors, mainly family and societal expectations, also play a major role in determining career choices in Pakistan's collectivist culture, often overriding individual interests.

Job opportunities and personality traits had less impact, reflecting structural issues like limited job availability, underemployment, and weak combination of personal strengths in career planning. Gender disparities also surfaced, with women facing cultural and mobility barriers in male-dominated fields. Regional inequality further disturbs career development, as urban graduates have better access to resources than those in rural areas.

The study calls for general changes, including stronger career counseling, mentorship programs, gender-sensitive policies, and curriculum restructurings based on labor market trends. Digital platforms and industry collaboration can boost accessibility and practical exposure. These findings deal valuable perceptions for educators, policymakers, and employers, inspiring a collaborative approach to bridge the gap between education and employment. By fostering equity, skill development, and individual agency, Pakistan can create more expressive and broad career opportunities for its graduates.

Policy Implications

The study highlights the crucial need for education and employment policy improvements to support graduates in Sindh, Pakistan. Key matters include a mismatch between academic programs and labor market needs, limited career guidance, gender disparities, and regional inequalities.

Academic curricula must be rationalized to attention on practical, market-relevant skills, while structured career counseling should be institutionalized across all education levels. Special consideration is needed for rural students and female graduates through targeted investment, mentorship, and inclusive workplace policies. Promoting digital literacy, entrepreneurship, and stakeholder collaboration is essential. These improvements will foster equitable access, enhance employability, and build a more inclusive, resilient workforce.

Recommendations

Taking into consideration the results and discussion of this research, the following recommendations proposed in order to overcome systemic barriers that hinder graduate student career decision-making in Sindh province (Pakistan). These recommendations are intended to fill existing barriers in education, career advice and job access whilst promoting inclusion and equity across all socio economic and regional environments.

- Introduce online career guidance, certifications, and virtual internships for students from remote regions.
- Teach them digital literacy as a basic skill in curriculums so graduates are ready for a world where technology is the currency of the economy.
- Implement programs that are smart about the underserved nature of rural areas (think agriculture-based entrepreneurship and local community demand driven vocational training).
- Enable collaboration between educational institutions and industries to ensure academic programs meet the needs of the labor market.
- Create collaborative research, innovation and entrepreneurship programs which offer hands-on experiences to students
- Create incubators and innovation hubs in universities to cultivate entrepreneurial skills and provide guidance on developing an idea into a business.
- To enable funding, mentorship and skills training for up-and-coming entrepreneurs, especially in rural.
- Devise strategies that encourage jobs to be created in sectors with occupational demand or areas of skills-based hiring.
- Create systems for monitoring and evaluation of the effectiveness of these career counseling programs, educational reforms, and employment policies.

By using a data-driven approach to ensure that policies and initiatives stay relevant to changing labor market conditions. Through these types of initiatives, where systemic barriers are challenged and stakeholders work together, that can contribute towards the development of a skilled, adaptable and equitable workforce in Pakistan.

Future Research Direction

This study provides an initial understanding of the factors affecting career choices of graduates in Sindh Pakistan. Despite this, there are a number of areas that have received less attention and where further research can elaborate and expand on the findings presented here. Future research with an emphasis on under-represented populations, longitudinal designs and/or comparative studies across settings could fill these gaps in knowledge to offer a more comprehensive picture of career decision-making processes in different contexts.

Future research could broaden the focus and depth of this study by including neglected populations, following periods with quantitative methods, and comparative studies both in Pakistan and other contexts. These directions will not only fill the existing gap of knowledge but also lay the groundwork for feasible and inclusive policies/practices to accurately equip graduates as they progress through career pathways. Future research can provide a more detailed and internationally valid understanding of career decision-making processes by expanding upon the insights developed within this study.

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