




Muhammad Nabeel Khan¹, Adil Sultan² & Muhammad Aafaq Ali Khan³

¹BS Scholar, Department of Business Administration, Thal University Bhakkar, Punjab, Pakistan

²BS Scholar, Department of Business Administration, Thal University Bhakkar, Punjab, Pakistan

³BS Scholar, Department of Business Administration, Thal University Bhakkar, Punjab, Pakistan

KEYWORDS	ABSTRACT
<p>Globalization, Economic Growth & Economic Complexity</p>	<p>With the help of this study, the subtle dynamics of global advancement are investigated, and linkages between economic complexity, globalization of trade, economic growth, and human progress are dissected. By conducting an in-depth investigation, this study investigated the dynamic mechanisms of mediation, shedding light on the ways in which globalization & economic expansion that serve as important forces that influence the progression of humankind. The results of current study provide significant information by examining the research issues in particular context to reach the conclusion and making certain decisions. Furthermore, our findings shed light on the deep interconnections that create the economic complexity, thereby giving significant insights for policymakers and stakeholders who are navigating the diverse problems of contemporary global economy. Through a better knowledge of these dynamics, our research makes a contribution to more informed approach to promotion of sustainable development, economic resilience, and societal advancement on global scale in order to contribute existing knowledge.</p>
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<p>Corresponding Author</p>	<p>Muhammad Nabeel Khan</p>
<p>Email:</p>	<p>mnabeelniazo@gmail.com</p>
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INTRODUCTION

Today in the era of unprecedented interconnectivity and global integration, intricate relationship between economic complexity, trade globalization and meditating impacts of the globalization and economic growth has become the central focus of scholarly inquiry. This study is concerned with the multifarious interactions that define the current horizon of global trade and economic growth, aiming to untangle the complex web that connects these phenomena (Rimidis & Butkus, 2023). The economic complexity a theory that measures the diversity and depth of a country's productive capabilities is crucial variable in determining its trade patterns and overall economic performance (Mewes & Broekel, 2022). Parallel to this, the trade globalization has intensified the movement of

goods, services, and capital across borders, thereby providing both opportunities and threats for the countries involved in global market economy (Hassan, Wang, Khan, & Zhu, 2023). The correlation between the two phenomena creates a very intricate and profound interrelationship that needs to be studied in depth. This research aims to clarify the role of globalization and economic growth in relationship between economic complexity and trade globalization (Alvarado, Tillaguango, Dagar, Ahmad, Méndez & Toledo, 2021; Mesagan & Vo, 2023). Globalization as an intermediary, with its wide effect on transfer of resources and information, plays pivotal role in defining the benefits from economic interchange.

Similarly, economic development, as a central aim of nations across the globe repeatedly, brings a complication as its aspect that impacts how countries address the challenges of global trade based on their specific economic capacities. This study intends to offer useful information to policymakers, scholars, and business executives who struggle with dilemmas and advantages of an increasingly globalized economy (Shahzad, Fareed, Shahzad, & Shahzad, 2021). By comprehending the detailed relationship amid economic complexity, trade globalization, agency of globalization and economic growth as mediating factors, we hope to provide holistic perspective that guides strategic decision-making and promotes sustainable economic development in a constantly changing world (Caglar, Zafar, Bekun, & Mert, 2022). In the modern global economic environment, complex links between economic density, trade globalization and moderator effects of globalization effect & development comprise intricate challenge. As links between economic complexity and trade patterns becomes more complex, it is crucial to embrace sophisticated perspective on how globalization & economic growth impact these relationships. There is no overarching framework to guide policymakers and stakeholders formulate effective plans focusing on intricacies of global marketplace. This research seeks to fill the gap in understanding by looking into interactions between economic complexity, trade globalization and their intermediating factors for informed decision-making and sustainable economic development.

LITERATURE REVIEW

Economic Complexity & Human Progress

The extensive network of relationships and interdependencies that exists within economic system of a nation is what is meant by term "economic complexity." This method goes beyond conventional measurements like gross domestic product and investigates the variety and level of sophistication of a nation's productive capacities (Rimidis & Butkus, 2023). Countries that have a high level of economic complexity have diverse range of industries and abilities, which enables them to traverse global markets more effectively. The concept, was established by economists Ricardo Hausmann and Cesar Hidalgo, underlines that the success of a nation is not only dependent on the amount of resources, but also on the capability to transform those resources into a range of goods and services (Amoa-Gyarteng & Dhliwayo, 2023). Economic, social, and technological developments are all components of human progress, which is the journey that encompasses many different aspects. Even though economic growth is vital component, progress encompasses more than just accumulation of material wealth; it also includes aspects such as education, healthcare, and the general well-being of society (Murshed, Apergis, Alam, Khan, & Mahmud, 2022). Improvements in living standards,

educational levels, and quality of life are often observed in cultures that are striving to increase complexity of economic environment. In order to attain sustainable human progress, it is needed to strike delicate balance in economic development, social fairness & environmental responsibility. These highlights standing of adopting holistic styles that would be beneficial to both individuals and communities.

Economic Complexity & Globalization

The complexity of the economy is a significant factor in current period of globalization, as it defines the manner in which nations participate in interconnected global economy. The level of economic complexity of a nation has an impact on the degree to which it is able to effectively participate in global trade networks (Doğan, Ghosh, Shahzadi, Balsalobre-Lorente, & Nguyen, 2022). In order to successfully traverse the complexity of international marketplaces, nations that possess production capabilities that are both diversified and smart are in a stronger position. The relationship between economic complexity and globalization is a crucial aspect of understanding the modern economic dynamics (Tabash, Mesagan & Farooq, 2022). The economic complexity refers to the diversity and sophistication of a country's productive capabilities and the complexity of its export products. As a result of globalization's acceleration of the movement of products, services, and novel ideas across international borders, economic complexity of country becomes an important factor in determining its level of competitiveness (Mesagan & Vo, 2023). In order to navigate the complex web of global economic interactions, a nation must be able to demonstrate the adaptability, creativity, as well as commitment towards the ongoing development of its productive capacities (Rivera, Leon, Cornejo, & Florez, 2023).

The complexity of economy is profoundly influenced by globalization, as defined by increased activity in international trade and investment as well as movement of information. Through its role as the catalyst, it encourages nations to diversify their economic activities and specialize in fields in which they have competitive advantage (Shahzad, Madaleno, Dagar, Ghosh & Doğan, 2022). The process of countries becoming more integrated into global economy frequently results in increase in the amount of technological exchanges and the transfer of information, which in turn encourages the growth of new sectors (Wang, Usman, Saqib, Shahbaz, & Hossain, 2023). Globalization, on other hand, involves increasing interconnectedness and interdependence of economies across national borders. Examining how economic complexity and globalization interact offers insights into nation's competitiveness, economic growth, and resilience. Due to fact that countries with a lesser level of economic complexity may have a more difficult time competing on a global basis, globalization also involves the presence of problems. The dynamic nature of modern world economy is highlighted by ongoing interaction in economic complexity and globalization. Adaptation & strategic approach to complexity are crucial for achieving sustainable success upon the international stage (Nan, Huo, You, & Guo, 2022).

Economic Complexity & Economic Growth

Through the promotion of innovation and diversification, economic complexity acts as the driving force behind sustainable economic growth. At the same time as nations are increasing complexity of their economies, they are expanding their range of productive capacities and moving beyond

traditional industries. The adaptability and resilience of a nation can be gauged by its capacity to create wide variety of goods and services through domestic production. Thus, economic complexity becomes a driving force for technological advancement because it fosters the acquisition and use of the new information (Tabash, Mesagan, & Farooq, 2022). A more economically complex nation is often better positioned for sustained economic growth. This is because economic complexity is a driving force. A higher level of economic complexity indicates a broader range of industries and capabilities within a country (Canh & Thanh, 2022). This change allows for increased production of goods and services across various sectors. Complexity is driving force behind ongoing evolution of a nation's economic structure, which not only contributes to nation's current progress but also lays groundwork for future prosperity by fostering an economy that is always evolving and innovative (Canh & Thanh, 2022).

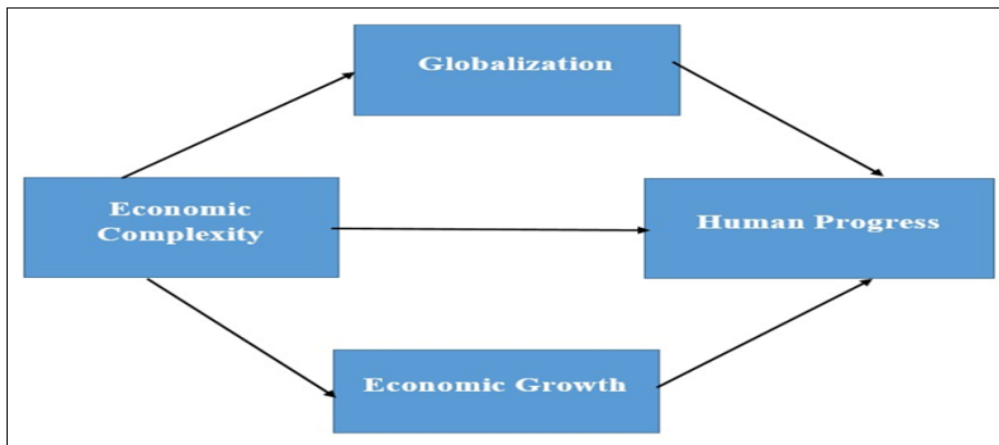
The idea of economic complexity is inextricably connected to the concept of the economic growth, particularly when taking into consideration advantages of specialization. Through specialization, nations are able to concentrate their efforts on the domains in which they possess a comparative advantage, which ultimately results in enhanced the efficiency and productivity. Having complex economy makes this specialization easier to achieve since it gives nations the opportunity to pursue industries that are in line with their particular capabilities and possessions (Canh & Thanh, 2022). Complex economies tend to be more innovative. The presence of diverse industries and skilled labor fosters an environment conducive to technological advancements and innovation (Rivera, Leon, Cornejo & Florez, 2023). Creating a global economy that thrives on the complementing strengths of varied participants is result of a synergistic network that evolves as states specialize in their own fields and engage in trade with other nations. Thus, economic complexity is not only a measure of a nation's development but also a crucial driver of sustained economic growth over specialization and international alliance. This is because economic complexity is a critical factor in both of these areas (Mewes & Broekel, 2022).

Economic Complexity, Globalization & Human Progress

When combined with the globalization, economic complexity transforms into a dynamic force that drives forward the journey of human progress. The influence of economic complexity is amplified as a result of globalization since it gives nations the opportunity to engage in a more extensive trade of products, services, and ideas. When nations take use of the global stage to showcase their varied and complex economic structures, they make a contribution to overall growth of human progress (Wang, Usman, Saqib, Shahbaz & Hossain, 2023). The interplay between economic complexity, globalization, and human progress is the complex and dynamic relationship that shapes the socio-economic landscape of nations (Rimidis & Butkus, 2023). In this linking, through the facilitation of interconnectedness brought about by globalization, the efficient dissemination of innovations and best practices is made possible, which in turn speeds up development across national boundaries. Within this framework, the complexity of the economy becomes a driving force behind the positive feedback loop that serves as the foundation for the global collaboration, which eventually results in improved living standards and societal well-being on a worldwide scale (Rivera, Leon, Cornejo & Florez, 2023).

The tremendous effect that globalization and economic complexity have on human advancement is a clear indication of the synergies that exist between the two. The ability of a nation to thrive in a globalized world is directly proportional to the degree of economic complexity that it possesses. It makes it possible for nations to diversify their economy, which in turn encourages innovation and adaptation. Resilience of nation in face of global crises is accordingly strengthened (Wang, Usman, Saqib, Shahbaz & Hossain, 2023). Economic complexity provides nations with diverse economic opportunities, fostering development of various industries & capabilities. This diversity can donate to job creation, income growth, and improved living standards. At the same time, the globalization serves as a driving force behind complexity of economy by facilitating the transfer of information, technologies, and resources on a wider scale across international borders. The linked nature of these two phenomena presents fertile environment for human progress, as civilizations harness economic powers, welcome diversity, and collaborate worldwide to handle complex issues and enhance well-being of people. This is because these two factors are intertwined (Rafique, Nadeem, Xia, Ikram, Shoaib & Shahzad, 2022).

Figure 1 Theoretical Framework



Economic Complexity, Economic Growth & Human Progress

The ability of a nation to increase its productive capacities is directly proportional to the degree of economic complexity that exists inside economy. This complexity is intricately tied to sustainable economic growth. The ability of a nation to adjust to shifting global demands is facilitated by the existence of a complex economic structure that is characterized by a wide variety of industries and specialized talents (Tabash, Mesagan & Farooq, 2022). It is common for countries to have greater levels of productivity, technological innovation & general efficiency as result of their investments in developing their overall economic complexity. Sustainable development practices are vital to mitigating negative environmental impacts linked with economic complexity and globalization. This increased complexity makes a big contribution to economic growth by producing an economic environment that is more robust and flexible. This places countries in the position to negotiate the challenges that come with a global economy that is rapidly evolving (Shahzad, Madaleno, Dağar, Ghosh, & Doğan, 2022).

The impact of economic growth on human advancement is most important when it is combined with inclusive development, despite the fact that economic expansion is an essential component. When utilized in a smart manner, economic complexity has the potential to contribute to inclusive growth that is to benefit of a considerably larger population. As economic complexity of a nation increases, there is a potential to cultivate employment opportunities, improve educational institutions, and strengthen healthcare infrastructure (Shahzad et al., 2022). Human progress should be measured not only by economic indicators but by improvement in quality of life, including health, education, and social well-being. The most important thing is to make sure that the advantages of economic progress are distributed fairly, to encourage social mobility, and to reduce inequities. It is for this reason that synergy between economic complexity, economic growth, human advancement lies not only in the quantitative expansion of economic activity but in quality betterment of people's lives and the overall well-being of society as whole (Rivera, Leon, Cornejo & Florez, 2023; Saud, Haseeb, Zafar, & Li, 2023).

RESEARCH METHODOLOGY

For the purpose of this investigation, factors that were utilized were globalization, economic growth, human advancement, and economic complexity. In any kind of research, the role of philosophy is something that cannot be ignored. One cannot ignore the significance of function that positivism plays in philosophy. During the course of this investigation, the hypothetic deductive technique was utilized. The cross-sectional study methods that were applied. A compilation of information obtained from the manufacturing companies located in Karachi and Lahore. The information was gathered from 480 company executives & managers. All variables, including economic complexity, economic growth, human advancement, and globalization, are acknowledged as having the high level of reliability and validity, and their values fall within the required range that may be used to test the hypotheses.

$$HP = a + b_1(EG) + b_2(GI) + b_3(EG) + e$$

RESULTS OF STUDY

Table 1 Mean, STDEV, T-Values, P-Values

	OS	SM	SD	TS	PV
Economic Complexity -> Economic Growth	0.458	0.455	0.050	9.226	0.000
Economic Complexity -> Globalization	0.437	0.434	0.052	8.416	0.000
Economic Complexity -> Human Progress	0.106	0.104	0.051	2.089	0.037
Economic Growth -> Human Progress	0.195	0.198	0.053	3.689	0.000
Globalization -> Human Progress	0.313	0.314	0.055	5.712	0.000

A stable and constant positive association between globalization and human progress is indicated by the fact that the observed mean is positive and standard deviation is low. Furthermore, the high T-Statistics and low P-Value underline the statistical significance of this association, offering solid support for the idea that heightened globalization is associated to amplified human advancement. According to findings of statistical analysis, there is persuasive evidence that there are substantial positive connections in economic complexity, economic growth, globalization & human progress. These findings offer a comprehensive view of collective impact that these variables have on socio-

economic development, which contributes vital insights into intricate processes that interconnect these variables.

Table 2 Mediation Mean, STDEV, T-Values, P-Values

	OS	SM	SD	TS	PV
Economic Complexity → Economic Growth → Human Progress	0.089	0.090	0.026	3.436	0.001
Economic Complexity → Globalization → Human Progress	0.137	0.136	0.026	5.194	0.000

In conclusion, findings presented in Table 2 indicate that there appear to be significant mediation effects in both paths, highlighting the roles that Economic Growth and Globalization play in the connection between Economic Complexity and Human Progress. The findings, which give the vital insights into the subtle pathways through which economic complexity effects the overall socio-economic advancement.

Table 3 Confidence Intervals

	OS	SM	2.5%	97.5%
Economic Complexity → Economic Growth → Human Progress	0.089	0.090	0.041	0.137
Economic Complexity → Globalization → Human Progress	0.137	0.136	0.084	0.187

According to Confidence Interval, the genuine mediation impact of globalization in relationship between economic complexity and human progress is predicted to be somewhere between 0.084 and 0.187. This estimate is based on a confidence level of 95%. This range offers a degree of clarity regarding the values that are most likely to be associated with mediation effect. Within a nutshell, the Confidence Intervals are a useful tool for quantifying the uncertainty that is connected with estimated mediation effects. Intervals indicate a range of values within which genuine effects are expected to reside, delivering useful information for academics and policymakers analyzing the robustness of mediation pathways in the context of economic complexity, economic growth, human progress and globalization.

Table 4 Correlation Analysis

	[1]	[2]	[3]	[4]
Economic Complexity [1]	1.000			
Economic Growth [2]	0.458	1.000		
Globalization [3]	0.437	0.576	1.000	
Human Progress [4]	0.332	0.424	0.472	1.000

It is possible to determine the degree and direction of correlations between the variables that were researched by referring to the correlation table. There is a general trend for these variables to go in the same direction, as indicated by positive correlations; however, the strength of these interactions varies from weak to moderate. Within the setting that was investigated, these findings offer the deeper understanding of linked processes of economic complexity, economic growth, globalization, and human progress.

Table 5 Specific Indirect Effects

Economic Complexity → Economic Growth → Human Progress	0.089
Economic Complexity → Globalization → Human Progress	0.137

The quantification of these particular indirect impacts allows for a better understanding of the distinctive contributions that economic complexity makes through the variety of channels to the overall influence that it has on human progress. Values provide a more in-depth knowledge of how Economic Complexity contributes to changes in human progress within context of relationships that were researched. These values represent the estimated influence that is mediated by economic growth and globalization.

Figure 2 Mediation Framework

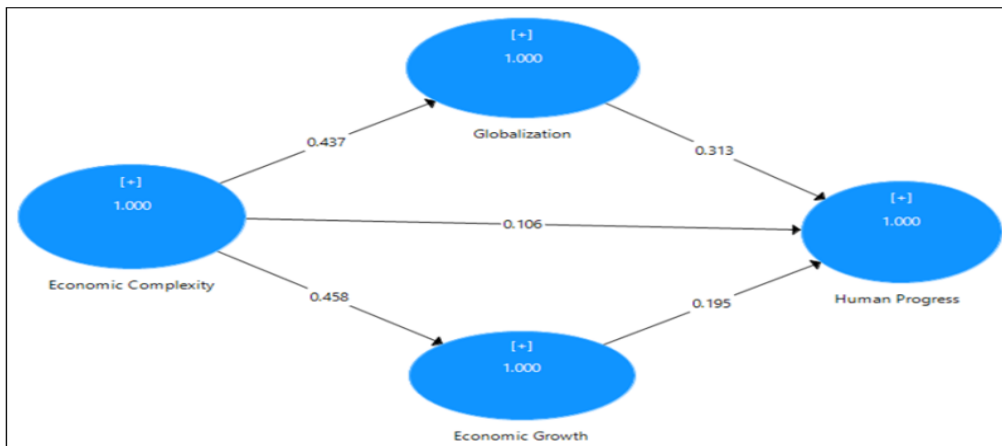
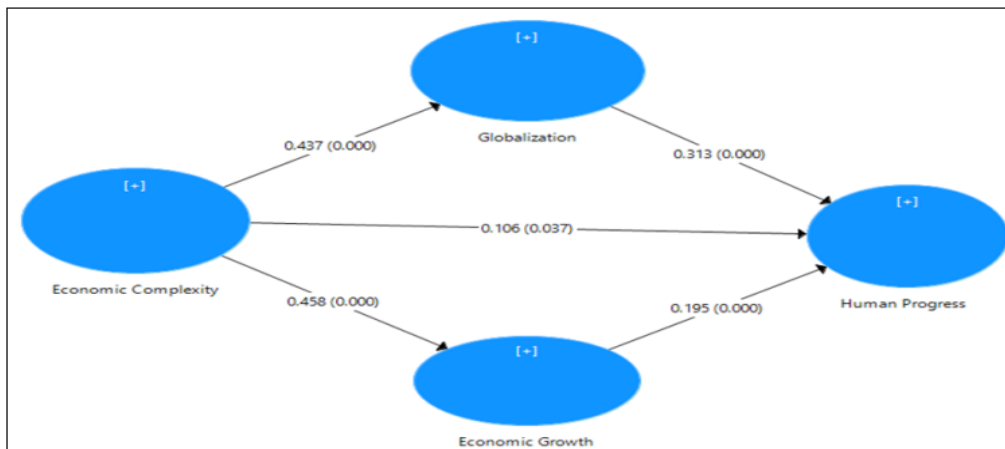


Figure 3 Mediation Framework



DISCUSSION

The research that investigates the influence of economic complexity and globalization of trade, with a particular emphasis on the roles that globalization and economic growth play as mediators, reveals important insights into the complex processes that shape the global economic systems. The interconnection of these variables is shown by positive and significant relationships that have been established between economic complexity, economic growth, globalization, and human progress (Saud et al., 2023). Particularly noteworthy is the fact that mediation pathways shed light on the

manner in which economic complexity, as driver, promotes human progress through both economic growth and globalization (Sobaih, 2022). Specific indirect effects indicate complex contributions, with economic complexity exhibiting a distinctive influence upon human progress through diverse routes. These contributions are revealed by specific indirect effects (Hassan et al., 2023). In contrast to mediation through Globalization, that emphasizes the significance of integrated global markets and increasing international trade, mediation through Economic Growth highlights the role that technological breakthroughs and enhanced productive capabilities play in process (Numan et al., 2023). In light of these findings, authorities, corporations who are working to promote sustainable development should be aware of the significant implications they contain. Thus, the sophisticated understanding of these relations can serve as the guide for strategic decision-making, highlighting necessity of comprehensive economic policies that inspire both complexity & global connectivity (Adam, Garas, Katsaiti, & Lapatinas, 2023). The findings of this research provide useful insights into the varied nature of economic interdependencies and their impact on the overall advancement of society. Therefore, this research is particularly relevant as the global environment continues to undergo transformation.

CONCLUSION

This study has offered a comprehensive examination of deep linkages that exist between economic complexity, trade globalization, economic growth, and human progress. In conclusion, this study has provided this exploration. The fact that these variables have positive correlations with one another demonstrates that they are interrelated, which brings to light globalized and intricate web in which many contemporary economies function. Further elucidation of key roles that the globalization and economic growth play in channeling impact of economic complexity on human progress is provided by the mediation analysis. The specific indirect effects highlight differentiated channels via which economic complexity promotes societal advancement. One of distinct mediators of this influence is economic growth, and other is globalization. Findings support the adoption of a holistic approach to policy creation, which acknowledges mutually beneficial relationship that exists between the complexity of economy and dynamics of global commerce. As we navigate a global terrain that is always shifting, it is becoming important to have solid understanding of these interdependencies in order to promote sustainable development. For purpose of informing strategic decisions that inspire economic diversity, technological progress, international alliance, policymakers, entrepreneurs, and academics can draw upon these findings. It paves the path for global economic framework that is more resilient, inclusive by recognizing delicate interplay amid economic complexity and trade globalization. This allows to inspire growth that transcends boundaries & enhances human progress all over the world.

Recommendations

It is suggested that governments establish policies that encourage diversification among industries in order to foster a vibrant and varied economic environment. This will facilitate the enhancement of economic complexity. At the same time, it is very necessary to make investments in education and innovation in order to nurture an able workforce and advanced technology capabilities, both of which are vital growth drivers for sustained economic expansion. Those in charge of formulating public policy ought to make facilitation of open trade policies, removal of obstacles to international

collaboration, and guarantee of fair-trade practices their top priorities. Promotion of sustainability ought to be fundamental component of economic plans, which should inspire enterprises to adopt practices that are ecologically reliable. Through application of these proposals, unified strategy for addressing economic complexity, globalization of trade, and economic growth has the potential to strengthen economies around the world, by promoting resilience, competitiveness, and sustainable development on extensive scale. These proactive actions have potential to steer nations toward a future that is more linked, inclusive, and affluent. This is significant since global economic paradigm is continuing to shift.

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