Original Research Article

Assessing the Competitiveness Edge: Afghanistan's Fresh Grapes Export Performance in the Global Market

ABSTRCT

This study assesses Afghanistan's fresh grapes export competitiveness using methods like CAGR for growth, CDVI for instability, and RCA/RSCA for comparative advantage. It also applied the NPC to evaluate price competitiveness, Markov Chain Analysis to track export patterns, and the Bai-Perron test to identify structural breaks, providing a comprehensive analysis of Afghanistan's global market positionduring 2008 to 2023. Fresh grapes, was one of theimportantcomponents of Afghanistan's agricultural exports, grew considerably in both quantity and value, though their export performance was marked by notable instability. The study highlighted that, Afghanistanhad moderate competitiveness in the world market, aided by favorable climatic conditions. However, a low NPC suggested limited trade protection, as domestic prices for Afghan grapes remained below international prices. Comparative analyses showed that, while Chile's export volumes were declined and value growth held steady due to rising prices. Peru achieved robust export growth despite moderate instability. Italy focused on high quality grapes production primarily for domestic consumption, ensuingwith low instability.Pakistan emerged as the most consistent market for Afghan fresh grapes, showed a steady demand that supported Afghanistan's competitive position in regional trade. Structural breaks in 2015 and 2019 found export volume shifts, with an initial increase from better market access, followed by a decline due to COVID-19. Since 2015, export values declined due to market constraints and economic factors, but recovered strongly with favorable weather and government policy adjustments.

Keywords: Afghanistan Fresh Grapes Export, Instability,Comparative Advantage, Market Access and Structural Break Analysis

1. INTRODUCTION

Agriculture plays a crucial role in Afghanistan's national economy, contributing approximately one-fourth of the GDP and supporting about 60 per cent of the population, who are largely dependent on farming. Agriculture is the primary livelihood for over half of Afghan

households, with about 68 per cent also relying on some form of livestock. Despite this reliance, agricultural productivity remains low, and about one-third of the population experiences food insecurity, with 36 per cent having limited dietary diversity. The semi-arid region is highly susceptible to climate change, with most arable land consisting of small farms heavily reliant on irrigation. Although Afghanistan holds potential to expand its production of cereals, fruits, nuts, and vegetables, along with developing highervalue supply chains for horticulture and cash crops.To achieve this which require investments in improved practices, extension services, and downstream agro-processing capabilities (Anon., 2020).

Horticulture has long been integral to Afghanistan's economy, playing a vital role both historically and in supporting a stable and prosperous society today. Although only about 6 per cent of Afghanistan's land is currently cultivated, the country's climate is highly suitable for various tree crops, vegetables, and seed production. In the 1960s, Afghanistan was the world's leading producer of raisins, and during the 1960s and 1970s, high-value horticultural exports contributed 48 per cent of the country's total annual export revenue. Exports averaged approximately US$600 million annually in the 1970s, with dried fruits accounting for 30 per cent and fresh fruits for 70 per cent. Grapes cover the largest portion of orchard acreage, followed by apples, almonds, pomegranates, and apricots. The primary grapesgrowing provinces include Kabul, Parwan, Kandahar, Herat, Ghazni, and Takhar, with peak harvest occurring from July to October(Yousufi 2016). Afghanistan with production of fresh grapes 9.55 thousandtonnes stands in 19th position among largest producing countries (Anon., 2017). Grapes in Afghanistan are consumed fresh, dried and in the form of grape juice. In Afghanistan there are three local varieties that offer the best commercial return for export: Shindokhani, Kishmishi and Taifi. New commercial varieties are also being introduced, such as Thompson Seedless and Red Globe, and are beginning to make inroads into foreign markets (Hamidullah*et al.,* 2023).

Grapes cultivation in Afghanistan indicated consistent growth in area, production, and productivity during 2008 to 2022. The cultivated area expanded at a CAGR of 4.09 per cent, reaching 93,000 hectares in 2022. Production found even stronger growth, with a CAGR of 8.40 per cent, amounting to 9,10,000 tonnes in 2022, highlighted the rising demand and focus on grapes production. Yield per hectare, or productivity, rose at a CAGR of 4.14 per cent, achieving 9.78 tonnes per hectare in 2022, likely due to improved farming practices or favorable conditions(Anon., 2023).

According to the results obtained from Trade Map data, fresh grapes hold a prominent position in Afghanistan's agricultural export portfolio, with an average export value of US$ 30,882 thousand. This represents 10.13 per cent of the total agricultural exports, underscoring the significance of fresh grapes as a major contributor to Afghanistan's export economy. The strong performance of fresh grapes export highlights the competitive standing of Afghan grapes in international markets, driven by favorable production conditions and demand for this crop globally(Anon., 2024;Mushair et al., 2020).

Afghanistan's economy ranks as the 124th largest globally by Gross Domestic Product (GDP) and 102nd by Purchasing Power Parity (PPP). With a population of roughly 41 million, its nominal GDP was recorded at US$ 14.58 billion in 2021, translating to a per capita GDP of US$ 363.70. Annual exports surpass US$ 2 billion, with agricultural, mineral, and textile products comprising 94 per cent of the total export value. As of 2022, the nation's external debt stands at US$ 1.4 billion (Anon., 2022).

Research on horticulture is crucial as it addresses pressing global issues such as food security and nutrition. Grapes hold significant importance within Afghanistan's horticultural sector, positioning the country as one of the leading producers worldwide. This focus on Afghanistan's fresh grape production is especially appealing, as it sheds light on the factors driving the steady growth in both the cultivation and export of this crop. Understanding these dynamics not only highlights Afghanistan's competitive edge but also reveals pathways for enhancing the sustainability and economic impact of its agricultural sector.

2. METHODOLOGY

The study is based on secondary data to analyze Afghanistan's fresh grapes export compared to major global exporters. Data obtained from Trade Map, MOCI, and CRD for a period of 15 years, from 2008 to 2023, assesses the growth, instability, and trade direction of Afghan fresh grapes export, including Markov chain analysis and structural break analysis within the study period.

2.1Analytical Tools and Techniques Employed

2.1.1Compound Annual Growth Rate (CAGR)

It measures the annual growth rate over a designated period, assuming steady, compounded growth each year. This approach produces a smoothed rate, facilitating comparisons across various time frames. The growth rate of Afghanistan's fresh grapes export, in comparison to other major exporters, was assessed using the exponential function:

$$Y_t = a\ b^t e^u$$

where;

Y_t = Dependent variable for which growth rate is to be estimated (Fresh grapes export)

a = Intercept

b = Trend co-efficient

e = Napierian base

t = Time trend

u = Disturbance or error term

The CAGR is obtained from the linearly transformed estimating form of the above equation, as stated below

$$\ln Y_t = \ln a + t \ln b + u$$

The per cent compound annual growth rate (g) was computed by using the relationship

(CAGR) g = (antilog of b - 1) x 100

Instability analysis

Afghanistan's fresh grapes export variability was evaluated using the Cuddy-Della Valle Index (CDVI), as recommended by Cuddy and Della in 1978. Unlike the traditional Coefficient of Variation (CV), which can overestimate variability due to trends in time series data, the CDVI accounts for these trends, making it a more reliable method for this analysis.

2.1.2 Cuddy-Della Valle Index (CDVI)

Is obtained through CV which is computed as,

$$CV = \frac{\text{Standard deviation}}{\text{Mean}} \times 100$$

CDVI is estimated as follows,

$$CDVI = CV \times \sqrt{1 - \bar{R}^2}$$

Where,

CV: Coefficient of variation in percentage

$\overline{R}^2$: Adjusted r square

This index accurately measures instability in fresh grapes export, with values under 15 per cent indicating low instability, 15 to 30 per cent as medium, and over 30 per cent as high instability.

2.1.3 Revealed Comparative Advantage (RCA)

RCA is based on observed trade patterns. It measures a country's exports of a commodity relative to its total exports and the corresponding export performance of a set of countries. RCA index can indicate as:

$$RCA_{\text{ij}} = \frac{\frac{x_{ij}}{x_{it}}}{\frac{x_{wj}}{x_{wt}}}$$

Where,

RCA_{ij} = Revealed comparative advantage for country *i*in product *j*.

x_{ij}= Value of Afghanistan fresh grapes export

x_{it}= Value of total agricultural export of Afghanistan

x_{wj} = Value of world export of fresh grapes

x_{wt} = Value of world total agricultural exports

The RCA index value ranges between zero and positive infinitive (+∞). If it is greater than one, then the country has a comparative advantage in those products, and vice versa.

However, RCA suffers from the problem of asymmetry as 'pure' RCA is basically not comparable on both sides of unity as the index ranges from zero to one if a country is not specialized in a given commodity while it ranges from one to infinity if a country is specialized.

2.1.4 Revealed Symmetric Comparative Advantage (RSCA)

In 1998, Laursen expanded upon the RCA index and developed the RSCA index which generates scores ranging between −1 to +1 and is symmetric around zero. Countries with RSCA

scores close to +1 have a higher revealed comparative advantage, and countries with scores close to −1 have a lower revealed comparative advantage.

$$\text{RSCA} = \frac{RCA-1}{RCA+1}$$

Since the RCA turns out to produce an output which cannot be compared on both side of one the RSCA overcomes this problem.

2.1.5 Nominal Protection Coefficient (NPC)

NPC is a straightforward measure of competitiveness. It is calculated as a ratio between domestic prices to the international price. It measures the extent to which domestic prices diverge from border equivalent prices. NPC was calculated by using the formula,

$$\text{NPC} = \frac{\text{Pd}}{\text{Pb}}$$

Where,

Pd: Domestic price

Pb: Border equivalent price

Therefore, in the present study, a comparison has been made between the unit price of exports (*i.e.*, export value/export quantity) in Afghanistan and the unit price in the world. Both the prices are given in US$ and are f.o.b. prices. Thus,

$$\text{NPC} = \frac{\text{Afghanistan export price}}{\text{World export price}}$$

Unit export price was derived by the following

$$\text{Export price (US\$/t)} = \frac{\text{Export value}}{\text{Export quantity}}$$

If NPC is < 1, it implies that the country has competitive advantage in export of fresh grapes and further,if NPC ratio > 1, it means lack of competitiveadvantage which discourages the export of fresh grapes.

2.1.6 Markov chain analysis

The Markov chain analysis was employed to assess the competitiveness of Afghanistan's fresh grapes export to the major importing countries. For this analysis, annual export data in value terms during 2008 to 2023 was applied. The trade patterns of Afghanistan's fresh grapes export were examined using a first-order Markov chain approach, allowing for a detailed understanding of the transition's probabilities in export competitiveness over time. Central to markov chain analysis is estimation of the transitional probability matrix "P" whose element P_{ij} indicates the probability of export switching from country "i" to country 'j' over time. The diagonal element P_{ij} where i=j, measures the probability of a country retaining its market share or in other words, the loyalty of an importing country to a particular country's exports.

$$E_{jt} = \sum_{j=1}^{r} E_{jt-1} * P_{jt} + e_{jt}$$

Where,

E_{ij} = Exports from Afghanistan to j^{th}country during the year 't'.

E_{it-1} = Exports to ith country during the period t-1.

P_{ij}= Probability of that, the exports will shift from i^{th}country to j^{th}country.

e_{jt}= The error term which is statistically independent of E_{it-1}.

t = Number of years considered for the analysis.

r = Number of importing countries.

2.1.7 Bai-Perron test

In econometrics, a structural break is an unexpected shift in a time series. Tests like the Chow, CUSUM, Quandt-Andrews, and Bai-Perron are used to detect such breaks. The Bai-Perron test is best suited for identifying multiple breaks, using HAC variance to account for serial correlation. Bai and Perron (2003) highlight that, structural breaks are critical in analyzing macroeconomic time series, often triggered by economic crises, policy changes, institutional shifts, or regime changes.

Model and estimators:

For the purpose of simulation study, Bai and Perron considered the following multiple linear regression with m breaks *i.e.* m+1 regimes.

$$Y_t = z_t\delta_j + u_t$$

Where, $t = T_{j-1} + 1, \dots \dots, T_j$

For j=1…..m+1 is a special case of general model considered in Bai and Perron corresponding to a pure structural change model. Here $Y_t$is the observed dependent variable at time; z_t (q*1) is a vectors of covariates and δ_j(j=1,…..m+1) is the corresponding vector of coefficients; $u_t$is the disturbance at time t.

The purpose is to estimate the unknown regression coefficients together with the break points when T observations on (Y_t, z_t) are available. The method of estimation is based on least squares principle. For each m partition (T1,…..Tm), the associated least-squares estimates of δ_j are obtained by minimizing the sum of squared residuals.

$$S_T(T_1, \dots\dots, T_{m+1}) = \sum_{i=t}^{m+1} \sum_{t=T_{i=1}+1}^{Ti} [Y_t - z'_t \delta_j]^2$$

Let δ^({T_j }) denote the resulting estimates based on the given m-partition denoted by {T_j}. Substituting these estimates in the objective function, the estimated break points are such that,

$$(T_1, \dots . T_m) = \text{argmin} T, \dots\dots, \text{Tm}\, S_T\,(T_1, \dots\dots\dots, T_m)$$

Where, the minimization is taken over all partitions $(T_1, \dots . T_m)$such that T_i- T_{i-1}≥h ≥ q. Thus, the break point estimators are global minimizers of the objective function. Finally, the regression estimates are obtained using associated least squares estimates at the estimated m partition.

Bai and Perron (1998) concerns the convergence of the break fractions $\widehat{Y_i} = \widehat{T_i}/T$ and the rate of convergence. The results obtained show not only that $Y_i$converges to its true value λ_i^0but that it does so at the fast rate *T*, i.e. $T(\lambda_i - \lambda_i^0) = O_p(1)$for all i. This convergence result is obtained under a very general set of assumptions allowing a wide variety of models. It, however, precludes integrated variables (with an autoregressive unit root) but permits trending regressors; for example, with a trend of the form $g_t = a + b(\frac{t}{T})$. The assumptions concerning the nature of the errors in relation to the regressors {z_t}, are of two kinds. First, when no lagged dependent variable is allowed in {z_t}, the conditions on the residuals are quite general and allow substantial correlation and heteroscedasticity. The second allows lagged dependent variable as regressors but then, of course, no serial correlation is permitted in the errors {u_t}. In both cases, the assumptions are general enough to allow different distributions for both the regressors and the errors across segments.

The process involves fitting models with various breakpoints to the data. Key metrics like the Residual Sum of Squares (RSS) and Bayesian Information Criterion (BIC) help identify the best model. A lower RSS shows a better fit, while the BIC helps select a model by balancing fit with simplicity, with lower BIC values indicating the preferred model. The model with the lowest BIC is generally chosen to capture significant changes without overfitting. Each identified breakpoint should align with a known event or policy changesuch as a new trade policy and agreement between Afghanistan and other countries, providing insights into how these factors influenced Afghanistan's fresh grapes export trends.

3. RESULTS AND DISCUSSION

Growth and instability of fresh grapes export

Table 1 presented the growth and instability of fresh grapes export among major exporting countries. Afghanistan showed significant growth with a CAGR of 19.92 per cent in quantity and 21.41 per cent in value, both at one per cent significance of level. However, high instability was indicated by CDVI values of 63.73 for quantity and 58.80 for value, suggested large annual fluctuations due to production, demand, or economic factors.Chile's fresh grapes export declined in quantity with a CAGR of -3.18 per cent at one per cent of significance but had stable valueof growth rate with a CAGR of 0.22 per centat non-significant level, possibly due to price increases. The CDVI values of fresh grapes in quantity 6.83and 20.82 for value showed a stable export environment.Peru had strong export growth with a CAGR of 17.32 per cent for quantity and 18.31 per cent for value, both at significant level, though CDVI values of 18.78 in quantity and 20.82 for value suggesting moderate instability. Italy's fresh grapes export generally experienced stable growth, showed a minor decline in quantity by 0.78 per cent and a marginal increase in value by 0.82 per cent. The low CDVI scores 7.89 for quantity and 9.52 for value, reflect a stable market with minimal volatility. The study findings were aligned with those of Antonio *et al*. (2015), they examined the main grapes producing countries. Italy, France, USA, Spain, and Türkiye ranked among the largest grapes producers. China led globally, accounted for 12 per cent of total production of world, while Chile emerged as the top exporter, responsible for over 20 per cent of global grape exports.

Table 1: Growth and instability of fresh grapes export from Afghanistan *vis-à-vis* other major exporting counting during 2008 to 2023

Particular		Afghanistan	Chile	Peru	Italy
Quantity (t)	**CAGR (%)**	19.92***	-3.18***	17.32***	-0.78*
	CV (%)	87.78	15.88	62.32	8.44
	CDVI	63.73	6.83	18.78	7.89
Value (000' US$)	**CAGR (%)**	21.41***	0.22^{NS}	18.31**	0.82^{NS}
	CV (%)	86.59	20.15	66.53	9.91
	CDVI	58.80	20.82	20.78	9.52

Source of data: Trade map and (FAO), 2023

Note: ***, **, *, NS denote significant at 1 %, 5 %, 10 % and non-significant, respectively

As per fig. 1, in 2008, Chile led global fresh grapes export with a value of US$ 9,87,738 thousand, peaking at US$ 17,32,658 thousand in 2022 due to favorable climate conditions but declining to US$ 8,11,236 thousand in 2023, possibly due to weather and supply issues. Peru showed steady growth from US$ 85,705 thousand in 2008 to US$ 7,63,142 thousand in 2018, reaching US$ 17,45,479 thousand in 2023, driven by market expansion, production investment, and strategic demand alignment.

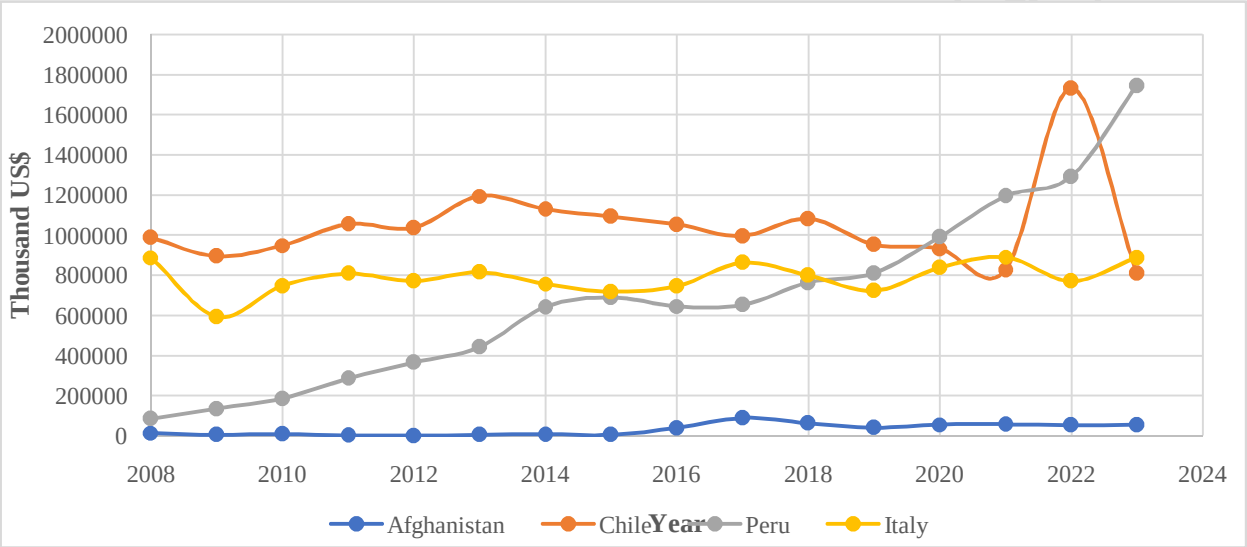

Fig. 1: Export of fresh grapes from Afghanistan and other major exporting countries during 2008 to 2023

Comparative advantage metrics for fresh grapes export from Afghanistan and other major exporting countries

Table 2 provides RCA and RSCA results for fresh grapes export during 2008 to 2022. Comparative metrics (RCA and RSCA) in fresh grapes export from Afghanistan had variability, with an average RCA of 8.65 and RSCA of 0.70, indicated moderate competitiveness. The country comparative advantage was driven by favorable climatic conditions, traditional grapesgrowing practices, and relatively low production costs. The study was conducted with the same methodology by Fahimullah*et al.* (2024), they analyzed production trend and export

performance of apples from Afghanistan. Chile leads with strong comparative advantagewithRCA of 13.80and RSCA of 0.86) due to an advanced agricultural sector, efficient supply chains, and favorable trade agreements. Peru also showed strong competitiveness through (RCA of 13.13 and RSCA of 0.83), supported by modern agricultural investments, expanded production and counter seasonal advantages. While, Italy was competitive with an average RCA value of 3.43 and RSCA of 0.54, it had the lowest values among the chosen countries which might be become, country's focus on producing highquality, niche varieties primarily for domestic consumption and the production of wine rather than large-scale of export of fresh grapes. Additionally, Italy faces strong competition from other Mediterranean countries and newer entrants like Chile and Peru, which had expanded their market share with more aggressive export strategies. The results were align with Radhika and Zahid (2017), they studied Afghan grapes production and export from 2000 to 2014, highlightedthat, the grapes as a main export crop with increases of 1.73 per cent in area, 3.03 per cent in production and 4.70 per cent in yield during the study period.

Table 2:Comparative advantage metrics for export of fresh grapes from Afghanistan and other major exporting countries (000' US$) during 2008-2022

Year	Afghanistan		Chile		Peru		Italy	
	RCA	RSCA	RCA	RSCA	RCA	RSCA	RCA	RSCA
2008	8.84	0.80	16.99	0.89	3.42	0.55	4.54	0.64
2009	4.24	0.62	16.10	0.88	5.56	0.69	3.27	0.53
2010	6.69	0.74	16.80	0.89	6.43	0.73	4.03	0.60
2011	4.26	0.62	16.73	0.89	8.09	0.78	4.19	0.61
2012	1.28	0.12	16.03	0.88	10.34	0.82	4.03	0.60
2013	4.49	0.64	15.99	0.88	12.87	0.86	3.78	0.58
2014	3.70	0.57	13.97	0.87	16.20	0.88	3.37	0.54
2015	2.70	0.46	13.84	0.87	17.60	0.89	3.32	0.54
2016	14.69	0.87	13.02	0.86	15.82	0.88	3.33	0.54
2017	22.58	0.92	11.53	0.84	13.98	0.87	3.48	0.55
2018	16.41	0.89	11.46	0.84	14.97	0.87	3.09	0.51
2019	10.71	0.83	9.96	0.82	14.55	0.87	2.69	0.46
2020	8.66	0.79	9.42	0.81	16.90	0.89	2.77	0.47

2021	9.62	0.81	8.82	0.80	19.50	0.90	2.93	0.49
2022	10.92	0.83	16.36	0.88	20.67	0.91	2.64	0.45
Mean	8.65	0.70	13.80	0.86	13.13	0.83	3.43	0.54

Note: RCA: Revealed Comparative Advantage, RSCA: Revealed Symmetric Comparative Advantage

Nominal Protection Coefficient (NPC) of fresh grapes export from Afghanistan and other major exporting countries

The NPC values for fresh grapes export during 2008 to 2022 are presented in Table 3. Afghanistan's NPC values consistently remained below 1 between 0.13 to 0.49, indicates that, the domestic prices were much lower than international prices and suggesting slight to negative protection, likely due to weak trade policies or sector challenges. Chile's NPC values were stable and also below 1 among (0.76 to 0.89), with a spike to 1.46 in 2022 due to market changes, reflecting a competitive market with minimal protection. Peru's NPC showed greater variation, peaking at 1.66 in 2009, indicates substantial protection. Italy's NPC values were close to 1 between of 0.87 to 1.13, showedarrangement between domestic and international prices, suggesting balanced trade policies and a stable market.

Table 3:Nominal Protection Coefficient (NPC) of fresh grapes export from Afghanistan and other major exporting countries (000' US$) during 2008 to 2022

Year	Afghanistan	Chile	Peru	Italy
2008	0.39	0.81	1.34	1.13
2009	0.32	0.78	1.66	1.11
2010	0.26	0.77	1.54	0.99
2011	0.13	0.76	1.45	1.00
2012	0.18	0.76	1.47	0.94
2013	0.17	0.80	1.43	0.92
2014	0.49	0.84	1.30	0.91
2015	0.45	0.83	1.28	0.87
2016	0.21	0.88	1.35	0.92
2017	0.34	0.83	1.43	1.03

2018	0.18	0.83	1.34	0.97
2019	0.17	0.81	1.29	0.94
2020	0.39	0.79	1.24	0.92
2021	0.23	0.89	1.38	1.06
2022	0.24	1.46	1.25	0.88

Direction of exports of fresh grapes export from Afghanistan

Markov-chain analyze of fresh grapes export from Afghanistan during 2008 to 2023 reveals that, Pakistan retained 99.70 per cent of its import share from Afghanistan, showcase strong loyalty and a competitive edge over India and other markets, despite losing (0.20 %) to India. In contrast, India managed to retain only 1.00 per cent of its share, with no gains from Pakistan and other countries. UAE maintained a stable position with a 9.10 per cent retention rate and gained (11.60 %) from other countries. Meanwhile, other nations lost 81.90 per cent of their previous share to Pakistan and retained merely 6.60 per cent from Afghanistan. Overall, Pakistan has proven to be the most dependable market for Afghan fresh grapes, reflecting a consistent preference and competitive strength in trade. According to Hasibullah*et al*. (2020), Pakistan remained the most reliable market for fresh grapes export from Afghanistan during 2006 to 2018, with a retention rate of 99.93, capturing considerable market share from India and other countries.

Table 4: Transition probability matrix showing shifts in export of fresh grapes from Afghanistan during 2008 to 2023

Countries	Pakistan	India	UAE	Others
Pakistan	**0.997**	0.002	0.000	0.000
India	0.000	**1.000**	0.000	0.000
UAE	0.909	0.000	**0.091**	0.000
Others	0.819	0.000	0.116	**0.066**

Structural breaks for fresh grapes export from Afghanistan

Figure 2 showed structural breaks in Afghanistan's fresh grapes export during 2008 to 2023. The first break found in 2015 marked a notable increase in export of fresh grapes, due to production improvements and better market access. The second break found in 2019 showed a significant decline in fresh grapes, possibly due to COVID-19 disruptions, due to reduced demand and, supply chain issues, and potential changes in trade policies or geopolitical tensions affected export volumes.

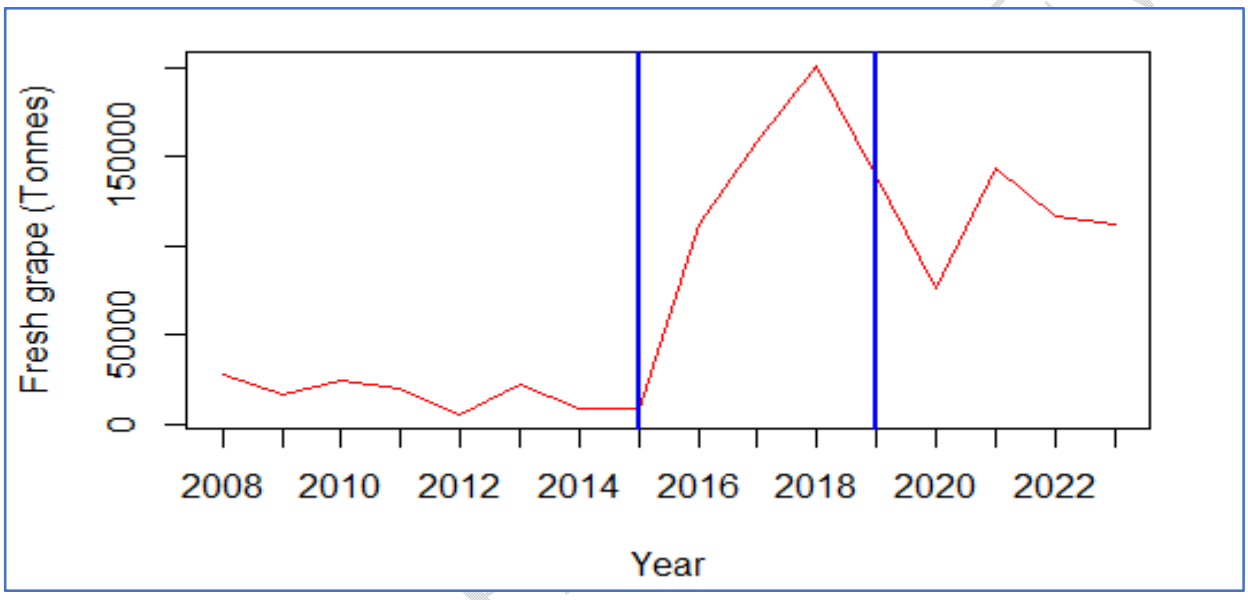

Fig. 2: Structural breaks of fresh grapes export from Afghanistan during 2008 to 2023

Note: Red colour line (-trend line), Blue colour line (- Structural breaks)

Figure 3 highlights a noticeable drop in fresh grapes export value in 2015, due to market constraints, reduced demandor economic issues. This was followed by a sharp increase, which might be attributed to favorable weather conditions enhancing production and adjustments in government export policies. These changes indicates that, both environmental and policy factors played a crucial role in revitalizing grapes export.

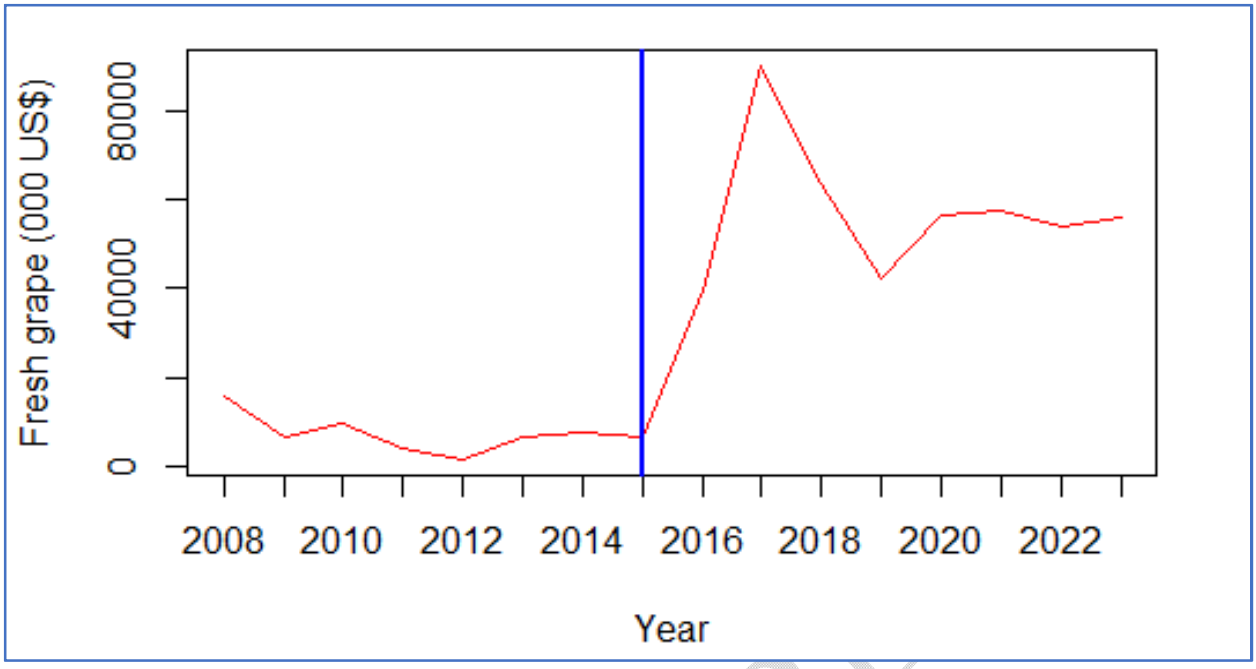

Fig.3:Structural breaks of fresh grapes export from Afghanistan during 2008-2023

Note: Red colour line (-trend line), Blue colour line (- Structural breaks)

4. CONCLUSION

The study revealed that, Afghanistan's fresh grapes export experienced a substantial growth in both quantity and value, although marked by considerable instability. Chile's export volumes were declined, and value growth remained steady, possible due to rising prices. Peru demonstrated robust export growth with moderate instability, whereas Italy's exports exhibited low volatility, focusing more on high-quality production for domestic consumption and wine production rather than bulk exports of fresh grapes. Afghanistan's fresh grapes export showed moderate competitiveness with RCA 8.65 and RSCA 0.70. Chile and Peru led thru (Chile RCA 13.80, RSCA 0.86 and Peru RCA 13.13, RSCA 0.83), supported by advanced agriculture and trade benefits. Italy, with lower valuesRCA of 3.43, RSCA of 0.54. However, low NPC values suggested limited trade protection, as domestic prices were lower than international prices. Pakistan proved to be the most reliable market for Afghan fresh grapes, indicated a steady demand and a strong competitive position in trade. The main shifts found in 2015 and 2019 reflected an initial boost in exports due to improved market access, followed by a decline due to COVID-19 impacts on international trade. A notable drop fund in export value of fresh grapes in 2015, likely due to market limitations or economic factors, was followed by a significant

recovery, potentially driven by favorable weather that enhanced production and adjustments in government export policies. These findings indicated that environmental and policy factors had played an essential role in revitalizing grapes export from Afghanistan.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

REFERENCES

1. ANONYMOUS, 2017, National Research Centre for grape in India,*Indian Council of Agricultural Research (ICAR).*
2. ANONYMOUS, 2020, Strengthening Afghanistan institutions' capacity for the assessment of agriculture production and scenario development. *Food and Agriculture Organization of the United Nations (FAO).*, pp:1-10.
3. ANONYMOUS, 2022, Economy of Afghanistan. Wikipedia, pp:1-5.
4. ANONYMOUS, 2023, Profiles and Agricultural Statistics in Afghanistan. Food and Agriculture Organization (FAO)., pp: 224-278.

5. ANONYMOUS,2024,Trade statistics for international business development https://www.trademap.org
6. FAHIMULLAH, W., LOKESHA, H., MAHIN, S. H.,AND M. N. VENKATARAMANA., 2024, Production trend and export performance of apple from Afghanistan. *Inter. J. of Agriculture Extension and Social Development*, **7**(3): 123-128.
7. HAMIDULLAH YOUNISI, ZABIHULLAH FARID AND KHALID JOYA., 2023, Growth and Instability in Area, Production and Productivity of Grape Crop in Afghanistan. *Journal for Research in Applied Sciences and Biotechnology*,**2**(2):170-175.
8. HASIBULLAH, M., D. MURUGANANTHI, AND A. ROHINI., 2020, Export performance and trade direction of fresh and dried Grapes (Raisin): evidence from Afghanistan. *Journal of Economics, Management and Trade*, **26**(4): 37-44.
9. YOUSUFI, A., 2016, Horticulture in Afghanistan: Challenges and opportunities. *Journal of Developments in Sustainable Agriculture*, **11**(1): 36-42.
10. Mushair H, Murugananthi D, Rohini A. Export performance and trade direction of fresh and dried grapes (Raisin): evidence from Afghanistan. Journal of Economics, Management and Trade. 2020 Jun 24;26(4):37-44.