



FoodBev SETA

Food & Beverages Manufacturing
Sector Education and Training Authority

Effects of Russia-Ukraine Conflict on the South African Food and Beverages Manufacturing Sector

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Abstract

The frequency and severity of shocks to food systems are accelerating globally and exacerbated by the conflict between Russia and Ukraine. Russia and Ukraine play an important role in global food production and trade. The two countries are some of the world's largest food exporters as they are net exporters of several of the leading cereal crops such as wheat, maize (corn), and barley. Moreover, they are dominant exporters of sunflower oil, which is one of the world's dominant vegetable oils. The conflict has reversed this economic trade flow after emerging. Thus, food supply chains have been adversely affected, with significant effects on production, sourcing, manufacturing, processing and logistics. The two countries trade considerably with South Africa, but little is known about how and to what extent the conflict has affected or is affecting the country's food and beverages manufacturing sector. This study addresses this limitation by investigating the effect of the conflict on the South African food and beverages manufacturing sector. The study is carried out using a convergent mixed methods parallel design which combines qualitative and quantitative methods. Data collection methods include surveys, interviews and focus group discussions with industry stakeholders. The findings illustrate that the effect of the conflict on the South African food and beverages manufacturing sector has been moderate to severe. The areas that have been affected include business operations, difficulty accessing goods and services internally and domestic sales. The sector, however, remains resilient in producing food and beverages for the country.

1. Introduction

Food security plays a critical role across the globe in ensuring the production of adequate food supplies, maximizing stability in the flow of supplies, and ensuring access to available supplies on the part of those who need them. Food security in developing countries is often dependent on increased access to developed country markets through trade liberalization (Benton *et al.*, 2022). Consequently, trade plays a crucial role in reducing food insecurity across the globe and provides greater choices in consumer goods. Historically, international trade has helped reduce food insecurity by connecting regions with limited agricultural potential and large populations to regions with comparative advantages in agriculture (Ash, 2015). It has also provided consumers access to a more diversified and nutritious food basket. Ensuring that markets around the world have access to nutritious food requires international trade and cross-border cooperation. Without trade, the pressure on local and national food systems to provide food security for citizens would be much greater and carry with it significant burdens on natural resources (Ash, 2015; Joubert *et al.*, 2022).

In the context of a global food system, the dynamics associated with international food trade have become key determinants of food security. Globalised food systems are increasingly susceptible to systemic risks, with natural, social, political and economic shocks in one region potentially leading to price spikes and supply changes experienced at the global scale (Hamilton *et al.*, 2020). The ongoing conflict between Russia and Ukraine is a perfect example of this because other interstate conflicts like the Qatar-Saudi Arabia Diplomatic, the United States of America-Iraq, Russia-Georgia and Israel-Palestine, to mention a few, have not disrupted global food systems. Put simply, little research attention has been paid to the effects of interstate conflicts on food manufacturing outside regions where there is conflict. It is against this background that the originality of this paper relates to highlighting the impact of the Russia-Ukraine conflict on the South African food manufacturing sector. According to research, Russia and Ukraine play major roles in global food production and trade (Duho *et al.*, 2022; FAO, 2022; Joubert *et al.*, 2022). The two countries together account for about 30% of global wheat and maize exports (Meijl *et al.*, 2022). Many food importing countries rely on the two countries to meet their consumption needs (Nasir and Nugroho, 2022; OECD, 2022). As such, the war could potentially harm global food security.

When putting more focus on the South African perspective, the two countries trade considerably with South Africa. In 2021, South African exports to Russia totalled slightly over R6 billion, and imports from Russia came to R9.2 billion (Business Insider SA, 2022). Russia is one of South Africa's major suppliers of wheat together with countries such as Lithuania, Poland, Australia, Latvia and Canada (Esterhuizen, 2022). Over the past five years, South

Africa imported around 30% of its wheat from Ukraine and Russia (Duho *et al.*, 2022; Esterhuizen, 2022). As a trading partner of Ukraine, South Africa imports malt from Ukraine. On the exports side, South Africa is also a major exporter of edible fruits and nuts to both Russia and Ukraine.

When Russia invaded Ukraine in March 2022, it disrupted global food systems and energy markets sending shockwaves across the world. Considering South Africa's high dependency on Russia and Ukraine, the shock has cast doubt on the country's recovery from COVID-19 which showed that the food industry is vulnerable to the effects of global shocks. It is important to understand the effect of the war on the country's food and beverages manufacturing industry because it is evident that apart from being a humanitarian tragedy, the conflict has emerged as an exogenous shock to global food supply chains as the two countries are major players on the global food market (Celi *et al.*, 2022; Hatab, 2022). All these mean that as the war continues to drag, it could have a cascading impact on South Africa's food prices (Duho *et al.*, 2022). It has been reported that the worldwide economic implications of the Russia-Ukraine conflict stretch in three different directions: financial sanctions, commodity prices and supply-chain disruptions (Mammadov, 2022). To unpack these directions, the conflict has aggravated global supply chains and added to the shortage of crucial commodities such as wheat, sunflower oil crude oil. Wheat is the main staple food for many South Africans meaning the war is likely to have devastating effects in the country.

It is further argued that the war has created a new multifaceted risk to the South African economy with higher energy and fuel prices increasing inflation which in turn is eroding disposable income and dampening consumer demand (Titov, 2022). Rising energy bills have spilled over increased food production costs and ultimately lead to higher food prices.

South Africa's food and beverages manufacturing sector is affected by Russia's invasion in the Ukraine. However, the impact is subsumed under broad themes such as the impact on the agricultural sector or global food security. There is no study that exclusively focused on the impact of the ongoing on the sector. This highlights the importance of bringing to attention the effects of the conflict on the food and beverages manufacturing sector whose performance is dependent on the two countries as major trading partners. It is for this reason that this study examines the effects of Russia's invasion of Ukraine in 2022. We do so with an understanding that, the ability of the sector to be a driver of growth in South Africa is dependent on possessing, among other things, information about the impact of disruptions to be able to implement measures to withstand future shocks as witnessed with the COVID-19 pandemic. For the SETA, there is also a need to understand the factors driving change in the sector and their implications on skills demand and supply so the SETA can provide support.

The following are the aims and objectives of the study:

1.1. Aim and Objectives of this Study.

1.1.1. Aim

To examine the effect of the Russian-Ukraine conflict on the South African food and beverages manufacturing sector.

1.1.2. Objectives

- i. To determine the level of effect of the Russian-Ukraine conflict on the South African food and beverages manufacturing sector.
- ii. To identify areas affected by the Russian-Ukraine conflict in the sector.

The rest of the paper is organized as follows. The next section reviews literature to establish how conflicts affect food security, the importance of Russia and Ukraine in the global food market and how the ongoing conflict is affecting the global community including South Africa. The aim is to determine the level of impact on the food industry. The literature review covers academic literature, published and unpublished reports and working papers which are considered useful to cover the aim and objectives. In section 3, we explain the methods used to address the aims and objectives of the study. The results of the study are presented and discussed in section 4. Finally, we present our concluding remarks in Section 5.

2. Literature Review

2.1. Effects of Interstate Conflicts on Food Security

Conflicts take part in many parts of the world, with negative impacts on food security. Prior studies have examined the link between conflict and food security and revealed that conflicts tend to affect food security by creating food shortages, which disrupt both upstream input markets and downstream output markets, thus, deterring food production, commercialization and stock management (Mbuli, 2019; Lin *et al.*, 2022). In conflicting situations, food systems get destroyed interrupting market supplies of food not only in these regions but also in neighbouring countries (Farukh *et al.*, 2021). What is clear from the literature is that most of these conflicts can be characterised as intrastate conflicts or civil wars as there is a limited focus on the impact of interstate conflicts which can have a direct and indirect impact on global

food security as we see with the Russian and Ukraine conflict. Intrastate wars have never resulted in far reaching cascading results on global food security to a point of catching the eyes of scholars. That said, only a few studies indicate that interstate conflict can also result in food insecurity (Mao, 2020; Farukh *et al.*, 2021). For example, recently there was a conflict in the Middle East involving Qatar, United Arab Emirates (UAE), Bahrain, Egypt, and Saudi Arabia (Farukh *et al.*, 2021).

The resultant economic and political blockade on all modes of transport in Qatar had food security implications within the borders of each of the countries involved. Despite the implications of the mentioned Qatar-Saudi Arabia Diplomatic Conflict on food security in each country, the impact on food systems in the global community was not significant or was not a global shock to the food industry like the ongoing Russia-Ukraine conflict. Other interstate conflicts such as the American invasion of Iraq, Russia and Georgia war, America's invasion of Afghanistan and Eritrean-Ethiopian war, to mention a few, have not disrupted food production and trade. Thus, it is evident that a deeper investigation of the relationship between interstate conflict and food systems is important. Russia and Ukraine conflict provides an opportunity to deeply investigate this the global community, including South Africa, is vulnerable to the shocks from the two countries as discussed below.

2.2. The importance of Russia and Ukraine to the Global Food Production Market

Ukraine and Russia are among the most important producers and exporters of food in the world (FAO, 2022). It is reported that Russia is the world's largest exporter of wheat and the second largest exporter of sunflower oil while Ukraine is the largest exporter of sunflower oil, the fourth largest exporter of maize and the fifth largest exporter of wheat (Benton *et al.*, 2022). Furthermore, Ukraine is also the largest exporter of soybean and plays a specific role in global markets. Given the importance of Russia and Ukraine for global food markets, Russia's aggression against Ukraine and political responses have significant and potentially longer-lasting implications for producers and consumers. Many countries across the world, particularly many African countries, heavily rely on imports of food from Russia and Ukraine to feed their population. Research shows that both countries play a critical role in supplying wheat to global markets, including to the Middle East and North Africa region, where wheat is the main staple food (FAO, 2022; Meijl *et al.*, 2022; Sihlobo, 2022). Reduced cereals and oilseeds export availability from Ukraine, the rising energy crisis together with economic sanctions and trade restrictions introduced by various countries across the world in response to the war have pushed up food prices (OECD, 2022).

2.3. Russia-Ukraine Conflict on the World

The outbreak of the Russia-Ukraine war on 24 February 2022, poses an existential risk to the global economy (FAO, 2022; Jagtap *et al.*, 2022). Despite it being a humanitarian tragedy, the conflict has adversely affected global food supply chains, with significant effects on production, manufacturing, processing and logistics (Duho *et al.*, 2022; TÁRIK, 2022). While food production has not stopped in Russia, the Russian invasion has forced Ukraine to ban the export of wheat, oats, millet, buckwheat and other foods for its own domestic food supply (OECD, 2022; TÁRIK, 2022). The two countries are major players on the global food market. Evidence from reviewed literature shows that Russia and Ukraine are significant players in the export of sunflower oil, wheat and corn in the global market (Hatab, 2022; Titov, 2022). According to Food and Agriculture Organisation (FAO) of the United Nations, nearly 50 countries across the world depend on Russia and Ukraine for at least 30% of their wheat import needs (FAO, 2022). Some regions are more affected than others. The majority of the countries affected are African countries including South Africa (Duho *et al.*, 2022; Hatab, 2022). In this way, Africa's food systems are susceptible to the impact of exogenous shocks as witnessed with the COVID-19 pandemic. Moreover, global shocks always have the most significant effect on the world's most marginalized people (National Agricultural Marketing Council, 2022).

The world economy, in particular developing countries, is already feeling the effect of the crisis of the Russia-Ukraine war (Duho *et al.*, 2022). This is due to the availability and supply of wide range of food, raw material and finished food product like wheat, corn, sunflower, and fertilizer are under threat (FAO, 2022). Consequently, the disruption to food output, supply chains, availability and affordability could have long-lasting impact in countries. According to Jagtap *et al.* (2022), in 2021 Africa received 40% of Ukraine's wheat exports, consequently, the conflict had its heaviest effect in the countries in Northern Africa. However, countries like Egypt have been able to fill some of the demand in the market. The main effect of the Russia/Ukraine conflict on the world economy is through higher prices of basic foods and crude oil (Rohner, 2022). World food prices rose to an all-time high in March 2022 as a result of Russia's invasion of Ukraine (TÁRIK, 2022), and this trend continues with the war. Millions of households are struggling with soaring food prices.

2.4. The effect Russia and Ukraine conflict on South Africa

South Africa is heavily reliant on 80% imported wheat from Russia and Ukraine, thus, price shocks and disruption in the supply of these goods are felt (Jagtap *et al.*, 2022). While research has revealed that South Africa is in a relatively fortunate position because of its vibrant

agricultural sector, which cushions the country against food shortages (Sihlobo, 2022), price increases are felt by consumers. It is crucial to investigate the effect of the conflict in South Africa to get a complete picture. The Russian invasion of Ukraine has sent prices of several essential commodities soaring, including edible oils such as sunflower oil – which was already in short supply over the last few years after poor harvests of sunflower, palm, soya, and canola in crucial regions of the world (Thukwana, 2022). According to National Agricultural Marketing Council (2022), in the past four months, the South African sunflower oil has increased by 45 to 55% driven largely by the shortage of sunflower supply in the global market due to the ongoing conflict in Russia and Ukraine. Moreover, the sanctions against Russia have significantly raised energy and oil prices as Russia is one of the world's largest energy exporters and oil producers.

The war has disrupted global energy markets. Rising energy bills have spillover effects on various activities along the food chain that undoubtedly increase food production costs and ultimately lead to higher food prices (FAO, 2022; Hatab, 2022). Food markets are highly integrated with the oil market; hence, any oil market changes directly impact the ability of food manufacturers to operate profitably (National Agricultural Marketing Council, 2022). Most food in South Africa is transported by road and therefore the rising price of fuel, particularly diesel, threatens food affordability.

It is evident that from the existing literature, food systems are susceptible to external shocks. The invasion of Ukraine by Russia is one of the primary drivers of the soaring food prices in the world and in South Africa. In this way, like many other African countries, South Africa is also feeling the effects of the war. However, the literature on the effects of the conflict on food and beverages manufacturing industry is limited, in particular the level and areas of impact are unknown. This limitation gap is addressed in this research.

3. Methodology

3.1. Study Approach

To address the aim and objectives, this study was carried out using a convergent mixed methods parallel design which can be symbolized as qualitative and quantitative. It is argued that a convergent parallel design entails the researcher concurrently conducting the quantitative and qualitative elements in the same phase of the research process (Demir, 2018). The overarching aim is a triangulation of one set of results with another to enhance the validity of inferences. In this study, the quantitative research approach involved collecting and analysing numerical data from online questionnaire designed by the FoodBev SETA research team. Qualitative methods included open-ended information. The adoption of a mixed method

approach was beneficial in this research that it allowed for corroboration and validation. The two approaches (qualitative and quantitative) complemented one another, with each compensating for the potential shortcomings of the other. They provide a better understanding of the problem and the effect of the war on South Africa as the study shows in the following section.

3.2. Study site, Sampling and data collection

The study was conducted in South Africa and all the respondents are located in all the Nine Provinces of the country. The qualitative aspect of this study included a comprehensive analysis of literature and reports on the problem under investigation, interviews and focus groups with different stakeholders from the industry. A total of four one-on-one interviews and eight focus group discussions were conducted virtually with representatives of industry associations, unions and companies operating in the food and beverages manufacturing sector using a semi-structured interview guide. The information gathered was analysed thematically.

In addition to qualitative data, as indicated above, quantitative data was also gathered to provide a landscape view of the current local and global factors impacting the food and beverage manufacturing sector. The quantitative strand included an online survey which was distributed to FoodBev SETA companies via email to system contacts on record and through FoodBev SETA's social media platforms. The target population was 800 company representatives. A sample size of 213 was determined using a confidence interval of 95% and a margin of error of 5%. Overall, a total of 217 stakeholders completed the survey

3.3. Data Analysis

The results of the survey were analyzed using the Statistical Package for Social Science (SPSS) Version 28. The Cronbach Alpha test was conducted to test for the internal consistency of the responses. Univariate and bivariate statistics were used to present the finding of the analysis. However, one limitation of the study is the weighting, statistical weighting was not applied to the data and may not present a balanced view of the result.

4. Findings and Discussion

Effects of Russian-Ukraine Conflict on FoodBev Chambers and Sub-sectors

The South African food system is closely connected to the global food chain and is affected by changes in the global marketplace (National Agricultural Marketing Council, 2022). The most notable effect of the Russian – Ukraine conflict on South Africa has been the rising fuel, food prices and inflation. This is consistent with literature that revealed that food prices are integrated with the oil market. The economy and its sectors have experienced the effect in various ways. Sixty-eight percent (68%) of the Food and Beverage manufacturing companies have indicated that the conflict has affected business operations.

Figure 1 shows chambers that are affected by the Russian-Ukraine conflict. The Manufacture of Food Preparation products has mostly experienced the effect of this conflict than other chambers (Figure 1). A Cronbach's Alpha's test was performed on the questions and the section was found to be internally consistent (0.88). Companies within the Manufacture of Food Preparation Products constitute the majority that has been affected by the conflict. It has been indicated that South Africa imports wheat from the two countries. Therefore, this can be attributed to the availability of wheat which is the second most important grain commodity in South Africa after corn. The other two most affected chambers are the Production, Processing and Preservation of Meat, Fish, Fruit, Vegetables, Oils and Fats and the Manufacture of Beverages at 21% and 16% respectively.

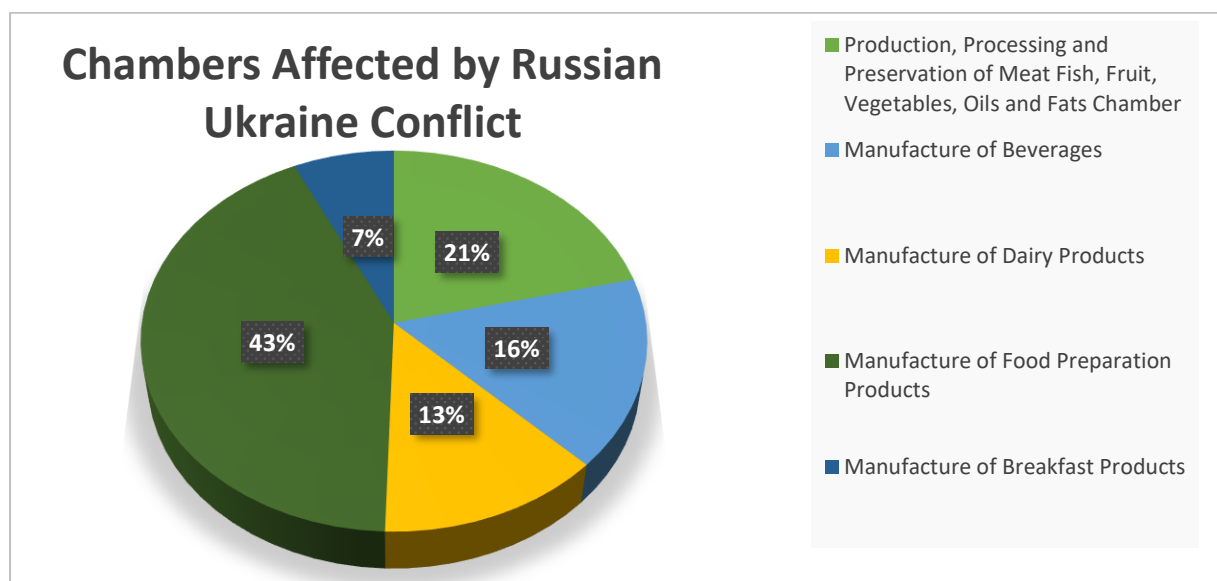


Figure 1: Chambers Affected by the Russian-Ukraine Conflict

Looking at the specific industries affected by the ongoing conflict, Figure 2 below shows that baking and other food products industries are being affected the most by the ongoing conflict. According to stakeholders interviewed, the Russian invasion of Ukraine has put the supply of wheat and other food products in jeopardy. As reported, both Russia and Ukraine have suspended exports for their key agricultural commodities to protect their own food security. The impact of this in the baking industry is evidenced by the rising prices of bread in South Africa. Arguably, this effect on the baking industry, is inconsistent with Sihlobo (2022) who revealed South Africa has managed to achieve self-sufficiency in grain production in 2021 to a point of avoiding adverse effects (Sihlobo, 2022). It is a further indication that Russia and Ukraine are not even in the top 5 of South Africa’s wheat importers with countries such as Poland, Australia, Latvia and Canada topping the list (National Agricultural Marketing Council, 2022).

Another sector affected by the war, though not severely, is the fruit and vegetables sector as the conflict has throttled South Africa’s fruit exports according to stakeholders from the sector. Russia and Ukraine are significant exporters of sunflower oil and the conflict has dramatically driven vegetable oil prices (FAO, 2022). Interestingly, despite the rising prices of vegetables oils and sunflower oil as reported in the literature, the results of the survey indicate little impact but interviews with stakeholders confirmed that indeed oil prices are rising and they are largely driven by the shortage of sunflower oil in the global market due to the shortages in the global market resulting from the conflict. This is consistent with report (National Agricultural Marketing Council, 2022) that revealed increasing sunflower oil prices in South Africa. With the war continuing, the likelihood that vegetable oil prices will continue to rise is very high.

Table 1: South African Food and Bev manufacturing Sub-sectors affected by the Russia-Ukraine conflict

Sub-sector	Count of Response	%
<i>Baking industry</i>	15	14
<i>Beer and Malt Industry</i>	4	4
<i>Confectionary Industry</i>	7	7
<i>Dairy Industry</i>	12	11
<i>Fish industry</i>	4	4
<i>Fruits and Vegetables Industry</i>	11	11
<i>Grain Mill Industry</i>	5	5
<i>Meat Industry</i>	9	9
<i>Oils and Fats Industry</i>	3	3
<i>Other Food Products Industry</i>	18	17
<i>Snacks Industry</i>	8	8
<i>Soft Drinks and Water Industry</i>	3	2

<i>Wine and Spirits industry</i>	5	5
<i>Grand Total</i>	104	100%

4.1. Level and Areas of effect on the sector

The effect of the Russia – Ukraine conflict has been moderate to severe as reflected in Table 1. The effect for many food and beverage manufacturing companies has emanated from the rising price of fuel which has a direct cost on operations. As the operation costs increase, this is passed on to the consumer in increases in food (National Agricultural Marketing Council, 2022). The rising food prices also affect companies that are experiencing tighter profit margins because consumers are re-evaluating their use of disposable income. Furthermore, another area experiencing challenges in the sectors is in the accessing of goods. The conflict has affected the global logistics market. As a result, the survey results indicate that difficulty accessing materials, goods, and services internationally, and lower domestic sales to businesses are the only areas to experience a severe effect greater than 20%. Stakeholders have noted the scarcity of certain products which are imported to continue certain production operations and the difficulty in accessing those products from other suppliers. This is in line with research which found that the supply of food products to the world has been severely impeded by the ongoing conflict (FAO, 2022). Notwithstanding, generally the immediate impacts of the war on South Africa’s food and beverages manufacturing industry are not severe.

Table 2: Effect of the Russian-Ukraine Conflict

	No effect	Low effect	Moderate	Moderate to severe	Severe effect
Difficulty accessing materials, goods, and services internationally	16%	19%	25%	18%	25%
Difficulty exporting goods and services	31%	21%	14%	15%	19%
Difficulty importing goods from abroad	24%	19%	29%	14%	14%
Lower domestic sales to consumers	15%	19%	26%	22%	18%
Lower domestic sales to businesses	19%	16%	32%	12%	21%
Increased domestic sales	36%	17%	20%	10%	16%
Difficulty exporting	42%	11%	18%	13%	17%
Improved exporting of goods	55%	13%	17%	6%	9%

5. Conclusion and Recommendations

This study aimed to examine the effect of the Russian-Ukraine conflict on the South African food and beverages manufacturing sector. The global shock wave of the conflict between Russia and Ukraine is a factor that every sector is grappling with, and the pressure on business is being passed on to consumers who are dealing with reduced disposable income. Overall, the food and beverages manufacturing sector has been insulated from the worst effects of the conflict because of South Africa's vibrant agricultural sector, which cushions the country against food shortages in the foreseeable future. In the immediate, the effect on the sector ranges from no impact to moderate impact. However, there is no dispute that the Russia-Ukraine conflict in the long-term impact on the sector will be moderate to severe and thus delay recovery from COVID-19 pandemic. The study has shown that the conflict has been a definite shock to the sector. However, the sector is resilient and will continue to navigate the ongoing effects of the conflict. It is evident that the sector can withstand and recover from disruptions in a way that ensures a sufficient supply of acceptable and accessible food for all as witnessed with the COVID-19 pandemic. In terms of the level of impact in the area of food trade, the sector is not severely affected by the war despite minor supply-chain related challenges caused by the suspension of exports or the introduction of export licenses for agricultural commodities in both Russia and Ukraine.

Recommendations

Based on the findings of the research, the following recommendations are made:

- The Ukraine–Russia conflict has highlighted the vulnerability of the global food system, demonstrating the importance of restructuring the food system to improve resilience to future shocks and stressors. The sector should consider researching alternative suppliers, preferably in different locations. This way, the sector is able to maintain production as the war continues to affect global supply chains.
- From a skills development perspective, there is a strong need to build adaptability and resilience skills to thrive during evolving business situations.
- The research further highlights an urgent need to build the capacity of food scientists and technologists and business strategists working across the food value chains in the country. This will equip them with skills and knowledge to design and implement research and interventions better targeted at developing resilient food systems.
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6. References

- Ash, K. (2015) 'The role of agricultural trade in delivering sustainable food systems Jared Greenville Net production Net per capita production', (September).
- Benton, T.G. *et al.* (2022) 'The Ukraine war and threats to food and energy security prices and supply disruptions', (April).
- Business Insider SA (2022) 'Russia is now looking beyond SA, as it tries to replace European imports with African'. Available at: <https://www.businessinsider.co.za/russia-wants-more-african-trade-missions-for-european-import-replacement-2022-3>.
- Celi, G. *et al.* (2022) 'The Ripple Effects of the War in Ukraine', *Intereconomics*, 57(3), pp. 140–140. doi:10.1007/s10272-022-1048-3.
- Demir, S.B. (2018) 'A convergent parallel mixed-methods study of controversial issues in social studies classes: A clash of ideologies', *Kuram ve Uygulamada Egitim Bilimleri*, 18(1), pp. 119–149. doi:10.12738/estp.2018.1.0298.
- Duho, K.C.T. *et al.* (2022) 'Exploring the Russo-Ukrainian Crisis and Its Impact on African Countries : A Cross-Regional Analysis', (May). doi:10.2139/ssrn.4085903.
- Esterhuizen, D. (2022) 'Report Name : Grain and Feed Annual', pp. 1–22.
- FAO (2022) *Impact of the Ukraine-Russia conflict on global food security and related matters under the mandate of the Food and Agriculture Organization of the United Nations (FAO*. Available at: <https://www.fao.org/3/ni734en/ni734en.pdf>.
- Farukh, B. *et al.* (2021) 'Food Security as Correlate of Interstate Conflict: A Case Study of the State of Qatar', 21(4).
- Hamilton, H. *et al.* (2020) 'Exploring global food system shocks , scenarios and outcomes', *Futures*, 123.
- Hatab, A.A. (2022) 'Russia's invasion of Ukraine jeopardizes food security in Africa : Shocks to global food supply chains could lead to social and political unrest (NAI Policy Notes 2022:5)'.
- Jagtap, S. *et al.* (2022) 'The Russia-Ukraine Conflict : Its Implications for the Global Food Supply Chains', (February), pp. 1–23.

Joubert, C. *et al.* (2022) 'Trade and food prices for south africa'.

Lin, T.K. *et al.* (2022) 'Pathways to food insecurity in the context of conflict : the case of the occupied Palestinian territory', pp. 1–19. doi:10.1186/s13031-022-00470-0.

Mammadov, E. (2022) 'The Economic Consequences of Russia-Ukraine War for', (March).

Mao, H. (2020) 'Friends like this : The impact of the US – China trade war on global value chains', (April), pp. 1776–1791. doi:10.1111/twec.12967.

Mbuli, B. (2019) 'FAO and the Situation of Food Security and Nutrition in the World', *Journal of Nutritional Science and Vitamonology*, pp. 4–8.

Meijl, H. Van *et al.* (2022) *Impacts of the conflict in Ukraine on global food security*.

Nasir, M.A. and Nugroho, A.D. (2022) 'Impact of the Russian – Ukrainian Conflict on Global Food Crops'.

National Agricultural Marketing Council (2022) *The impact of the RussiaUkraine conflict on South African oil price*. Available at: <https://www.namc.co.za/wp-content/uploads/2022/08/Trade-Probe-Issue-89.pdf>.

OECD (2022) 'The impacts and policy implications of Russia's aggression against Ukraine on agricultural markets'. OECD. Available at: <https://www.oecd.org/ukraine-hub/policy-responses/the-impacts-and-policy-implications-of-russia-s-aggression-against-ukraine-on-agricultural-markets-0030a4cd/>.

Rohner, D. (no date) 'Global Economic Consequences of the War in Ukraine Sanctions , Supply Chains and Sustainability', in.

Sihlobo, W. (2022) 'May 2022 Reflections on South Africa ' s food security : the effects of the Russia-Ukraine war Africa ' s food conditions Do we face food insecurity in South Africa ?', (May), pp. 3–6.

TÁRIK, M. (2022) 'The Russo-Ukrainian War Is A Threat To Food Security In The Arab World', *International Refereed Journal On Social Sciences*, 8(48), pp. 2748–2755. doi:<https://doi.org/10.5281/zenodo.6977088>.

Thukwana, N. (2022) 'Sunflower oil is up 55%, and canola 40%, in two months – and worse is still to come', *Business Insider South Africa*. Available at: <https://www.businessinsider.co.za/cooking-oil-has-risen-over-50-and-the-war-in-ukraine-will->

worsen-the-price-outlook-2022-4.

Titov, A. (2022) 'The Impact of the Ukraine War on Russia', *Political Insight*, 13(2), pp. 32–36. doi:10.1177/20419058221108783.

Ash, K. (2015) 'The role of agricultural trade in delivering sustainable food systems Jared Greenville Net production Net per capita production', (September).

Benton, T.G. *et al.* (2022) 'The Ukraine war and threats to food and energy security prices and supply disruptions', (April).

Business Insider SA (2022) 'Russia is now looking beyond SA, as it tries to replace European imports with African'. Available at: <https://www.businessinsider.co.za/russia-wants-more-african-trade-missions-for-european-import-replacement-2022-3>.

Celi, G. *et al.* (2022) 'The Ripple Effects of the War in Ukraine', *Intereconomics*, 57(3), pp. 140–140. doi:10.1007/s10272-022-1048-3.

Demir, S.B. (2018) 'A convergent parallel mixed-methods study of controversial issues in social studies classes: A clash of ideologies', *Kuram ve Uygulamada Egitim Bilimleri*, 18(1), pp. 119–149. doi:10.12738/estp.2018.1.0298.

Duho, K.C.T. *et al.* (2022) 'Exploring the Russo-Ukrainian Crisis and Its Impact on African Countries : A Cross-Regional Analysis', (May). doi:10.2139/ssrn.4085903.

Esterhuizen, D. (2022) 'Report Name : Grain and Feed Annual', pp. 1–22.

FAO (2022) *Impact of the Ukraine-Russia conflict on global food security and related matters under the mandate of the Food and Agriculture Organization of the United Nations (FAO)*. Available at: <https://www.fao.org/3/ni734en/ni734en.pdf>.

Farukh, B. *et al.* (2021) 'Food Security as Correlate of Interstate Conflict: A Case Study of the State of Qatar', 21(4).

Hamilton, H. *et al.* (2020) 'Exploring global food system shocks , scenarios and outcomes', *Futures*, 123.

Hatab, A.A. (2022) 'Russia's invasion of Ukraine jeopardizes food security in Africa : Shocks to global food supply chains could lead to social and political unrest (NAI Policy Notes 2022:5)'

Jagtap, S. *et al.* (2022) 'The Russia-Ukraine Conflict : Its Implications for the Global Food Supply Chains', (February), pp. 1–23.

Joubert, C. *et al.* (2022) 'Trade and food prices for south africa'.

Lin, T.K. *et al.* (2022) 'Pathways to food insecurity in the context of conflict : the case of the occupied Palestinian territory', pp. 1–19. doi:10.1186/s13031-022-00470-0.

Mammadov, E. (2022) 'The Economic Consequences of Russia-Ukraine War for', (March).

Mao, H. (2020) 'Friends like this : The impact of the US – China trade war on global value chains', (April), pp. 1776–1791. doi:10.1111/twec.12967.

Mbuli, B. (2019) 'FAO and the Situation of Food Security and Nutrition in the World', *Journal of Nutritional Science and Vitamonology*, pp. 4–8.

Meijl, H. Van *et al.* (2022) *Impacts of the conflict in Ukraine on global food security*.

Nasir, M.A. and Nugroho, A.D. (2022) 'Impact of the Russian – Ukrainian Conflict on Global Food Crops'.

National Agricultural Marketing Council (2022) *The impact of the RussiaUkraine conflict on South African oil price*. Available at: <https://www.namc.co.za/wp-content/uploads/2022/08/Trade-Probe-Issue-89.pdf>.

OECD (2022) 'The impacts and policy implications of Russia's aggression against Ukraine on agricultural markets'. OECD. Available at: <https://www.oecd.org/ukraine-hub/policy-responses/the-impacts-and-policy-implications-of-russia-s-aggression-against-ukraine-on-agricultural-markets-0030a4cd/>.

Rohner, D. (no date) 'Global Economic Consequences of the War in Ukraine Sanctions , Supply Chains and Sustainability', in.

Sihlobo, W. (2022) 'May 2022 Reflections on South Africa ' s food security : the effects of the Russia-Ukraine war Africa ' s food conditions Do we face food insecurity in South Africa ?', (May), pp. 3–6.

TÁRIK, M. (2022) 'The Russo-Ukrainian War Is A Threat To Food Security In The Arab World', *International Refereed Journal On Social Sciences*, 8(48), pp. 2748–2755. doi:<https://doi.org/10.5281/zenodo.6977088>.

Thukwana, N. (2022) 'Sunflower oil is up 55%, and canola 40%, in two months – and worse is still to come', *Business Insider South Africa*. Available at:

<https://www.businessinsider.co.za/cooking-oil-has-risen-over-50-and-the-war-in-ukraine-will-worsen-the-price-outlook-2022-4>.

Titov, A. (2022) 'The Impact of the Ukraine War on Russia', *Political Insight*, 13(2), pp. 32–36. doi:10.1177/20419058221108783.