

# The Entrepreneurship Evolution Of Flour-Milling

Philemon Kwaramba\*, Midway Bhunu\*\* and Ngoni Adrian Chitondo\*\*\*

\*-Development Economist (SIRDC);

\*\*-Graduate Student, Chinhoyi University of Technology and Coffee Researcher/Consultant;

\*\*\*- Graduate Student, Chinhoyi University of Technology and Miller

---

## Abstract

*This Paper Covers The Entrepreneurship Evolution Of Flour Milling, Reflecting Upon The Transition From Manual Processing, Intermediate Mechanization To Large Scale Factory-Type Processing. Various Global And Africa-Wide Survival Strategies Are Shared For Wider Critique And Possible Modification. The Future Prospects Are Also Tabled For Further Scrutiny. The Guiding Entrepreneurship Theories Included: Resource-Based (Flour), Innovations, Economic And Opportunity-Based Inspirations Into Entrepreneurship.*

---

Date of Submission: 02-07-2023

Date of Acceptance: 12-07-2023

---

## I. Introduction

The origin of wheat is not very clear to many. It is thought to have been first cultivated in the Middle East spreading from Jordan, Palestine and Lebanon to Syria, Turkey, Iran and Iraq (Sousa et al., 2021). The flour milling process has evolved from wheat being ground between two large stone wheels (although this process does still occur in a few mills). In a roller mill the practice centers around separating the three components of a wheat seed – the white endosperm, the outer bran layers and the wheat germ. These are each made up of different materials and when separated and milled in isolation the miller can produce flours that are finer and therefore better suited for today's uses.



## II. The Evolution of Flour Milling

Going back thousands of years ago in the ancient Egyptian era whenever they wanted to make bread would take variety of wheat grains and pound it with rocks until it was fine enough to make bread. Taking into consideration that their flour was coarser than the flour we see today. Now for this era they used to trade with grain for example wheat which was not yet purified into flour and pounding the wheat was a hard task to do but because it was done to feed the family or as a gift it was manageable.

Now as more and more people started to make bread their daily food the production of flour at home was becoming a mammoth task as stated above that they used to pound the wheat till it was fine enough to make bread. Fed up with the long and mostly difficult process of flour milling the Greeks created the first dedicated flour mill in the fifth century BC which was simple yet much more efficient than simply pounding the grains with rocks.

However, the human mind is always after the most efficient and easy way to produce desired product, hence the Romans created the first rotary corn mill, it was driven by horses, donkey or mules which ever that was

used within that time in labour and eventually created water mills that could constantly grind flour on a much larger scale. This was a huge step into realisation that they could grind flour and make profit from it. So now this is the huge dive into entrepreneurship which gave rise to a more advanced simpler method. As with many Roman inventions, this one also spread, and flour milling became a common place.

From there it was a real task to make flour milling a very successful business which involved eliminating labour costs and finding ways to make the process more efficient, hence the first automated flour mill was invented in the US during 1785 and the first one to use steam power was built in 1865 in Hungary. The two inventions were combined to create a roller mill, which used a series of metal rollers which would break down the wheat into smaller fractions and remove the germ and the bran completely and proved to be very effective in the gradual reduction process. This innovation brought about the end of the traditional Middle Ages.

The Milling Revolution was a span of twenty to thirty years beginning about 1870 when numerous technologies and innovations occurred in the industry. Perhaps one of the most important the Evans automatic mill system. This process reduced the total amount of labour needed by more than half, eliminated all the most strenuous labour and increased the total flour yield from wheat. The greatest percentage increase in production can be seen during the years of milling revolution, the product of these and other technical innovation.

The modern mills are fully automated and the whole process can be controlled by one miller on his gadget (computer, tablet etc) from drawing wheat from the silos, cleaning, gristing and conditioning to the milling, blowing product into silos and or packing and palletizing then moving the product into the finished goods warehouse. Application of robotics, sensors, PLCs, laser ray technology and integrated networks systems has made all this possible reducing the head count significantly. Application of supply chain 4.0 principles where there is the use of advanced robotics, and the application of advanced analytics of big data in supply chain management: place sensors in everything, create networks everywhere, automate anything, and analyze everything to significantly improve performance and customer satisfaction, has also resulted in huge success and paradigm shift in the milling sub-sector.

### III. Guiding Entrepreneurship Theory:

*Resource-based theory:* this relates to entrepreneurship whose origin are a commodity like peanuts which are then value-added into products that are commercialized globally

*Innovation-based theory:* this relates to research and development (R&D) outputs, in this case value-added products used in the confectionary industry and marketed globally

*Opportunity-based theory:* this relates to the supply of value-added products to meet protein needed for various clientele, besides protein from meat products. Wider commercialization entail setting up of processing factories and development of World-wide brands

*Economic-based theory:* this relates the deliberate pursuit of market opportunities for value-added peanuts and butter within the confectionary sector.

### IV. Flour Market Dynamics: Environmental changes in the Flour Milling Business

The advancement in technologies in the milling industry required mills to become more proficient in the acquisition of and management of capital as well, perhaps one of the most important changes was the transportation allowed mills to locate away from the initial grain collection sites and ship their products to new and distant markets.

Barriers to entry by beginners were very few but the use of new innovations required firms to invest large amounts of capital. Using some of porter's forces we can look at the environmental change in the operation of the flour milling business

The bargaining power of buyers, the bargaining power of flour buyers as a group had traditionally been minimal. Consumers were usually isolated from only other producers of flour other than their own local mill. The introduction of the milling revolution changed all this. Expansion of trade due to railway systems, road systems allowed brands of flour to be bought outside their usual trading area. We can look at the Zimbabwean case where a lot of flour is found on shelf in retail shops for example Gloria, Baker's pride and other different ones.

As the country continues to face economic challenges, raw materials are increasingly in short supply. Even if they are there, they are expensive. This means that manufacturers will have to sell products at higher, less competitive prices. That Zimbabwe is landlocked doesn't help matters. Raw materials that are not locally available have to be shipped in and this may take time. As a result, production is delayed often. Government should go on a drive to support local production so that raw materials become available locally. This will go a long way in alleviating this challenge.

For manufacturers who rely on imported raw materials, forex challenges are a reality. The banks have had instances where they do not have foreign currency yet the parallel market which never runs dry is

illegal. Those with foreign shareholders find that they cannot pay their dividends. Some companies have come out lamenting how it is proving difficult to pay shareholder dividends and repay foreign loans. They now owe millions in unpaid funds although locally, they have enough money. Currency issues must be addressed once and for all and we certainly would want the ZWL to provide an answer for business. So far so good as the auction system has led to provision of forex at a discount.

### **V. The Flour Pricing System**

Many millers struggle to compete on price with cheaper imports that are competing with their products. Competition is healthy; however, it remains government's duty to protect local manufacturers. South Africa decided to ban importation of second-hand cars years ago so as to enhance local growth and this seems to have paid off. In Zimbabwe, imposition of duty on goods that are found locally has helped but this is not enough.

In Zimbabwe, power supply is erratic. Although this is much better now than it was a few years ago, it remains a challenge. Electricity is also expensive. Millers who rely heavily on electricity to power their machinery are always the biggest losers. While some have invested in generators, fuel prices mean that these are more expensive to run at the moment and the most benefit one can get is break even at PBT level and maintain market presence. Other sources of power need to be explored. Solar quickly comes to mind. This can be cheap and effective.

### **VI. The Brain Drain Challenge**

Although this is not unique to manufacturers, brain drain adversely affects production. Many years of economic decline have disillusioned many professionals who have opted to go and work abroad where salaries and conditions are better. Currently, an estimated 4 million Zimbabweans are living abroad. Some of these are people with the skills needed to drive our industries. Many companies are left to employ unqualified staff with little or no experience to perform optimally. This results in poor quality products being churned out into the market

### **VII. Challenges faced by Millers**

Access to credit is limited for most small-scale millers. They do not have the required collateral so the banks will not offer them loans to grow their businesses. Consequently, they must rely on old and dilapidated equipment and, as technology develops, they are left behind. The small companies will remain small or even close and this is worrisome. Efforts by government to support manufacturers are still not enough as only those with the right political links seem to benefit from government programmes.

Zimbabwean millers need to focus on finding solutions to the challenges that face them. Where government support can be accessed, they should take advantage of such opportunities. That way, manufacturing will be our economic anchor together with mining and agriculture. Government also needs to play its part. Firm rivalry in the milling industry is not intense. The industry participants not only have to contend with numerous laws, but also high storage costs inherent to the business.

Economic problems are mostly one of the major changes in operating environment of flour milling. In Zimbabwe it is not news of the current prevailing inflation and exchange rates. Firms had enjoyed the profits of the business until 2008 where the economic crisis reached its peak. The problem this posed on the flour milling sector was mainly to do with purchase of the raw materials and spares for the plants. Due to poor local production of wheat, millers had to import the wheat from all over the world, Canada, USA, Russia, Ukraine, Australia, South Africa etc. With shortage of foreign currency at the time and stifling inflation, acquiring the raw materials and spares was a huge challenge for the millers and some closed their factories and or some of their factories.

War can lead to a major disruption of business regardless of where you are. It has been evident in the recent Russia and Ukraine crisis as Zimbabwe was not spared the brunt of prices increases and supply chain gaps, as most of our wheat comes from both Russia and Ukraine. Local supply of wheat has been low over the years but the current harvest having drawn lessons on the recent challenges in the supply chain of self-reliance looks set to greatly improve the situation as the wheat price is now coming down.

Regulation of this industry for the selling price of flour and of bread has continued to be a challenge in this sector especially when there is no cheaper subsidized local wheat on the market. This then pushes the millers to find cheap wheat parcels of wheat across the globe which may not give them the efficiencies they desire on extractions and quality, having to add improvers which affect their costs in turn. At times the industry has enjoyed restrictions on imports to stimulate uptake of the local products and stimulate industrial growth.

Threat of new entrants is essentially neutralized. Most entrants are kept at bay by the high cost of capital investments required to successfully compete in the flour milling industry. Prime locations those providing power, raw materials and transportation are mostly occupied by established firms.

### VIII. Survival Strategies of the Industry

The flour milling Industry has survived through years of economic hardships, challenges in access to foreign currency, hyper-inflation and currency changes amongst a few high-level environmental issues due to several reasons. Chief amongst them is that it is a sector which requires huge capital investments for start-up and requires special skills set for the millers who run the plant and it is not a common trade the world over. To start a flour mill, one needs to invest in storage structures for the grain, a well laid out cleaning section for the wheat, a multi-floor building for the actual mill and storage for the finished product. A sophisticated laboratory is a must for the various tests done on the grain and flour before, during and after milling are a must to ascertain product quality for the bakers.

As mentioned previously some organizations at the height of economic meltdown had to shut down operations and to date, they are still struggling to get back up and recover the market share. Those who were prudent in forward planning, strategic partnerships and engaging the government on policy matters have managed to remain standing. Forward planning includes but is not limited to wheat pipeline from the suppliers, spares procurement, succession planning to avoid brain drain and retention schemes for the people who work in the organization. People are the most important resource in any organization so taking proper care of employees is of paramount importance. This does not only relate to remuneration but training needs, having personal development plans and retention plans for the employees ensures continuity and survival of the sector.

Strong leadership has also been instrumental in the survival of the sector, ensuring all facets of the business environment are critically analysed at each level and correct decisions are made daily in the planning process. For the planning process to be efficient, accurate and detailed reports for every facet of the business are required. The operating environment in Zimbabwe though currently enjoying some form of stability is characterized by unexpected policy changes which tend to shake the industry and the economy at large but strong leaders always sit down with their teams and find ways around the challenges to continue supplying high quality flour to the market. Customer relationships also help to maintain and grow market share ensuring the survival of the business and presenting opportunities for growth.

### References

- [1]. Hytti, U., & O Gorman, C., (2004), What Is Enterprise Education? An Analysis Of The Objectives And Methods Of Enterprise Education Programs In Four European Countries; *Journal Of Education And Training*, 46(1): 11-23.
- [2]. Kazemi, M., (2002); Assessing Entrepreneurship By Industrial Managers, Casual Study: Khorasan Province; *Science And Development Magazine*, 48-58.
- [3]. Malek Mohammadi, A., (2007), *Promotion And Teaching Of Agriculture And Natural Resources*; Vol. 2, University Publishing Center, Tehran.4-7.
- [4]. Mc Elwee, G., (2005), *Developing Entrepreneurial Skills Of Farmers*; University Of Lincoln.4-7.
- [5]. Mokaya, S.O., Namusonge, M., & Sikalieh, D., (1995), The Concept Of Entrepreneurship; In Pursuit Of A Universally Acceptable Definition. *International Journal Of Arts And Commerce*, 1(6): 128-135.
- [6]. Movahedi, R., & Yaghoobifrani, A., (2012), *Introduction To Rural Entrepreneurship*; Bu Ali Sina University Press (In Persian).
- [7]. Mueller, S.L., & Thomas, A.S., (2000), Culture And Entrepreneurial Potential: A Nine Country Study Of Locus Of Control And Innovativeness; *Journal Of Business Venturing*, 16: 51-75.
- [8]. Sousa T, Ribeiro M, Sabença C, Igrejas G (2021). The 10,000-Year Success Story Of Wheat! *Foods*. 10(9):2124. Doi: 10.3390/Foods10092124.