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Western Heads East: a Three Pronged Approach to Addressing the Challenges Faced by the Probiotic Yoghurt Kitchens

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Western Heads East: a Three Pronged Approach to Addressing the Challenges Faced by the Probiotic Yoghurt Kitchens

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EXECUTIVE SUMMARY

Western Heads East (WHE), is a social enterprise initiative started by Western University in partnership with African universities, women's groups, and research institutes. The 'Yoghurt Mamas' produce and sell probiotic yoghurt, which confers a nutritional benefit to its consumers, particularly to individuals suffering from HIV/AIDS. The program benefits the community, serving to empower women through sustainable economic development. The collaboration has resulted in the establishment of 10 community kitchens throughout Kenya, Rwanda, Uganda and Malawi (WHE, 2017).

Despite its success the program still faces significant challenges, which this report aims to address through a multi-faceted solution. The first challenge involves consumers misconceptions of the use of probiotics. Many consumers of the yoghurt are HIV positive and believe the yoghurt offers medicinal benefits, and consequently stop taking their ARVs. While the probiotic yoghurt confers health benefits for its HIV positive consumers, it is not a replacement for medication. A second challenge is the lack of a uniform packaging strategy for the yoghurt. Many kitchens are currently using illegal methods like collecting and recycling old water bottles. A third challenge involves the incorrect usage and marketing of probiotics, many kitchens are not currently using probiotics in their yoghurt or they are diluting the probiotics. A final challenge is the lack of financial and entrepreneurial knowledge among the yoghurt mamas.

This report proposes a three-pronged approach to respond to the challenges faced by WHE and the yoghurt kitchens. It will initially be implemented in two kitchens, through a grant of \$82,000 US. If it is successful it can be expanded to all of the kitchens. The first part of the approach involves a glass jar packaging strategy, where consumers return their glass containers for a small stipend. Consumers will be placed on a registry to track their usage. Once they have more than 3 glass jars to their name they will need to either return their jars or pay an additional container fee. The second part of the approach involves financial training, which will be targeted directly at the Yoghurt Mamas to develop their entrepreneurial skills and address their present financial challenges. The third and final aspect of the proposal involves health education, targeted at Yoghurt Mamas and church leaders in order to raise community members understandings of the correct usage and benefits of probiotics.

The success of this proposal will be measured in a few ways. First, to assess the financial knowledge of the Yoghurt Mamas, the financial records/books will be examined periodically, to ensure the financial expert was beneficial for the Mamas. The next two goals, health education and the use of glass jars as packaging will be monitored through qualitative surveys of the clients and the Yoghurt Mamas. Financial analysis of the proposal indicates that it will start earning a profit after two years.

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BACKGROUND ON WESTERN HEADS EAST

WHE Business Model

Western Heads East (WHE) is a grassroots initiative by the University of Western Ontario in partnership with African universities, women's groups, and research institutes (WHE, 2017). The program establishes social enterprises in under-serviced areas of East Africa in the form of probiotic yoghurt kitchens led by local women (WHE, 2017).

The current business model for the kitchens is a mixed non-profit and retail model. The kitchens are involved in a local value chain that produces and locally distributes probiotic yoghurt to their respective communities, typically earning a small profit that is in turn put back into running the business (WHE, 2017). The kitchens also benefit from free access to patented bacterial strains and will soon have access to pre-packaged probiotics (WHE, 2017). The WHE venture has strong pro-social mandates, including the promotion of health, providing free yoghurt to HIV infected individuals, and empowering women through economic development. Despite all of this success, WHE is still largely dependent on donations and grant money. The program is currently struggling to become a sustainable business in the face of slow growth and entrepreneurial challenges, and will need to make necessary changes to have all of their kitchens become financially empowered and sustainable social enterprises.

Health Benefits of the WHE Probiotic Yoghurt Program

Probiotics are live microorganisms otherwise known as "good bacteria" that deliver health benefits to their host (Goldin, 1998). "Fiti", meaning health in Kiswahili, was the probiotic yoghurt developed by WHE (Hekmat & Reid, 2006). The probiotic yoghurt is a nutritious food source that provides both protein and vital nutrients, such as calcium, potassium and magnesium (Goldin, 1998; Reid, 2006; Western Heads East Program). It is especially

beneficial for children, as it helps build stronger immune systems and boost energy levels. This is critical for young children who are often susceptible to life-threatening cases of diarrheal diseases during their formative years. The yoghurt has also been found to boost pediatric growth; kids drinking Fiti Yoghurt have been found to develop at faster rates compared to their peers (Western Heads East Program, 2017). Dr. Reid proposes that this effect is due to a lowered rate of infection in the children who drink Fiti regularly (Lilly & Stillwell, 1965; Reid, 2008; 2010).

The probiotic yoghurt is also beneficial to HIV positive consumers as it has been found to increase their CD4 counts, lessen the wasting symptoms of their disease and make their medications easier to tolerate (Whaling *et al*, 2012). Dr. Reid's research of probiotics and vaginal health found that women without sufficient lactobacilli bacteria in their vaginas may be more than four times more likely to contract HIV. His findings indicate that the probiotic yoghurt may therefore reduce a woman's risk of contracting HIV. (Reid, 2008; 2012).

Finally, consumption of the yoghurt has been found to help treat urogenital infections & bacterial vaginosis in women, and aid in lowering mortality and morbidity rates from diarrheal diseases in patients suffering from HIV/AIDS (Reid, 2010).

Target Population of WHE

The target populations who benefit from WHE are the communities surrounding the yoghurt kitchens. While everyone in the community can benefit with regards to digestive and immune health from consuming the probiotic yoghurt, it is of significant benefit to HIV positive individuals as it helps improve their compromised immunity. The Yoghurt Mamas who operate the kitchens also benefit from WHE. They play a large role in the success of the kitchen and therefore represent important stakeholders in the business model. Through the program, Mamas are able to gain the respect of their community, while making a small income. Their job is not

simply to make yoghurt, but to create a community environment where customers can come to socialize. The WHE yogurt program serves to economically empower the Yogurt Mamas, providing them with an income to take home to their families. According to Dr. Reid, this can act as a protective barrier against intimate partner violence as the husband is able to see that his wife is contributing to the families income and wellbeing (Reid, 2010; Western Heads East Program).

Local Context

WHE's initial yoghurt kitchen was established in Mwanza, Tanzania. The program has since spread to other East African communities in Kenya, Malawi, Uganda and Rwanda. East African countries are the least urbanized nations globally (Warah, 2011). According to the United Nations Human Development Report 2010, Tanzania, Kenya, Uganda, and Rwanda have been classified as "low human development" with high rates of poverty (Warah, 2011).

Women play a major role in rural communities in sub-Saharan Africa and constitute about 50% of the agricultural workforce (Mason, et al, 2015). Unfortunately, gender norms have limited women's access to resources, making female-headed households particularly vulnerable to food insecurity (Mason, *et al*, 2015). Thus, WHE's program provides an incredible opportunity to economically empower women.

Economic activities prevalent in the rural communities of East Africa include farming, livestock keeping, fishing and dairy production (Elly, 2013). Unfortunately, land shortages have limited farming as a major economic activity and has resulted in a rise in food prices, which has further contributed to malnourishment and food insecurity (Elly, 2013). This rise in food prices has created a market for an inexpensive, nutritious food product like WHE's probiotic yoghurt.

Healthcare provision in many communities have been plagued with poor infrastructure and a lack of sufficient services. Access to health care is further restricted due to centralization of facilities in urban areas and high cost of transportation (Johansson et al, 2011).

Finally, technology has become a major driver of politics, economics and social culture in East Africa, by advancing communication systems and access to information (Soremekun *et al*, 2013; Aker *et al*, 2010).

WHE CHALLENGES

1. The misconception of probiotics

There is no cure for HIV, however ARV improves patient immunity, slows down disease progression and increases life expectancy. However, this medication has toxic side effects including nausea, dizziness and vomiting (Whaling *et al*, 2012). It is important for patients to have adequate food and nutrients in order to reduce the side effects of the medication and to allow them to maintain their quality of life. WHE's probiotic yoghurt is incredibly beneficial for HIV patients living in low income areas, as it acts as a food supplement, causes patients to gain much needed weight and increases their CD4 counts. However, many patients have a misconception regarding the purpose of the probiotic yoghurt, believing it to be a medication for HIV (Whaling *et al*, 2012). The probiotic yoghurt makes patients feel healthy and good, which contrasts the wasting side effects of ARVs. This misconception has resulted in some patients not taking their ARVs and using the probiotic yoghurt as a substitute. While the probiotic yoghurt is beneficial, it does not function as a medication for HIV (Whaling *et al*, 2012). This misconception poses a dangerous threat to HIV eradication and spread.

2. The lack of uniform packaging strategies

Packaging of the yoghurt has posed a major challenge for the yoghurt kitchens. Solutions used by the kitchens have resulted in resistance from both customers and the government. Some kitchens have encouraged customers to bring their own containers to store the yoghurt, however this method has been unsuccessful as many look down upon on the use of recycled packaging (Texeira & Wiedeman, 2015). Other kitchens have resorted to purchasing, washing and using old water bottles as packaging for the yoghurt, however this practice is currently illegal. If kitchens continue to engage in this method they risk government persecution (Texeira & Wiedeman, 2015).

3. The incorrect usage /marketing of probiotics

The yoghurt produced by WHE is special because of its probiotic nature, which confers health benefits and nutritional advantages to its consumers. However many kitchens have stopped using probiotics or they are diluting the probiotics. A few of the reasons for this, include the long travel distance to pick up the probiotics, miscommunication about the availability of probiotics and the Mamas hesitancy to lose working hours by spending time traveling to obtain the probiotics. Kitchens are continuing to market their yoghurt as probiotic, which reduces customer trust and health benefits (Texeira & Wiedeman, 2015). This practice ultimately threatens their reputation and future sales of the yoghurt.

4. The lack of financial and entrepreneurial knowledge

Currently there is a lack of accountability in the yoghurt kitchens due to insufficient education regarding business management. The Yoghurt Mamas typically are not given adequate training on how to manage their finances, increase capital, or document their sales (Trudell,

2013). Absenteeism is also prevalent, especially during the harvest season when the Yoghurt Mamas are often needed at home to help their husbands with farming. As a result, the kitchens are often not selling enough to make the venture worthwhile and are not putting enough money aside as savings in case of emergency (Trudell, 2013). There is a clear need for financial training focused around entrepreneurship in order to ensure the sustainability of these kitchens in the future.

Furthermore, the Yoghurt Mamas have reported that they are unsure of where their earnings are going or where their seed money is coming from (Trudell, 2013). This budgeting confusion needs to be resolved in order to empower the Mamas and give them an important sense of ownership over their kitchen and the yoghurt they sell.

PREVIOUS EFFORTS TO ADDRESS THE PROBLEM

The idea of using yogurt as the delivery method for probiotics was solidified in the 1930s (McFarland, 2015). Since then probiotics have been used to guide medical care and promote health and improve nutrition across the globe (McFarland, 2015). In Africa, past efforts in the field of probiotics have included forays into kefir, yogurt, and plant-based beverages (Van Wyk et al., 2002; Kort, 2015; Ukeyima et al., 2009). Looking at plant-based probiotic beverages in particular, a past study found that these beverages are increasingly in demand in Africa (Shah, 2001). However, the commercial use of these plant-based beverages has been slow to be adopted due to the typical challenge of confronting safety assessments with the limited number of requisite facilities for this work (Ukeyima et al., 2009).

Other past efforts to combat malnutrition besides probiotics have been centralized around improving the root causes of it, including working towards the betterment of women's education

and status, as well as improving drinking water—all of which have been similarly blamed for malnutrition in sub saharan Africa (Smith & Hadid, 2000).

THE PROPOSAL

Our proposed solution involves a three-pronged approach to the challenges faced by WHE and the yoghurt kitchens. It does not touch on the incorrect usage or marketing of probiotics, as a solution for this is already underway using ready-made sachets with the probiotics inside.

Packaging- Strategy and Implementation

In order to address the packaging of yoghurt in a sustainable, environmentally friendly manner, a reusable jar strategy will be implemented. The probiotic yoghurt will be sold in a glass jar, which the customer can return on a subsequent visit for 3 cents. Customers will be placed on a registry to track how many containers they have. Once a customer has 3 unreturned containers, they will need to either return their containers or pay an additional container fee of 50 cents. The additional container fee ensures that the packaging strategy is affordable and sustainable for the kitchens. In order to purchase the containers, WHE will require a grant of US \$82,000 to order and buy the jars from an African based glass manufacturer. All the jars will be able to hold 1L, but customers can choose between two amounts: a larger, 1L portion will be marketed towards families and cost 87 cents, and a ½ L portion will be marketed towards individuals and cost 47 cents.

<u>Strengths</u>	<u>Weaknesses</u>
<ul style="list-style-type: none"> • Customers will have a financial incentive to buy yoghurt from kitchens. • Kitchens will become profitable after the second year. <i>See financial analysis in appendix.</i> • The kitchen will be able to reuse containers, saving the kitchen money from having to purchase a new container for every sale of yoghurt. • The yoghurt can be transported easily with stable packaging; allowing an expansion to their distribution strategy. • The registry used to track the containers will also allow the kitchens to better track their sales and consequently, their consumption and financials. 	<ul style="list-style-type: none"> • The use of recycled jars, has been shown to trigger a negative association among customers of the yoghurt kitchen (Texeira & Wiedeman, 2015). • Glass containers have many uses, customers may decide to forgo the financial stipend and keep their glass jars. • Kitchens are only able to afford a limited number of jars, they risk running out of containers if a large proportion of customers don't return them. • Logistical challenges in the organization and delivery of a new stock of containers. • If packages run out, the kitchens will be unable to sell the yoghurt, risking the kitchens profitability. • The additional time, work and resources (soap, clean water etc.) required to clean the glass jars.
<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> • Glass jars are very versatile and can hold many different types of food/ drink products. This versatility in usage provides a plethora of opportunities for the kitchens, allowing them to expand the products they produce and sell. • Glass bottles are more stable than plastic containers. In many countries in Africa, plastic waste is a major concern, so the use of glass jars is a much better alternative for the environment. • Glass is recyclable, and can be recycled continuously with no loss in quality or purity (Glass Packaging Institute, 2017). 	<ul style="list-style-type: none"> • The use of glass containers can be hazardous for the environment if the containers are broken, especially if the infrastructure for proper garbage disposal does not exist. • The glass containers risk breakage during all steps of their usage, if they are handled incorrectly they will have a limited lifespan (Glass Packaging Institute, 2017).

Financial Training and Health Education Program- Strategy and Implementation

In order to address the issues pertaining to entrepreneurship and the kitchen's finances, a financial education program will be implemented. This will involve hiring a business-adept

university graduate, from one of WHE’s partner universities in East Africa, to carry out a training program for the Yoghurt Mamas. This program will involve how to properly register customers for the glass jar program, how to record sales, and how to manage their books.

In order to promote the health benefits of the probiotic yoghurt and clarify the misconception among HIV positive community members about its use as a replacement for antiretroviral medication, we will be implementing an education program, targeting both the Yoghurt Mamas and the heads of the local church, with the goal of having these community “influencers” disseminate the information to their communities by word of mouth and by providing eye-catching, informational posters for them to hang in their kitchens and churches respectively. Like the financial education program, a university graduate from one of WHE’s partner universities will be hired to carry out the program, which will involve a comprehensive overview of the health benefits of the probiotic yoghurt to the community.

<u>Strengths</u>	<u>Weaknesses</u>
<ul style="list-style-type: none"> • Education ensures people understand how the probiotic yoghurt works and that they continue to take their ARVs. • Financial education allows Mamas to understand the kitchen’s cash flows. • Church attendance is high and will be an effective channel to convey information on yoghurt to the many attendees. • Attention-grabbing & visual posters help disseminate information for those who can’t read. • “Influencers” have trust of community already. • Both programs will be using local university students as the teachers. 	<ul style="list-style-type: none"> • Finance and math are typically difficult subjects to learn, especially with little educational background. • Long term support and wrap-around, comprehensive approach needed for education & awareness to be sustained. • Not everyone can read so posters may not be effective. • Many HIV positive youth are hesitant to turn to churches and ministers as it means their HIV status is likely to be found out by community (Busza, Besana, Mapunda & Oliveras, 2013). • HIV positive individuals may choose to continue using probiotics as an alternative to their meds.
<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> • Use CHWs to disseminate information to community. • Financial skills are transferable and Yoghurt Mamas can teach what they 	<ul style="list-style-type: none"> • Not everyone supports this venture of educating mamas and the public • Church might want a stake in the project and want compensation for involvement.

<p>learned to others.</p> <ul style="list-style-type: none"> • UWO Interns – disseminate financial information & save costs in subsequent years. • Involve men in learning/teaching. • Allow saved-up money to be used for purchase of goods and machinery. 	<ul style="list-style-type: none"> • Failure to educate public might have the opposite effect and actually cause people to stop accepting probiotic yoghurt.
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The plan is to implement this strategy in two kitchens first before expanding to other kitchens pending initial success. According to financial analysis of the strategy and implementation (*see appendix, Tables 1 and 2*), the yoghurt kitchens would earn an average annual profit of US \$609.55/ per kitchen after year two. The analysis takes into account numerous fixed and variable costs for an average kitchen in East Africa for the first and second years, including the costs of salaries and posters for the education aspect of the strategy that will be required in year one.

ASSESSMENT AND MEASURABILITY

There are three main goals outlined above: financial stability, education of the community on probiotics and the use of glass jars as packaging. Each of these goals can and must be monitored for efficiency and to ensure success.

First, financial stability can be monitored through monthly examinations of financial records. This is a quantitative way of assessing the feasibility of the kitchen. This monitoring system is reliant on the Yoghurt Mamas ability to learn how to do basic finance and continuously update their progress. Their numbers will be compared to the ones predicted to make sure the kitchens are on track to meeting profit goals.

The next two goals, education of the community on probiotics and the use of glass jars as packaging will be monitored through qualitative assessment of the responses of the consumers

and the Yoghurt Mamas. To approach this, the Mamas can have casual conversations with clients to find out about program efficacy. After the conversation, the Mamas can record the answers for data collection. There are a few reasons for the use of randomised informal conversations, instead of the use of randomised surveys. First, it ensures that even those who cannot read can still be apart of the sample. This is extremely important to make sure that the education is transferable to everyone in the community. These informal surveys should be done around ten times a week and at the end of every month approximately forty surveys will be collected and assessed.

When surveying for knowledge on probiotics, a few categories of questions can be used. To make sure it is brief and informative, only a couple questions will be integrated into the conversation. The first question will ask if the consumer knows the health benefits of the product. The Mamas do not need to record down what they say but rather assess their knowledge on a scale. If they do know the benefits of the product then a follow up question will be asked regarding where they learned the information. The first question allows the Mamas to know if the education is working in general. The second question highlights the communication channels that are most successful (i.e. church or kitchen). If a customer is known to be HIV positive (noted in the registry, as they would not be paying for yoghurt), the Mamas will ask the same questions as above, plus the additional question of whether they are still taking their ARVs.

Next, when surveying about the packaging, the Mamas will ask how people are liking the new packaging and record their answers. The Mamas themselves will also report their thoughts on the new packaging.

Both qualitative methods and the monitoring of the financial books, will be used to monitor the initial roll out of the plan and to ensure the goals of this proposal are being effectively met. Adjustments can then be made accordingly to ensure the success and sustainability of the kitchens.

CONCLUSION

Through uniting education and a new packaging strategy under one plan of action, the solution is able to tackle three of the major challenges currently faced by WHE. Namely, the lack of a uniform packaging strategy, the lack of financial training/ knowledge amongst the Yoghurt Mamas, and the current misconception surrounding probiotic benefits amongst the HIV positive community. As the financial analysis of the plan indicates, the kitchens should start to make a profit after just two years—even while having to take on additional financial costs that come with implementing the two education programs. In addition, the proposal ensures many markers of success, in addition to profits, are being constantly monitored to assess the efficacy of the proposal. Overall, we strongly believe this solution will successfully and sustainably meet the needs of WHE, while continuing to empower the Yoghurt Mamas and help them more effectively feed their communities.

APPENDIX

Table 1. Year 1 Income Statement:

Fixed Costs Per Year :	US \$
Jars (700 total/kitchen) ¹	593.83
Utilities ²	456.25
Mamas' Salaries (9 mamas/kitchen) ³	13140.00
Education Specialist Salary ⁴	2920.00
Finance Specialist Salary ⁵	2920.00
Posters	30.00
Variable Costs Per Year:	
Recycling Fee	1762.95
Cost of Yoghurt (Milk + Sachet) ^{6,7}	18432.50
Total:	40255.53

Revenue per Year:	US \$
Yoghurt Sales	34151.08
Additional Container Fee	365.00
Total:	34516.08

Net Profit: \$ -5739.45

Table 2. Year 2 Income Statement:

Fixed Costs Per Year :	US \$
Jars (100 total/kitchen)	84.83
Utilities	456.25
Mamas' Salaries (9 mamas/kitchen)	13140.00
Posters	30.00
Variable Costs Per Year:	
Recycling Fee	1762.95
Cost of Yoghurt (Milk + Sachet)	18432.50
Total:	33906.53

Revenue per Year:	US \$
Yoghurt Sales	34151.08
Additional Container Fee	365.00
Total:	34516.08

Net Profit: \$609.55

¹ <http://www.thecarycompany.com/containers/glass/jars/mason?capacity=1524>

² https://www.numbeo.com/cost-of-living/country_result.jsp?country=Kenya

³ <http://www.thelondoner.ca/2016/04/26/yogurt-breakthrough-could-mean-more-than-nutrition-for-east-africans>

⁴ <http://www.wageindicator.org/main/Wageindicatorfoundation/publications/2012/wages-in-uganda-wage-indicator-survey-2012>

⁵ Ibid.

⁶ <https://knoema.com/FSPPDM2016Jul/world-food-prices-database-from-un-wfp-world-food-programme-monthly-update>

⁷ <http://blogs.worldbank.org/dmblog/kadogo-oyugis-results-from-kenya>

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