



TECHNOLOGY MANAGEMENT

MBAB 821

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Individual Assignment
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Table of Contents

1. Technology entrepreneur	2
2. Barriers to innovation.....	5
3. The effect of the Fourth Industrial Revolution	7
4. Blockchain model and mobile technologies triggering a new era of mobile financial services in developing countries.....	10
5. Changing into an exponential organisation- UODL NWU	12
6. The demise of KODAK	14
7. References	17
8. Solemn Declaration	20

1. Technology entrepreneur

Khula is a technology solutions company to service the supply chain industry, and was started by 24 year olds'; Karidas Tshintsholo and Matthew Piper in 2016 whilst they were still students at the University of Cape Town studying finance. Tshintsholo and Piper created a mobile App known as *Khula* to revolutionise the agricultural industry in Africa by digitising farming in a way that will provide solutions particularly to emerging and small scale farmers. The idea is to connect emerging farmers to the formal market place, and allow them, through technology, to supply their fresh produce to large retail industries like Pick n Pay, and restaurant chains such as RocoMamas as well as hotels with the 'touch of a button' (Rangongo, 2019).

The Khula App as a crowd-sourcing platform gained notoriety in 2018 when it won the; Revenue Growth Early Stage Award. The App essentially creates one massive and inclusive virtual farm which consists of over 2000 active farms where farmers can list their produce, as well as monitor and trace in real time their inventory levels (Reporter, 2018).

Farmers are also able to share logistic costs which assists in reducing their operational expenses, and this is greatly beneficial to small-scale and emerging farmers who may not have existing large revenue reserves to accommodate the logistical costs to be incurred. The App allows local trucking businesses to also list their companies as transportation providers to these farmers. The trucking companies through the App receive notifications of when a delivery becomes available for which they can also apply. The Khula App therefore not only provides, a virtual market place solution but also a logistics saving solution that makes agricultural supply chain more convenient and cost-effective for emerging and small-scale farmers as well as logistics companies seeking entry into the market place. This is a phenomenal access opportunity which is life-changing especially in South Africa where the agricultural sector is predominantly dominated by large industrial farms with decades of experience in the industry. The Khula App provides ease of access also for the young and aspirant farmers and trucking business owners as well as the financially disadvantaged local farmers who may be much older and without the resources and supply chain business acumen to compete against much larger fresh produce suppliers (Writer, 2018).

Khula App was inspired by a trip to Israel taken by Tshintsholo and Piper wherein they discovered that; 60% of the most arable land is in Africa with more than half being dedicated to small agricultural businesses. They realised that they were ignorant about who and where these farmers are located. They saw the inefficiency of this and a gap in the supply chain market that could be filled by co-founders; Piper (focuses on the product design and the company strategic goals and direction), Tshintsholo (heads up the business development) and then Jackson Dyora- who is known as the “brains behind the technical aspects of the app”. Khula thrives as a result of their shared-economy business model that is software focused and therefore does not require large capital investments to get off the ground. Their major expenses are actually their own staff who maintain the operability of the App. With their low costs and revenue generated by charging minor “percentage from the transaction between the farmers and the clients, as well as a fee for logistics”. This is what allowed Khula to experience its exponential growth from its pilot stage of only 300 farmers to more than 2000 farmers and wherein a revenue of approximately R500,000 was also generated within the first three months of Khula’s existence (Africa World, 2018).

What sets Khula apart from other applications is that they do not have a dominant mobile competitor. The only real competitors are the traditional food distributors which are not real competition in the sense of how Khula seeks to further disrupt the supply chain industry through technology. What makes not only Khula impressive but also their founders is truly the access opportunity it affords to the not so financially privileged farmers, and logistics business owners. Furthermore, it also provides incentive for the more traditional food distributors to reduce their logistic rates as the App is proving more highly beneficial for farmers in general. The latter is resultant from the fact that farmers can share the transportation costs. In addition, Khula provides marketing opportunities without having to incur large marketing and advertising costs (Rangongo, 2019).

Inspirational is that; at the tender age of 24 years old, Tshintsholo and Piper have created opportunities and changed the nature of trade and supply for agriculture in South Africa. As a developing country with more than 40% poverty rate, also facing a global pandemic COVID 19 which has slowed and disrupted the economy, it is critical to provide solutions that allow continuity of services and food supply (within the

parameters of observing social distance- through technology solutions available) (Statistics South Africa, 2019).

Furthermore, Khula also provides opportunity for the 2.7 million South African subsistence farmers to progress from only survival farming (due to a lack of resources) to commercial farming as Khula facilitates a trade solution that really only requires a smart phone and basic understanding of using an App. These young entrepreneurs have taken advantage of the convenience of through connection created by software solutions afforded by the Internet of Things (IoT). Through IoT, the Khula App is able to take smart farming to another level in South Africa. Smart farming is managing farming by using modern information and communication technologies. It is primarily understood as being more applicable to; advancing the quality and increasing quantity of farming products through technology. However, Khula is extending this to also include technological supply chain and logistics solutions to farming management (The Anzisha Prize, 2020).

Moreover, with the land redistribution policy in South Africa which seeks to provide opportunity and restitution through land redistribution, and the fact that more than 79% of South Africa's land is agricultural, the opportunities to capitalise on fresh produce supply and distribution by using the Khula App can no longer be regarded as a dream but now a reality the emerging and small-scale farmer whose financial and infrastructural capabilities are not as favourable as the wealthier industrial farmers (Trading Economics, 2020).

Khula App directly assists in providing solutions that will assist in mitigating the existing issue of food security which is not only a global issue, but one felt more severely by developing countries- and South Africa being included. The co-founders of Khula have a vision to expand the reach of Khula to also operate in other developing countries like Brazil and India. This revolutionary connectivity supply chain tool will make possible opportunities for increased income in families and communities that struggled due to a lack of resources and reach to retail, sales and marketing industries. Increased income does not only provide economic relief but also social relief. So many issues like lack/poor education, malnutrition and even crime are related to poverty and financial lack. Khula through its business-to-business (B2B) crowd funding business model provides hope and solutions (Africa World, 2018).

2. Barriers to innovation

Innovation is important as it allows companies, institutes and governments to not only remain relevant in this globalised competitive market but is also essential for economic growth. The capability to resolve serious problems is dependent on new inventions and this is more especially necessary for developing countries (Kylliäinen, 2019).

As a result, it is essential to identify what those barriers to innovation are in order to either mitigate their effect or completely eliminate them so as not to compromise relevance and growth opportunities. The following are three out of many main barriers to innovation:

- **Fear**- one of the main reasons why most organisations and individuals do not attain their full potential is fear. The fear of failing, which often results in not even trying. This is due to the fact that when employing a brand new idea, process or procedure, there are no guarantees or examples success that can provide the safety net needed to 'take the plunge' and do something new. A lack of guarantees that something will either work or reap the financial success desired causes many people and organisations to remain stagnant and uncompetitive with their conventional ways of operating. Another fear which is mainly seen amongst the people who will actually have to implement these innovative ideas, processes or solutions- is the fear of losing their position as experts in old technologies, methods and processes (Gower, 2015).

This was evident in the North West University's (NWU) Unit for Open Distance Learning (UODL) - University Preparatory Programme department (UnivPrep). The UnivPrep department was expected to transform its applications and registrations processes to fall in line with NWU's move to paperless in the majority of its operations. The first round of records management training, to record and store information onto the University's software storage centre- Nextcloud, was provided to the department in 2018 and again towards the end of 2019. The intent was to ensure that; by January, all records will effectively be managed on the cloud and there will be no use of paper in the applications, registrations and general records management processes. However, the

majority of the staff in this department are over the age of 55 years old and have performed in their functions using paper for more than 30 years. The idea of having to learn a whole process and system- Nextcloud was not only intimidating but frightful as they were the experts using the old systems and procedures. This delayed the launch of UnivPrep to a paperless system, and the department was subsequently forced to make use of Nextcloud and go paperless as a result of the lockdown due to the global pandemic COVID 19. When the department could have tested the process prior to lockdown and whilst having direct access to the IT department should there be any problems related, they did not. This fear delayed the process and UnivPrep only begun to effectively align with the University's paperless goal in June 2020, during lockdown and without physical support of IT and other staff members who may have been more proficient in employing Nextcloud in their processes.

- ***Lack of resources-*** innovation does not only require new ideas and/or processes. It also requires resources and/or capacity to effect those changes and resources to actualise that innovate idea into reality. A lack of whatever resource that may be required to ensure actualisation, implementation and subsequent success requires resources. Even if there may be the resources to e.g. actualise a new idea or purchase new systems, there may be insufficient resources for the training and development of personnel to ensure they are proficient in their implementation processes. Such a lack of resources may delay innovation from being realised to effect change, provide solutions and remain relevant. A research and development is not often budgeted for, and this is especially the case with smaller companies who do not have extra revenue to 'test' new ideas. Most often their resources are already strained, and because innovation is also about taking risks, not having the financial capacity to cushion potentially failed risks taken, companies would rather not take the risk at all (Gower, 2015).
- ***Complacency (Arrogance)*** - this is usually seen in cases where a business holds a majority of the market or has no real competition. A lack of serious competition, consistent profit margins and the expectation of continued

customer loyalty are some of the factors that contribute to organisations not innovating at all or fast enough to maintain their relevance in the possibility of competition and in general technology developments. When you are a leader in the market, there is a level of arrogance that technology will improve at the rate you dictate or lead it to. This was evident in the case of Nokia. Nokia was the leading mobile phone manufacturer for years with really only Motorola as competition- but not threatening enough to push for drastic innovation. They maintained brand loyalty consistently throughout the years until their inability to innovate allowed for competition like Apple (when the iPhone was launched in 2007) to take over which led to their downfall as mobile phone production leaders. Within 6 years since the launch of the iPhone, Nokia not only lost its position as mobile phone leader, but also had to sell their mobile handset business to Microsoft to maintain profitability.

By placing greater emphasis and investment into the hardware engineering, and underestimating the importance of software development and the “experience of using a phone”, Nokia in less than 10 years of the iPhone 2007 launch, became basically non-existent after it sold completely to Microsoft in 2015 (Idea Note, 2019).

3. The effect of the Fourth Industrial Revolution

The World Economic Forum states that; the Fourth Industrial Revolution (4IR) is “the current and developing environment in which disruptive technologies and trends such as the Internet of Things (IoT), robotics, virtual reality (VR) and artificial intelligence (AI) are changing the way we live and work” (World Economic Forum, 2020).

In a developing country like South Africa, the lack of skilled engineers and scientists as well as digital skilled workers are some of the challenges that may impede the opportunities afforded through 4IR. The industry sectors most likely to be negatively impacted by the revolution and replaced by robotics are; manufacturing, logistics, retail and wholesale stores, administration departments, and a few low-skilled jobs to mention a few. In contrast, the sectors most likely to benefit are; healthcare industry, first-line supervisors of mechanics and/or any other type of work that necessitates human interaction or managing robot behaviour (World Economic Forum, 2016).

Some of the ways that 4IR might affect businesses are:

- A decrease in the amount of full-time personnel required in manufacturing and agricultural positions. This is due to the fact that many of these jobs are being phased out as a result of automation increasing. An example of this is already seen in smart farming where IoT sensors are used to detect the temperature and acidity of soil. Furthermore, through their smartphones, farmers are also able to now independently and remotely monitor their equipment, crops and livestock. This eliminates the need for having workers who would previously go out and perform these tasks. Drones are also used to survey the farmlands and gather crop production data.

The effect of unemployment as a result of this can be reduced by, retraining these staff members to perform other tasks that still requires their physical presence and operability (Meola, 2020).

- 4IR and the advancement in technologies making it possible to work effectively remotely and still remain connected through connections like Zoom, Google Meetings and Skype are resulting in some companies rather employing specialist contract workers and/or remote workers. This can be both negative and positive in that; the increase of remote workers and continued operations as such, the necessity to maintain physical office spaces will reduce. This impacts on other businesses whose revenue is generated through the office property rentals. Furthermore, the absence and/or reduction of humans in offices, also results in decreased utility expenses. Electricity, water services and even waste removal companies generate their revenue as a result of occupancy of staff in offices. In contrast, remote workers provide an opportunity for businesses to reduce their operation expenses related to e.g. office management whilst maintaining productivity remotely. This increases their profitability (Unknown).

As a result, of this joint opportunity and cost in the above-mentioned, it will be beneficial for businesses whose services are dependent on traditional work operations to innovate and find new ways to remain relevant in the midst of these changes. Perhaps expand their scope of services to include transport

and distribution (waste removal companies- already have trucks but the reduction in waste removal from companies is compromising their profitability). Such companies could expand to provide alternative their services by making use of their existing resources- their vehicles.

- 4IR has already resulted in a new currency emerging, the currency of DATA. Online sharing of information is the current norm. Posting images, videos, text messaging and sharing documents and updating social media profiles is the way to communicate and remain relevant. This is all facilitated through connected devices which all use data which is considered to be the “food of artificial intelligence...AI is driving innovation across growing numbers of products and services, and the more data you have, the better the predictions get” (Trailhead).

What can be done, is for existing business to innovate and transform their processes and develop a greater online presence. This means that social media experts, IT programmers, software management experts, website content creators will be in greater demand. New businesses should be strategic in their goals and services provided to ensure they can be done online and with the ‘click of a button’ as this is the desire of the existing customer. All this provides opportunities in the education sector to further expand the courses and qualifications offered. They too along with government should promote education in digital skills development and the Stem subjects (Science, Technology, Engineering and Mathematics) which will advance the youth’s skills capacity to perform in their changing smart learning classrooms and their future work environments that are currently being transformed and re-shaped by the fourth industrial revolution. Becoming tech savvy is essential businesses, employees and learners to all survive in the world being changed by the 4IR (Bernard Marr & Co).

4. Blockchain model and mobile technologies triggering a new era of mobile financial services in developing countries

Blockchain is” a distributed database existing on multiple computers at the same time. It is constantly growing as new sets of recordings, or 'blocks', are added to it. Each block contains a timestamp and a link to the previous block, so they actually form a chain” (Rodriguez, 2017).

The majority of information is currently already being shared on the internet- which is a decentralised and interactive platform, however this is not the case when it comes to our banking and general financial services. When sending money and making financial transactions, we still use the traditional brick and mortar centralised financial institutes- like banks. However, mobile technologies like banking Apps, payment and transaction methods are transforming. With the internet, banking apps and online payment systems such as PayPal, there is a decreasing necessity to go to a physical bank to ensure continuity in your financial transactions and account management. Through online banking and mobile banking Apps, customers can make changes and manage their own accounts. However, this all still requires for there to an integration with a specific bank account or credit card to ensure successful usage of these services and technology- and this is still provided by banks. Though there has been a decline in visitations to banks and financial institutes, there is still the need (Rodriguez, 2017).

However, blockchain technology is disrupting this need, and provides the opportunity to eliminate this "extra link" that is the brick and mortar bank and/or financial institutes. Blockchain technology is created to assume the three significant roles of traditional financial services, and those are transaction registrations, confirmations of identity and simply contracting. This replacement by blockchain technology will result in more efficient services being provided in the following ways according to (Rodriguez, 2017):

- Transactions being finalised directly between parties (customer and provider) without the services of an intermediary.
- Conclusion of deals will take place digitally and much faster than before.
- The transparency and traceability of the transactions provides for advanced security which makes transacting in this way more preferable.

Blockchain technology can also be used to trace information from outside data sources such as; stock prices and news features along with anything else that a computer can analyse. Furthermore, blockchain technology can create smart contracts which are automatically achieved when specific programmed conditions are met that also protects both parties of the contract- should those conditions not be met. Smart contracts can be utilised for e.g. insurance premiums, property rentals and even crowdfunding. Other areas that it will make transacting more convenient and speedier are as per (De Meijer, 2016):

- Cross border payments can occur without having to go into physical banks and endure the tedious and administrative bureaucratic processes.
- Share trading can occur without intermediaries like brokers and also reduces trading costs incurred through their broker fees.

In developing countries, the blockchain model and mobile technologies provide great opportunities to advance financial processes and transactions. Increasing the speed and security of transacting is highly beneficial. However, this also means remote 'banking and transacting' will replace conventional banking that still requires human effort. This poses increased risks of unemployment.

By decentralising the banking sector in South Africa for example, which currently employs more than 3% of personal income taxpayers, and the resulting potential for employment reductions being made poses a greater risk on the economy's existing 29% unemployment rate. The traditional banking and financial service structures not only provide employment, but also access to citizens who do not have the technologies and digital literacy skills to utilise these remote opportunities already afforded by mobile technologies. With the future of transacting heading towards blockchain model banking and financial service businesses being rendered redundant or obsolete, an increase in access exclusion will occur. Many of South Africa's youth are employed in insurance industries jobs wherein they provide financial broker services as consultants and stock trader and analysts, their jobs too are at stake, and will exacerbate the already existing socio-economic imbalance which unemployment already contributes to. The developing world has much more to consider when advancing towards new

technologies as the socio-economic and education deficits in their societies can make such wonderful technologies appear dangerous (Carrim & Fubbs, 2017, pp. 3-5).

5. Changing into an exponential organisation- UODL NWU

I work for the North West University's Unit for Open Distance Learning (UODL). The UODL provides quality education courses, degrees and preparatory programmes through open distance learning across South Africa and Namibia. This method of delivery is realized by means of tailored administrative and academic support as well as the use of technology to ensure accessibility for students even those in remote areas. The objective behind this learning approach is to increase access to education for people who cannot attend full-time due to location and time issues as well as personal responsibilities which are barriers to full-time learning e.g. working as a full-time professional.

In terms of the remote teaching and learning services rendered to the students, the UODL is on par with the University as they operate using the same technologies (.g. electronic interactive whiteboards and computer-based teaching and learning- more so during the lockdown due to the COVID 19 pandemic). However, in terms of the administrative operations, the UODL is not comparable with the full-time campus operations and administrative support departments in particular as previously mentioned the UnivPrep department.

While the University at large processes its applications through the NWU online applications system, UnivPrep prospective applicants merely make use of a fillable application form which must still be emailed to the applications administrator for screening, approval/decline and then processing to registrations and so forth (all of which are still done through varied and disconnected systems like Varsite- for registrations and others- for the finance and assignments department). On the other end of the spectrum is the Study Materials department who operate completely off these systems and currently make use of Takealot as a study material distribution service provider which only they have access to the shared system to view orders. The tracking and tracing of study material is concluded remotely by Takealot support staff who interact with the UODL study material department.

These disconnected systems and processes make even the most basic of enquiries so tedious for the administrative staff, and the customers (the students).

To better streamline these processes, what may be beneficial is to have a system similar to the convenient Customer Relationship Management (CRM) system that enables management and analysis of interactions with its customers. If there was a joint and shared system in which all information pertaining to a registered student is visible from application stage right up to successful qualification completion, it will allow effective and efficient administration to take place. Instead to be able to confirm e.g. if a registered student's study material has been ordered, issued and distributed, one needs to either physically go to the study materials department or contact via telephone/email to confirm this. They in turn need to check their order listings, and then confirm with Takealot if the order was successfully delivered before returning to the administrative support staff enquiring on behalf of the student.

What can be done to transform the UODL and suggested in (Exponential Enterprise, 2019):

- ❖ *Forecast future developments that might affect the department-* it is becoming clearer that; learning is taking place in virtual classrooms, with the help of online and mobile technology solutions. This immediate access to learning and information increases the expectation for support services to equally be operable in an efficient and advanced way. Administrative departments also need to transform and adopt new strategies and processes that are streamlined and interconnected to ensure effective and speedier resolutions to problems and enquiries.
- ❖ *Touch the technology-* meaning management needs to remain abreast with new technology solutions currently available and potential ones on the horizon to pre-empt how capable will their institutes be of operating in the environment of these available technologies. Furthermore, will they have the resources, and capacity to adapt and employ these technologies in their processes. In the UODL it has already been identified that there is a need for a better and more advanced applications system, however, to ensure the strategic alignment across the NWU, the budget approvals are instead being considered for an entire new information management system for the University which will

address the above-mentioned loops in the process resultant from systems that are not effectively integrated. However, in the interim, I would suggest that the study materials department make use of Nextcloud and share relevant folders that indicate the status of a student's study material ordered and delivered.

- ❖ *Leveraging uncommon partners*- this was already seen by the unconventional initiative to partner with Takealot as a study material service provider and distributions solution. The only issue is the lack of instant and direct visibility to their tracking and tracing systems which would further enhance the efficiency of the study materials department as a link in the UODL chain of student information and support services.

Additionally, embracing the digital age is essential, and by promoting this through simple leadership efforts such as conducting monthly updating and feedback reporting online e.g. Zoom meetings, this will demonstrate to personnel the institutes commitment to progressing along with the technology developments and not against or in resistance to it. This can even continue once lockdown restrictions are further reduce and operation activities continue as normal. Hosting and participating in virtual meetings from one's desk will reduce time spent travelling (walking/driving) from office to another- especially with three campuses as large as the NWU has. By adopting these above-mentioned steps, the UODL will not only be able to enhance the customer experience received by the students from the University, but also the internal customer experience between departments (KeiJzer, 2017).

6. The demise of KODAK

Kodak was primarily in the business of selling film and printing film photographs. However, improvements in technology and software capabilities and solutions development, not only were cameras digitising (which is already a product being rendered obsolete by smart phones), thus making it possible to store, download and share photos electronically without the intermediate services of Kodak. Additionally, mobile-phone technology improvements also made it possible to take photos with your phone and share them via SMS and email on a mobile phone and/or through the internet. The demise of Kodak was as a result of their failure to innovate and even invest in the technologies they invented (the first digital camera created by Steve

Sasson for Kodak in 1975). The complacency of Kodak was one similar to that of Nokia as previously mentioned. Being a leader in their industry without any real major competitor and their complacency of this knowledge, resulted in their subsequent failure to realise the opportunities that investing in the innovation of digital cameras, caused them to not only be left behind but altogether lose their position as industry leaders. Additionally, Kodak also failed to employ transformation strategies and diversify their production to maintain their existence, relevance and profitability like Fuji Films did in its partnership with Xerox to create office automated products e.g. copiers and printers (Brand Minds, 2018).

What could have been done to save Kodak before its demise would have been the following (Brand Minds, 2018):

- Designing their business model and company strategy to accommodate and invest in continued research and innovation efforts. By doing so, they could have effectively made innovation and transformation part of their budget and company long-term strategic goals which through their processes and planning remained committed to actively ensuring their longevity and success.
- Understanding that change is not only inevitable but also necessary to ensure progression and success. A shift in perspective in understanding innovation as not a necessary risk but a necessary solution that would have advanced Kodak from merely securing their position as a competing industry leader but also, leading and directing major and revolutionary changes in the market.
- Encourage your creatives to not only communicate, but also take risks in their creations and subsequently allow them to be bold enough in presenting their creations.
- As management, be willing to not only hear but implement advice, adopt and actualise innovative ideas into your sales product lines. Avoid leadership complacency and arrogance that is detrimental to growth and be examples in remaining educated about not only your product and its related technologies and processes, but also industries that are advancing in simulating your own products and services in theirs. Had Kodak observed more closely the mobile-phones industry- they could have seen this coming or at the very least pre-empted the possibility.

- Investigate the market for new technologies by making use of technology, product design consultants and even the marketing department- who are at the cusp of transformations in industries in their market analysis.
- Observe competitors- even those you may think are not threatening to your operations. They may be more committed to looking for new opportunities to improve their products to gain them a real competitive edge against you.
- Additionally, it would also be wise to conduct impromptu group reviews of your products by customers. Customers can also be valuable in performing trend analysis as; they are equally interested in enhancing their own customer experience through their preferred purchases. They read, enquire and 'have their ear on the ground' about product developments in other companies. Word of mouth is a very resourceful tool which must should not simply be overlooked.
- Lastly, boldly transform your products and services continuously even if it may not seem necessary, because when it does become necessary- it may be too late.

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SOLEMN DECLARATION – INDIVIDUAL ASSIGNMENT

Solemn declaration by student

Module: Technology Management
Module Code: MBAB 821
Assignment No.: 1
Assignment due date 14 September
2020

I **Kedron Peter** declare herewith that the assignment which I herewith submit to the North-West University as partial completion of the requirements set for the MBA degree, is my own work.

X

Kedron Peter

Signature of student:

Student number **35250399**

Signed at Potchefstroom this 13 day of September 2020