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Innovative mHealth solutions – Impact on the Supply Chain

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Innovative mHealth solutions – Impact on the Supply Chain

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Summary:

With this thesis we aim to study the myriad options of mHealth solutions available today in order to evaluate their impact on the pharmaceutical supply chain. We then apply this knowledge to help overcome specific supply chain problems faced by our sponsor company in two of their key markets.



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KEY INSIGHTS

1. There is significant scope for mHealth solutions to improve the pharmaceutical supply chains of emerging markets due to rapidly increasing mobile penetration.
2. Motivation, monitoring and proper incentives are essential in ensuring the success and sustainability of an mHealth solution.
3. A thorough understanding of the market/ players/ solutions/ supply-chain/ products is a prerequisite for successful implementation.

Introduction

Over the years, many industries have turned to mobile technology as a means of streamlining their processes and operations, improving interaction with clients and increasing their responsiveness and flexibility. The pharmaceutical industry is also turning to mobile technology to help it understand and better address the situations and scenarios that it faces. For these solutions to be beneficial, it is of utmost importance that they are designed and tailored to meet the requirements of specific markets.

With this thesis we aim to study the existing mHealth solutions in order to evaluate how they can help overcome problems in the pharma supply chain.

Data Collection

We research various mHealth solutions available today that aid the pharmaceutical supply chain. What we find is that although a large number of solutions exist, only a fraction of these achieve the desired outcomes. This can be for a number of reasons including a lack of motivation among the players, lack of awareness, absence of proper incentives, unsuitability of the solution to the market or supply chain, shortcomings in the solution design, etc.

In order to get a better idea of this situation we interview a number of eminent professionals who work with these supply chain related mHealth solutions and who belong to a broad range of industries such as software, telecom, healthcare, pharmaceutical, retail pharmacy, NGOs, consultancy and academia. From these interviews we gain knowledge about the hurdles faced during solution implementation, reasons behind their success or failure and the things they would do differently in future projects to avoid previous mistakes.

On identifying the specific solutions and regions of focus, we interview, in a second stage, experts from these regions to get their feedback/tips on implementation and suitably modify our apps to incorporate these ideas.

KPI	EMERGING MARKET						DEVELOPED MARKET
	SMS for Life	SMS for Health	Sproxil	mClinica	Logistimo	Rapid SMS	Refill by Scan
↓ Counterfeit			✓				
↓ Stock-outs	✓	✓			✓	✓	
↓ Product diversion			✓			✓	
↑ SC coordination	✓	✓			✓	✓	
↑ Demand forecast	✓	✓		✓	✓	✓	✓
↑ Patient compliance				✓			✓
↑ End-patient data				✓			✓
↑ Data quality							

Impact of mHealth on the pharma supply chain

Based on extensive literature review and expert interviews, promising mHealth solutions are mapped against the factors that they improve. Some of the relationships shown above are described below.

Counterfeiting is an issue faced by the Pharma Company in emerging markets. Not only does it prevent the company from increasing its sales and revenue, but it also has severe consequences on the health of the patient. Since many of the concerned authorities in emerging regions do not have sufficient means to tide over the problem, manufacturers need to take an initiative to ensure that their customers get a legitimate product. *Sproxil*, which uses SMS scratch codes, is one solution that can bring about a change in these situations.

Another major issue for the Pharma Company is the occurrence of stock-outs which cause low product availability, resulting in delayed or incomplete treatment, increased suffering, bad publicity, loss of revenue/market share and in more severe cases even leading to death, unplanned pregnancies or transmittance of illness. Thus, we see that the consequences of having stock-outs go beyond a simple fall in sales due to the critical nature of the products the Pharma Company deals with. Despite this, stock-outs occur due to the following conditions.

Supply chain coordination is the first problem and is a big hurdle in the developing regions of the world. Even though there may be a willingness to share data and information, the supply chain remains disconnected because of the absence of a cheap and efficient communication system. This is an area where mHealth has brought about a sea of change. Apps such as *SMS for Life*, *SMS for Health* and *Rapid SMS* are simple SMS-based tools that encourage stock levels at the outlets to be

transmitted periodically upstream. This allows a central demand planner to make inventory and stocking decisions based on a holistic view of the supply chain. *Logistimo* is a solution suitable for outlets that want to have good visibility and control of their own inventory levels with the additional benefit of allowing visibility upstream.

The next hurdle faced by supply chains is poor forecasting. If we scale up the impact of forecasting the right demand to the Pharma Company level, we see that good forecasts allow the different players in the supply chain to maintain the stock levels to meet their demand. A poor forecast can lead to stock-outs or excessive inventory, resulting in higher holding costs and expiry wastage. Most of the solutions in the mapping (above) improve forecasting accuracy.

Accuracy of the forecasts can also be improved by increasing patient adherence or patient compliance. Patient adherence, or ensuring that a patient sticks to his treatment, is critical in the case of continuous treatments. *mClinica* serves this purpose in emerging markets by working as an SMS-based pill reminder service. *Refill-by-Scan*, by Walgreens USA, increases compliance by making it convenient for a patient to refill the medicines on time.

Product diversion is another issue faced both in developed and emerging nations. Diversion of medicines causes a shortage in one market and an excess in another, causing numerous problems for the supply chain such as stock-outs, skewed forecasts, etc. *Sproxil* and *Rapid SMS* are solutions that help tackle this problem. By improving supply chain coordination and generating better forecasts, inventory levels are enhanced to help various players optimize their cash flows and working capital requirements. Better coordination also allows retailers to aggregate their deliveries with nearby retailers to increase their purchasing frequency.

Applications

Solutions are designed by us to help overcome problems faced by the sponsor company in two specific markets. The first one is a smartphone app to be used by patients in the UAE, where the company has to sell its products to local wholesalers before the products enter into the country. This app can help reduce the bullwhip effect, increase forecast accuracy, curb counterfeiting and control product diversion in this region. This is done by providing the company with sell-through demand data in addition to the sell-in demand data that the company currently works with. For the company and the supply chain to reap the benefits of this app, it has to be used extensively by the end customer (patient). In order to ensure this, a number of patient-centric features have been incorporated into the app. Some of these features are counterfeit-scanning, reminder services for medicine consumption and refill, drug related information (side effects, offers, suggestions) and a progress tracker.

The second application is to use two existing mHealth solutions to prevent the occurrence of stock-outs for a long term contraceptive drug in Kenya. A major reason for these stock-outs (often 30-50%) is the small size of the entities that sell the product (e.g., pharmacies, dispensaries, etc.). These entities operate with a very low working capital (WC), resulting in a low ability to stock large quantities of expensive medicines such as this one. In addition, the lack of patient tracking systems results in poor forecasting and demand analysis, which add to the risk of stocking this medicine.

As a result of these, stock-outs occur frequently since dispensaries prefer to keep low on-shelf inventory rather than face expensive overstocks. This pattern of regular stock-outs is a major problem for this treatment, which requires the patient to use the product periodically. Failure to adhere to the treatment schedule makes the treatment ineffective and leads to unwanted pregnancies.

Given the nature of this problem, we tackle it using two existing solutions in tandem: *Logistimo* and *mClinica*. *Logistimo* is designed to increase the visibility within the supply chain and to expedite the order placement and order tracking processes, while *mClinica* is a patient assistance program that can be used to shape the patient demand by offering them discounts if they come within a certain period to purchase the medicine. Further, *mClinica* can track the current number of patients in each region to help the company with its forecasting and distribution.

Both solutions use simple mobile phones to carry out many of the functions normally performed by

inventory management and Customer Relationship Management (CRM) software on computers. Using these, supply chain coordination and working capital for the various players are increased. This will help them invest in more stocks to avoid stock-outs.

Conclusions

mHealth solutions have the potential to overcome some of the biggest supply chain hurdles faced by the pharmaceutical industry today. Problems faced by supply chains in emerging markets such as the lack of visibility among the various players, low operating budgets and the inability to track end-patient treatments can be resolved by using the right mHealth solutions, as shown in the Kenya application. On the other hand, although developed markets may have advanced IT infrastructure, some metrics can be improved by implementing mHealth solutions, as shown in the UAE app.

These solutions can help eliminate wastage and inefficiencies to revolutionize distribution in emerging regions and improve the overall supply chain visibility in developed markets. We only elaborate on two possible mHealth solutions, but as can be seen from the thesis, the possibilities in this field are immense.

We hope that this thesis serves as a motivation for the healthcare and pharmaceutical industry to leverage the advancements in mHealth for the improvement of their supply chains.

Cited Sources

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Interviews Conducted

- 16th Jan 2012: **Dr. Ruchi Dass** - Founder and CEO at HealthCursor Consulting Group.
- 20th Jan 2012: **Prashant Yadav** - Senior Research Fellow and Director-Healthcare Delivery Research at William Davidson Institute.
- 2nd Feb 2012: **Patricia Mechael** - Executive Director of mHealth Alliance (UN Foundation).
- 2nd Feb 2012: **Jeroen Veenhoven** - mHealth Marketing & Insights Manager at Vodafone PLC.
- 7th April 2012: **Dr. C.I. Joseph**, owner of Dr. Joseph's Clinics and Pharmacies, UAE.
- 1st May 2012: **Anup Akkihal**, CEO - Logistimo.
- 3rd May 2012: **Hafiz Ladha**, Director - mClinica.