

TITLE: consumer-focused supply chains: a cross-case comparison of medicine appeal and acceptance in India, Uganda and Nigeria

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Purpose

Medicine adherence levels remain frustratingly static at around 50% in the developed world and are likely to be lower in the developing world (Sabaté, 2003). Sabaté goes on to say that improving adherence would have more effect on health than any improvement in specific medical treatments (ibid.). We believe that supply chains can contribute to adherence by ensuring appealing and acceptable medicines are made available to consumers.

The study of adherence improvement has historically focused on increasing motivation through behaviour change (Kreps et al., 2011). However, there is some awareness – though little research – that other factors are important, including medicine appeal (Davis, 2007) and acceptance (Murray et al., 2009; Shapiro et al., 1986). Together, appeal and acceptance determine whether medicine is acquired and consumed, hence whether patients are adherent and so can derive value from it. Appeal is particularly important in the private sector when medicine must be purchased over the counter.

We use Service-Dominant Logic (SDL) (Vargo & Lusch, 2004; Vargo & Lusch, 2008) as a lens to investigate consumption as the “last yard” of the supply chain, and empirical research performed in India, Uganda and Nigeria to assess how different populations view the formulation and packaging of Oral Rehydration Salts (ORS) and Zinc. Over 700,000 children die from dehydration each year due to diarrhoea, of which more than half are in Africa (Walker et al., 2013). ORS taken with Zinc is the treatment recommended by the World Health Organisation. However, demand is weak in many parts of the developing

world, where caregivers instead often incorrectly use local remedies, antibiotics or loperamides (for example, Imodium). The research investigated whether different packaging designs would affect the appeal and acceptance of the medicine to caregivers, its correct preparation and dosing, and the use of ORS and Zinc together. The results and analysis provide new and actionable insights into medicine appeal and acceptance in the developing world.

Design/methodology/approach

We used SDL as the basis for analysing the consumption space. This identified the roles that medicine appeal and acceptance play in adherence and how changing the offering can contribute to consumption and therefore adherence (figure 1). The option to “Change the patient” becomes only one of the options when SDL is used to position consumption in its context. “Change the offering” then also becomes an option.

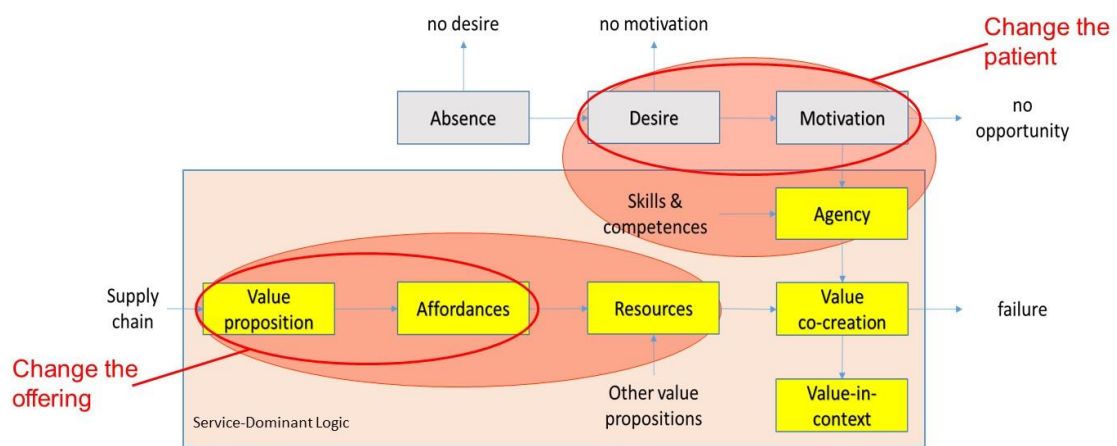


Figure 1: Adherence and "last yard" consumption using the lens of SDL

We used semi-structured interviews and discussion groups to obtain the views of over 500 parents on formulations and package design for ORS and Zinc. Their preferences were recorded on a Likert scale to permit quantitative analysis. The studies, performed in rural resource-poor areas, examined seven ORS formulations (smaller sachet, effervescent tablet, premix in Tetrapak, premix in plastic bottle, premix in plastic pouch, combined with water purifier, combined with Zinc) and six packaging designs (see figure 2 for examples).



Figure 2: Examples of packages tested in the research

Findings

We provide empirical evidence of both common and differing preferences across the three developing countries. Common findings include a dislike of wastage, something that supply chains could address by providing smaller package sizes. Differing purchase intent between countries was seen with product offerings such as effervescent dissolvable tablets and the inclusion of water purifier in the ORS.

Our theoretical analysis of the three case studies using the lens of SDL provides potential explanations for medicine appeal and acceptance based on cultural and environmental factors. We propose a common set of factors with specific country differences which could permit the extension of the findings to supply chains for other medicines and potentially for other products.

Relevance/contribution

The contribution of this research is significant. It highlights how packaging and formulation can affect medicine's appeal and acceptance, and therefore patient adherence. The results of the research provide practical guidance for supply chains on how medicine formulation and packaging design can have direct and measurable effects on appeal, acceptance and therefore consumption.

The research approach may also provide a new framework for assessing medicine acceptance more widely. In addition, it is likely that the same approach can be applied across other product groups such as pre-packaged food.

References

- Davis, J. (2007), "The effect of qualifying language on perceptions of drug appeal, drug experience, and estimates of side-effect incidence in DTC advertising", *Journal of health communication*, Vol. 12, No. 7, pp. 607–22.
- Kreps, G.L., Villagran, M.M., Zhao, X., McHorney, C.A., Ledford, C., Weathers, M., Keefe, B. (2011), "Development and validation of motivational messages to improve prescription medication adherence for patients with chronic health problems", *Patient education and counseling*, Vol. 83, No. 3, pp. 375–81.
- Murray, L.K., Semrau, K., McCurley, E., Thea, D.M., Scott, N., Mwiya, M., Kankasa, C., Bass, J., Bolton, P. (2009), "Barriers to acceptance and adherence of antiretroviral therapy in urban Zambian women: a qualitative study", *AIDS care*, Vol. 21, No. 1, pp. 78–86.
- Sabaté, E. (2003), *Adherence to Long-term Therapies: Evidence for Action*, World Health Organisation, Geneva.
- Shapiro, L.J., McCormick, W.C. & Angorn, R.A. (1986), "Implications of Drug Product Appearance on Generic Drug Acceptance", *Clinical Research and Regulatory Affairs*, Vol. 4, No 1, pp. 43–58.
- Vargo, S.L. & Lusch, R.F. (2004), "Evolving to a New Dominant Logic", *Journal of Marketing*, Vol. 68, January, pp. 1–17.
- Vargo, S.L. & Lusch, R.F. (2008), "Service-Dominant Logic: Continuing the Evolution", *Journal of the Academy of Marketing Science*, Vol. 36, No. 1, pp. 1–10.
- Walker, C.L.F., Rudan, I., Liu, L., Nair, H., Theodoratou, E., Bhutta, Z.A., O'Brien, K.L., Campbell, H., Black, R.E. (2013), "Global burden of childhood pneumonia and diarrhoea", *Lancet*, Vol. 381, 9875, pp. 1405–16.