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REPORT

WHEN THE DRONE FLIES! RETHINKING COMMUNICATION MODELS IN THE CONTEXT OF INNOVATIONS

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Abstract

As the use of technology in development continues to rise, Communication for Development (C4D) has been interrogated to guarantee that the communication demanded by innovation conceptually fits into existing models. Communication in innovation suggests more than what is offered by the traditional theory and practice. This paper studies the UNICEF work that launched an innovation to use drones to transport laboratory samples from a peri-urban health facility to a central laboratory. The C4D team recognised the need for a non-traditional C4D approach that included steps to Introduce, Name and Interrogate the innovation. The paper argues that while innovations proliferate, C4D models must mutate to better respond; and particularly to leap-frog new technologies. This requires rethinking communication models and approaches.

Keywords: *Innovation, diffusion of innovation, communication for development, communication theory and practices, drones, unmanned aerial vehicles (UAVs)*

Background

Over the past few decades the development terrain has been overwhelmed by different fashions of technology that purport to contribute to social development. For instance, in the Bulletin of the World Health Organisation (90(5):332-40), Lagomarsino and colleagues note that by 2012, 42% of ICT-enabled health programmes used it to extend geographic access to health care, while 38% used it to improve data management and 31% to facilitate communication between patients and physicians outside the physician's office. Other purposes included improving diagnosis and treatment (17%), mitigating fraud and abuse (8%) and streamlining financial transactions (4%). One of the recent technological applications to development is the use of drones. In the OCHA Policy and Studies Series (2014:10), Easton and Gilman detect the shift of EAVs from military connotations to their use as life-saving and humanitarian technologies. This shift is attracting the attention of investors and donors.

In 2016, UNICEF launched an innovative study to use drones to transport laboratory samples from a peri-urban health facility to a central laboratory. The successful results led to the opening of a 40km radius Drone Air Corridor in 2017 which offered a controlled airspace for technology to be tested and

local skills built. Different companies would use the corridor to test drones for offering imagery, transportation and internet connectivity.

While the transportation test would continue from the initiative commenced in 2016, for imagery tests, firms were expected to use the UAVs with powerful cameras to capture aerial images for different purposes that would include water and disaster mapping in addition to drought surveys. On the other hand, connectivity drones would be tested to provide WIFI to rural primary schools and give teachers an opportunity to access and send information.

During these encounters, UNICEF recognised the need for a non-traditional C4D approach. The C4D team ventured to answer the question: How best can communication introduce innovations to ensure, gauge and predict acceptability and use?

Objective

Building on the C4D work on introducing the drone to communities, this paper purports to discuss the use of new communication approaches to introduce innovations. Using the UNICEF initiative in introducing the drones, it discusses how the innovation was introduced by the Communication for Development team and what results were obtained in terms of the level of acceptance of the innovation.

Rationale

This work contributes to the body of knowledge on Communication for Development by filling the lacuna of evidence-based models on introduction of innovations. On the other hand, it offers an important pedestal for practical implementation of Communication for Development initiatives for introduction of new technologies in development. Processes described in this paper may be utilised in full or partially by future projects that implement innovative endeavours.

Theoretical Framework

The Diffusion of Innovations theory explains how new behaviour, objects and ideas are adopted by a population. One major thrust that isolates the Diffusion of Innovations theory from persuasive models is its claim that during the adoption process it is the innovation that changes to fit to the needs of the people (Rodgers 1983:164). This is an important premise as it urges implementers to be ready to reinvent innovations. It smacks of the fact that to understand and predict such an evolution of the innovation, a situation analysis is important as one of the first steps in introducing an innovation.

Everett Rogers introduces five qualities that determine the success of an innovation, namely: relative advantage, compatibility it values and practices, simplicity, suitabiliy to trialling, and observable results. This paper only discusses relative advantage and compatibility for the reason that these are the qualities that have a close link with the drone initiative under discussion.

Relative advantage refers to the benefit beyond the idea postulated by the innovation. The greater the perceived added advantage an innovation has, the greater the chances of adoption by a community. The perceived advantages could be viewed in terms of economic or psychosocial benefits that include prestige, convenience or mere satisfaction (Rodgers 1983). It is important therefore to quest for perceived relative advantage even when introducing an innovation so that a people's expectation is elevated for acceptance. In the case of introducing the drone, relative advantage was quested for by asking the people what other uses they perceived or wished the drone to provide.

Everett understands compatibility as the degree to which an innovation is seen as consistent with people's values, norms and practices. Incompatibility with the value systems constitutes renunciation_of

an innovation. After introducing the drone people were asked if they thought the innovation was consistent with their cultural believes, values and practices. This was to ensure that use of the UAV was going to be culturally accepted to enable continued acceptance. However, it is important to note that in the Diffusion of Innovations, those five qualities for adoption are defined as necessary elements for an innovation that is already introduced and is functioning. In the use by the UNICEF C4D team the two elements above were experimented to inform the process of introducing the innovation. The other 3 elements (suitability to trialling, simplicity and observable results) were not seen as relevant at this stage.

The gap that was identified in the Diffusion of Innovations was that it largely describes the process/stages of adoption and not the process of introducing an innovation.

Les Robinson (2009:2) compares various studies that lead to a conclusion that for engagement and adoption to happen three relative advantages, which he terms über-wants, are weighed by individuals; namely, personal control, time saving and self-esteem. Control is about how people get results in their lives. The more control they have the more certain they are of getting what they want with a minimum of disruption, delay, danger, doubt and uncertainty. On the other hand, if people perceive an innovation as influential in enabling them save time, it will more readily be adopted than when they do not see that benefit. The level of self-esteem that an innovation generates in individuals and communities has a value quite more important than the utility of the innovation. To exercise these concepts in pragmatic terms Les Robinson suggests an engagementsuitability tests, outlined below, that detects the level at which an innovation promises 'engagement suitability' and adoptability.

1) Does it address real life's frustrations, guilts or worries (in other words the needs) of your target group?
2) Does it give them more control over their lives?
3) Does it save them time (or is at least time neutral)?
4) Does it have social value?
5) Are there credible peers who will endorse these qualities?

Just like the propositions of Everett, Les Robinson's engagement suitability test is designed for programmes on course i.e. already under implementation. There is a gap therefore in terms of models that practically illustrate processes of introducing an innovation through communication. The Communication for Development initiative fills the gap through a mélange of propositions from Les Robinson and Everett as well as other innovative suggestions for modelling communication in introduction of innovations.

The Malawi Case of Drone Corridor

Methodology

The Malawi team planned a unique phase that included steps to Demystify, Name and Interrogate the innovation; and finally Sensitise the community. Firstly, the drone was introduced to community members. Creating a multisensory experience, its characteristics were demonstrated and explained, without naming it. After communities understood characteristics of the drone, they were asked to name it. Next, the communication team engaged the communities in a session of interrogating the drone. This required them to reflect on its characteristics and their setting/culture to identify possible fears and expectations. Community members were also asked to suggest possible uses of the drone to improve their community. Finally, the communication team sensitised the communities and cleared fears and misconceptions surrounding the drone.

The activity comprised 16 Focus Groups Discussions with men, women and community leader that included Area Development Committees (ADCs), 12 interactive film shows and 18 interactive roadshows. Exit interviews were conducted after each sensitisation contact with the communities.

Respondents were selected randomly by members of the C4D team. The randomisation required an arbitrary selection of at least 10 members of the participants to respond to some questions upon consent. However, the 10 respondents' requirements were not always met due to different circumstances surrounding the sensitisation e.g. time limitations to travel to a different site. Questions for gauging the degree of acceptability were derived from traditional pretesting tools (Haaland 1984) and the Les Robinson engagement suitability test. the pretesting therefore ventured to quest for understanding the use of the drone, perceptions on importance of the drone in addressing people's needs, potential of the drone to make the people have more control of their wellness, and perception of social value in having the drone. Percentiles were done to draw a picture of how representativeness of the responses *(*Ref. **Tables 1-3:** Estimated number of participants reached with FDGs, interactive meetings and exit interviews*).*

Table 1: FGDs Reach

Men		Women		Community Leaders	
# of FGDs	**Participants**	**# of FGDs**	**Participants**	**# of FGDs**	**Participants**
4	52	4	56	8	86

Table 2: Estimated Number Of Participants Reached With Interactive Community Moblisation Meetings

Women	Men	Girls	Boys	Total
9,000	9,450	8,050	7650	34,150

Table 3: Exit Interviews

Adults (aged 30 above)		Youth (aged 15 to 30)		Total exit interviews
Male	**Female**	**Male**	**Female**	
19	21	12	15	**67**

Results and Discussions

This section outlines undergone during the process of introducing the drone and discusses reactions from the community as well as observations and recommendations made by the C4D team.

Demystifying

The drone was shown to the people without naming it. Facilitators said the 'thing' could fly with an aid of a remote pilot who could use a computer or a phone to direct it. The pilot could be any person trained to fly the 'thing'. It could be any other person in the community. Facilitators also explained that there are different types of the 'thing' according to functions which they serve. These functions included taking aerial pictures, transporting small items, and providing internet connectivity. Then one of the facilitators flew the 'thing'.

After flying it, those willing were asked to touch and smell it. The idea behind this was to increase multi-sensory experience with the thing in order to demystify it and enhance understanding and attachment. As Shaz Smilansky notes, multi-sensory elements (touch, taste, smell, hearing, and sight), allow clients to experience and most importantly feel an emotional connection with the brand/product. By adding product-related multi-sensory elements we utilise elevated platforms that engage emotions through the senses (Smilansky 2009). Experiences that engage the senses affect the right brain hemisphere and create lasting impressions (Caine & Caine 1997:79). Thus, this step ensured the people saw and heard it fly then touched and smelt it. This process of demystification would later be handy as a precursor to a conducive environment for the naming session which followed.

Figure 1: A pupil touches the drone at Chisazima, in Kasungu district, Malawi

Naming

Names have a totemic representation of a community's heritage. In traditional societies names have an intrinsic connection is created between the bearer and the life-force emitted by the name (Harrison 1990:52). In most of Malawian communities, naming is a process that is culturally valued as it demonstrates respect to the person who names. Among indigenous communities, a name resonates with the family's and community's life experiences and is a process of integrating the new born into the cosmos of the indigenes. Equally, marketing understands the role of shared naming by establishing a brand that resonates with the people's minds (Conley & Fiedenwald-Fishman 2006: 111). Therefore, after being exposed to the 'thing' people were asked to reflect on its characteristics and name it, offering the communities a naming opportunity ensured that the 'thing' was integrated into the life of the community; thus, increasing chances of recognition and acceptance. Names that came out included 'Kandege' (Tiny Airplane), 'Mtumiki' (Messenger), 'Ka droni' ('little drone'). In justification those who said it was Kandege said it was so because just like a plane it flew, but it was tiny; while those who identified it as a Mtumiki justified their naming because one would send it to perform needed functions as were mentioned by the facilitators i.e. taking photos, pictures and providing information from far distances (internet connectivity). In a few communities, some who had already seen it or heard about it simply called it by its common name in town: Drone!

In each session, facilitators resultantly used the name that was the most agreed upon. By the end of all community dialogues the most common name identified and used became 'a tiny plane called drone' (ka Ndege kotchedwa droni), which was used synonymously with 'little drone' (ka droni).

Interrogating

Community members were asked about their impressions of the drone after which facilitators probed deeper into whether they felt the drone would be useful in their lives and if there were any fears and expectations surrounding the innovation.

Generally, participants of dialogue groups appreciated the innovation and saw it an important initiative to improve their lives in education, emergency situations and in health. For some the fact that the drone would be used to collect samples for testing created expectation for good health that would induce health seeking behaviours:

"Sometimes you go to the clinic and the doctor looks at you and writes a medication on paper even before you explain. If the doctor only receives your blood delivered by the drone, he or she has no choice but to test it…No shortcuts!" Chief, Community Discussions.

However, there were also real and perceived fears ranging from issues of witchcraft to security and privacy. For instance, some community members observed that the idea that the 'airplane' had no pilot on board would easily be associated with witchcraft. Nevertheless, they noted that the drone would be distinct from witchcraft planes in that it would be flying during the day. To maintain that distinction, users of drones needed to make sure that it always flew during the day. The other consideration for the pilots would be to ensure the drone was accurate enough to avoid incidents of accidental landing in a graveyard. That would exacerbate the association of the innovation with witchcraft since, as belief holds it, 'planes of witches' also land in graveyards; at night though.

Those who feared for their security observed that politicians could use various malicious methods to affect constituents they disfavour. For them, one of the possibilities would be to put a bomb or an infectious germ on a drone and send it to their constituency. Being aware that the country was marching towards general elections, it would not be easy to trust a drone coming into the community. During the testing period, Malawi had had rumours of blood suckers going around communities. This fear surfaced as people observed that blood sucking perpetrators would use drones to break into their houses and syphon blood from individuals. To establish trust, discussants suggested to have the drone labelled 'UNICEF' and tagged with a toll-free number to report any cases around the initiative.

The question of privacy manifested itself in the quest to know the flight range of the drone:

"How low does the thing fly? You know in our community we do not have roofed toilets…and you saying that this thing can take pictures…" Participant, ADC Discussion.

"There are lovers here who do stupid things in the bush…Will it also capture pictures of that?" Audience participant, roadshow.

Other participants debunked such fears of privacy by alluding to individual and family responsibilities for privacy. Families had to ensure they had well-constructed toilets and individuals had to be decent to avoid open defecation and (visible) sexual activity. However, it is important to note that infringements on people's privacy can influence people's acceptability of a technology. J. J. Britz notes that the use of technology for the processing information has far reaching effects on society that include loss of dignity and spontaneity, as well as a threat to freedom and the right to privacy (Britz, online:ND). In her research on the impact of technology on the privacy of the individual, Rosenberg (1994:228) concludes that technology continuous to be viewed as a threat to privacy rather than a possible solution. Viewed against these threats, pilots of drones would need to consider flight height and adequate sensitisation of information to communities whenever there was need to fly low. Such sensitisation would not only avert fears but also increase the level of perceived benefit.

Apart from expressing their fears and expectations, community members were asked to suggest ways in which they would want to see the drone being used to improve their lives. Their 'what ifs' ranged from: agriculture, child protection and local governance, to promotion of educational quality. While some suggestions may seem weird to other readers, it is important to note that innovative ideas originate from sketchy and at-times-deemed-crazy sources (Scott 2010). Therefore, this paper does not segregate ideas to underscore the importance of original thoughts in the process of innovation. Such thoughts could be used as springboards for design thinkers of technology for development.

Some people opted to have the drone used for crop inspection. In this way, it would survey fields to detect infections or the general health of the crop. Community members would at times take pictures with the drone and send them to the District Agricultural Development Officer for detection. Some suggested using the drone to collect reports from chiefs and teachers to district/zonal offices to speed up decisions in education and governance. In education, the drone would equally be used to map the status of

infrastructure in schools. There were also suggestions of using the drone for child labour inspection in farms:

> *"In the tobacco fields a tenant or farm owner will make children hide when he knows there are monitors coming to check. With the drone, it will fly up in the air and arrive unawares…No time to run and hide!"* Participant, FGD.

At the time of the innovation, Malawi had had cases of albino suicides as it was believed that their bones would be used to magically promote business and bring success to life. There were also problems of child trafficking and most of the victims were orphans and vulnerable children. A community leader at one site suggested having the drone monitor safety of albinos and other vulnerable children by following them where ever they go. It would 'then report to child protection officers about what it saw'. In a similar role, the drone would be used in criminal investigation e.g. detecting livestock thieves as well as detecting farmers and traders of Indian hemp.

In *Innovative Minds*, Eberl and Puma (2007:50), note that even the best ideas are worthless if no one is interested in them (Eberl & Puma 2007:50). They observe that it is often difficult or even impossible to precisely assess the market value of an idea in its early phases. The innovator's top priority must be to translate an idea into competitive products:

> *"Be a good listener. Don't immediately discard crazy ideas or suggestions, because later on you might recognise the great ideas that are sometimes concealed within them. And anyone who has the courage to express an apparently idiotic idea has proved that he or she is at least an independent thinker."* (Eberl & Puma 2007:50).

In addition to the fact that weird ideas propel technological advancement and science to new horizons, they equally express unmet needs as was observed in a contribution by one community member at Mankhaka film show in Snr. Chief Lukwa area:*"And when my bicycle is broken, can the drone take me to the clinic?"* This question is loaded with unmet needs on referral system and how heavy-goods drones could be part of the solution.

Sensitising

This step was implemented through activities that included community meetings, interactive drama, roadshows, exit interviews and public announcements on community radios. About 40% of the population in the corridor (n = 285,121 aged 18+) were estimated to have been reached by the C4D interventions.

After understanding the people's expectations and fears, the team developed key messages to create awareness, clear misconceptions and debunk the fears that had been identified. The message creation process also took into consideration some of the Frequently Asked Questions (FAQs) during the community dialogues. For instance, people wanted to know who would have custody of the drone/s, who would operate it/them, if the drone/s would not burn their houses/village in the case of an accident (e.g. falling), if it would not adversely affect the environment, if it/they could experience an accident due to weather, and if there were going to be small airports for drones in the communities, and special community committees overseeing flights. An outline of these messages could help current and future drone initiatives in Malawi and other countries with similar demographics. Some of the key messages communicated and discussed with the participant groups were as follows:

1. Drones are objects that are remotely controlled to fly by using a computer or a phone. Drones can be used for transportation, internet connectivity and taking images. More uses of the drone suggested by you (communities) will be considered by partners in development.

2. For a period of one year, different companies will be testing drones for different purposes in your area.
3. Drones are not mysterious or mystical – they are simple and increasingly common technologies that may offer solutions to development problems by cutting transport times and labour costs e.g. transporting blood samples from a hard to reach village clinic to a health centre to speeding up testing and delivery of results.
4. Though the drone may look mysterious in that it can be flown without a pilot on board, it is not mythical because it uses modern science to fly. A remote pilot uses a computer or phone. Some of the people in our/your community have the type of phones that can be used to fly drones.
5. When you see a drone passing overhead, do not worry. It cannot harm you in any way.
6. Drones are safe for people, animals and the environment.
7. Drones will be landing at the district airfield during the testing period. The airfield remains a protected area. Prevent driving oxcarts and bicycles across the airfield.
8. The drones will be operated by trained pilots from the Ministry and UNICEF partners.
9. Pilots of the drone will ensure that your privacy is guaranteed. They will not fly the drone around your private spaces, e.g. homes, without your consent.
10. The government is setting up rules to regulate flying of drones in Malawi. This will ensure that all drones flown are safe for people and that they are not used for ill purposes.
11. When the drone flies in public spaces, individuals do not have the right to privacy because consent cannot be obtained from thousands of individuals. Registered drones are performing a function for the common good when they fly in public spaces. Consent for flying in public spaces will have already been obtained from national and district authorities by the time the drone flies.
12. It is against the law to attack a drone that is flying in public spaces for the common good of the community members.
13. If the drone lands close to you, do not touch it, but ensure to tell officials of its location and wait for its retrieval.
14. Just like a car or a plane the drone can have an accident. It can fall anywhere on the ground e.g. a market place, a school or a graveyard. When this happens pick up the drone, or report its location to your nearest authority e.g. the chief or the health worker.
15. As the drone performs community functions, do not expect a token when you report on a drone that has landed on had an accident.
16. Routine landing spots of drones will be announced to you when the initiative commences.

Acceptability

Over 90% of the exit interview respondents agreed that the drone would address their most important needs; mostly in health and agriculture. This level of complacency was encouraging to ensure the smooth introduction of the innovation. The same range of percentile agreed the drone was culturally appropriate i.e. did not have any potential conflicts with their values and beliefs. This alluded to the fact that sensitisation was conducted to iron out fears; especially concerning witchcraft.

In an independent study in the Drone Corridor, Alec Fraser notes that the initial reaction to seeing a drone prior to sensitisation was one of fear, confusion, curiosity, and anxiety. On several instances, interviewees drew associations between drones and acts of witchcraft. After sensitisation by the C4D team these fears subsided. He also found that 94% (n=33) of interviewees strongly agreed that drones could have a positive impact in their community and would support the use of drones in the future (Fraser, 2017:5).

Conclusion

This paper aimed at discussing the use of new communication approaches to introduce innovations by focusing on how the UNICEF C4D team in Malawi introduced the drone in a 40km radius community of Kasungu in Malawi, as well as discussing results of the unique approach that was utilised. The team observed that existing theories and approaches did not have adequate underpinning theoretical and practical frameworks for introducing innovations. Therefore, a novel approach was used by the team that included steps to demystify, name and interrogate the innovation before finally sensitising the communities.

The work demonstrates that it is important to demystify an innovation to ensure community/individual (psychological and social) attachment with the product and integrate it into the culture of the society. It is equally imperative to engage communities in naming an innovation. During such process, some names that have already entrenched a community will stand out to become the preferred names by the members of the community. Other names can actually be introduced in the community and be adopted with ease. Allowing communities to interrogate an innovation allows fears, anxieties and expectations to be levelled out. On the other hand, it informs the process of framing messages for introducing the innovation. Effective messages in introduction of innovation will aim at mere introduction of facts about the product, clearing the misconceptions and fears, and in some instances defining actions to be taken by communities in different contexts of implementation. Such messages will establish andor raise confidence (trust) and complaisance (perception of benefit). Through exit interviews as well as reference to independent research, this paper demonstrates that the DeNIS (Demystify, Name, Interrogate, Sensitise) approach works in preparing individuals and communities for an innovation i.e. accepting its use in the community.

The work contributes to the Diffusion of Innovation theory by connecting the missing link on introducing the product. This is due to the fact that the diffusion of innovation largely tackles concepts on adoption processes of an innovation; from innovators, across early minority and late majority, to laggards. Besides filling the gap of knowledge in the pre-implementation phase of an innovation, the DeNIS approach also forms part of ground-breaking research approaches at the step of interrogation. This approach sign-posts how community dialogue, as an on-going research tool, can generate evidence for implementation.

Amidst the heavy contribution of technology to development, the image that juts at the top is that Communication for Development must itself be innovative to adequately respond to innovation. This is justified by the reality that exiting communication models present shortfalls to sufficiently address participatory information generation for communities to be part of the innovation design. Technologies in development like mHealth and the use of UAVs present an opportunity for the C4D expert to start rethinking and reshaping existing models and approaches. The Communication DNA is mutating. There are traits of Communication in Innovation and/or Communication for Innovation emerging as a unique body of knowledge in C4D/SBCC.

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