

What Mobile Phones Mean to Rwandan Entrepreneurs

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Introduction

Each day, thousands of people in the developing world acquire a mobile telephone. In communities where landlines are scarce (and PCs are even scarcer), many of these new users hear a dial tone for the very first time. These new users may find themselves in greater control of their social and economic networks, or may find that the mobile helps improve their financial, emotional, or even physical well-being. However, up to this point, the social impacts of the mobile telephone in developing nations have not received sufficient scholarly attention. Though there is a rich tradition of study of the social and economic impacts of Information and Communication Technologies (ICTs) in developing nations, these studies have focused more often on television, radio, and more recently, PCs and the internet. Studies of the impact of the telephone, and certainly of the mobile telephone, have been comparatively rare.¹

This paper approaches the phenomenon of mobile phone usage from the *user level* – asking individuals to express what the mobile phone means to them.² It focuses on owners of micro-, small-, and medium-sized enterprises (MSMEs), which are of critical importance to the economies of developing nations.³ Using a small-group quantitative methodology called a Q-sort, it examines users' own experiences with their mobiles. The research treats users not as a block with a single set of needs, but rather as goal-pursuing individuals who interact with the technology in different ways. The study identifies four distinct voices; some participants see the mobile as an instrument for the pursuit of various business goals, while others view the mobile as satisfying emotional or intrinsic needs. Taken together, these voices point to a range of intended 'uses and gratifications' among MSME users in the developing world, and suggest numerous interesting paths for future research.

¹ Georg Strom, "The Telephone Comes to a Filipino Village," in *Perpetual Contact: Mobile Communication, Private Talk, Public Performance*, ed. James E. Katz and Mark Aakhus (Cambridge, UK: Cambridge University Press, 2002). See also, for fixed-line studies: Karen Eggleston, Robert Jensen, and Richard Zeckhauser. "Information and Telecommunication Technologies, Markets, and Economic Development." In *The Global Information Technology Report 2001-2002: Readiness for the Networked World*, edited by Geoffrey Kirkman, Peter Cornelius, Jeffrey Sachs and Klaus Schwab. Cambridge: Oxford University Press, 2002. Andrew Hardy, "The Role of the Telephone in Economic Development." *Telecommunications Policy* 4, no. 4 (1980): 278-86. H. Hudson. *When Telephones Reach the Village: The Role of Telecommunications in Rural Development*. Norwood, NJ.: Ablex, 1984.

² Leysia Palen, Marilyn Salzman, and Ed Youngs, "Going Wireless: Behavior and Practice of New Mobile Phone Users" (paper presented at the ACM Conference on Computer Supported Cooperative Work, Philadelphia, PA, 2000).

³ John McMillan and Christopher Woodruff, "The Central Role of Entrepreneurs in Transition Economies," *Journal of Economic Perspectives* 16, no. 3 (2002).

Background

MSMEs, Economic Development, and ICTs

Thirty years ago, Sydney Aronson observed: “it seems apparent that the kind of modernization experience by the Western world...over the past century, is intimately tied in both cause and effect, to the availability of the telephone as an easy, efficient, and relatively inexpensive means of communication.”⁴ As a force for economic development, the mobile’s contribution to a new, sudden *global* expansion in the availability of an inexpensive dial tone is momentous indeed. Nowhere has the expansion been more sudden than in Africa. There are now at least 23 million mobile subscribers in Africa, and more mobile lines than fixed lines; between 1995 and 2001, mobile usage in Africa grew at staggering 82% a year, while fixed lines in Africa grew at 7% per year.⁵

Many of these millions of new mobile users in Africa are owners of “micro-enterprises”, with 0-5 employees, or of small- or medium-sized firms, with 5-100 employees. MSMEs are worth singling out for special attention because they comprise the majority the total economic activity in most nations -- developing or developed. Urban MSMEs span the gamut of economic activities, from street vendors to restaurants to fix-it shops and small manufacturers. In rural areas, the bulk of MSMEs are agricultural. Micro-enterprises, especially, are often informal or semi-formal entities, existing without taxes or formal regulation.

The ICT needs and behaviors of MSMEs are an emerging area of focus within development practice and theory⁶. On the practical side, Bangladesh’s Grameen Village Phone is perhaps the best-documented example mobile phone usage by micro-enterprises; over 10,000 participants have purchased a mobile and become telecommunication providers for an entire village.⁷

Duncombe and Heeks present a particularly comprehensive theoretical approach to MSME ICT usage, based on their analysis of MSMEs in Botswana.⁸ They argue that practitioners and theoreticians should understand and address drivers of ICT *demand* (as it relates to

⁴ Sidney. H. Aronson, "The Sociology of the Telephone," *International Journal of Comparative Sociology* 12, no. 3 (1971) p. 154.

⁵ Connectivity statistics from International Telecommunications Union. Up-to-date statistics available at <http://www.itu.int/ITU-D/ict/statistics/>

⁶ An example: Per Lind, "On the Design of Management Assistance Systems for SMEs in Developing Countries," in *Information Technology in Context: Studies from the Perspective of Developing Countries*, ed. Chrisanthi Avergou and Geoff Walsham (Burlington, VT: Ashgate, 2000).

⁷ <http://www.grameenphone.com/village.htm>

⁸ Richard Duncombe and Richard Heeks, "Information and Communication Technologies and Small Enterprise in Africa: Lessons from Botswana," (Manchester, UK: Institute for Development Policy and Management, University of Manchester, 2001).

running and growing a business) instead of focusing on the more visible shortcomings in the supply of ICT services and hardware to MSMEs. Furthermore, because the information needs of the majority of MSMEs are simple, informal, and based on social ties with known, proximate actors, they argue that the majority of MSMEs actually require little or no ICT technology, *save perhaps the telephone*. To them, the telephone is...

the information-related technology that has done the most to reduce costs, increase income and reduce uncertainty and risk. Phones support the current reality of informal information systems, they can help extend social and business networks, and they clearly substitute for journeys and, in some cases, for brokers, traders and other business intermediaries. They therefore work “with the grain” of informality yet at the same time help to eat into the problems of insularity that can run alongside. Phones also meet the priority information needs of this group of communication rather than processing of information.⁹

Mobile telephone technologies are not the only way to provide telephony to the large MSME community that requires it. Landlines, public telephones, shared phones (such as Grameen), and telecenters are alternate mechanisms. Nevertheless, the rapid growth and relative affordability of mobiles in Africa and elsewhere makes their utilization by MSMEs essential to understand.¹⁰

Uses and Gratifications Approach to ICT needs

The approach of asking users what the technology ‘means to them’ flows from the ‘uses and gratifications’ perspective towards communion technologies.¹¹ As a complement to effects-based research, the uses and gratifications perspective focuses on individuals’ expected benefits from and rationales for engaging in communication behaviors. In doing so, it can help explain barriers and drivers to adoption of a technology, as well as explain usage patterns that may vary across individuals and contexts.

Among MSMEs, there may not be a clear distinction between the needs, attitudes, and ICT use patterns of the owner, and those of his/her business. Many businesses are run out of the home, or have no fixed address. Similarly, many of an MSME’s employees are likely to be family members. This distinction may be especially hard to find when it comes to a portable technology like the mobile, which is likely to be used in both ‘work’ and ‘home’ contexts in a

⁹ Duncombe and Heeks, p. 19

¹⁰ See also: Victor W. Mbarika, "Re-Thinking Information and Communications Technology Policy Focus on Internet Versus Teledensity Diffusion for Africa's Least Developed Countries," *Electronic Journal on Information Systems in Developing Countries* 9, no. 1 (2002).

¹¹ Jay Blumler and E. Katz, *The Uses of Mass Communications: Current Perspectives on Gratifications Research* (Beverly Hills, CA: Sage, 1974), Thomas E. Ruggiero, "Uses and Gratifications Theory in the 21st Century," *Mass Communication & Society* 3, no. 1 (2000).

single day.¹² Therefore, to explore the way mobiles are used in MSMEs (or perhaps in any workplace context) is important to ask the owners about both work and social purposes.¹³

Previous work on the dimensions of telephone and mobile telephone usage provides clues about what sorts of the uses and gratifications MSMEs owners might pursue via their mobiles. For example, Katz's elaboration of the effects of mobile use includes uncertainty reduction, security, and, in the workplace, productivity.¹⁴ Looking back to the literature on fixed-line telephone behavior, LaRose reviews studies¹⁵ that indicate strong evidence for at least two factors underpinning telephone usage: instrumental (task-related) and intrinsic (socially or emotionally focused). A third dimension – security – appears in similar studies.¹⁶ The general expectation of this inquiry is that MSME owners will cite both intrinsic and instrumental elements of mobile phone usage.

Within an instrumental set of motivations, a few distinct elements are possible. First, the mobile's basic provision of *access to information* is shared with landlines. *Mobility* is a new function unique to wireless technologies. Finally, given the mobile's possible use in the economic pursuits of the MSME owners, *productivity* (the mobile as a tool that helps a business prosper, either by time savings or by revenue generation) might also be valued. In terms of intrinsic motivations, status (the mobile as social signal) is likely to be relevant. Other intrinsic motivations, such as happiness, the joy of early-adoption, or the enjoyment of

¹² Cheryl Geisler et al., *Border Crossings: The Social Transformation of the Boundary between Work and Life by It Gone Mobile* [On-line White Paper] (Rensselaer Polytechnic Institute, 2001 [cited February 5 2002]); available from <http://www.rpi.edu/~geislc/Mobile/WhitePaper.pdf>, Diana Gant and Sara Kiesler, "Blurring the Boundaries: Cell Phones, Mobility, and the Line between Work and Personal Life," in *Wireless World: Social and Interactional Aspects of the Mobile Age*, ed. Barry Brown, Nicola Green, and Richard Harper (London: Springer, 2001).

¹³ This approach is distinct from earlier research into telephone usage in the US and Europe, much of which seems to want to make a clear distinction between domestic/social uses and business uses. e.g., G. J. O'Keefe and B. K. Sulanowski, "More Than Just Talk: Uses, Gratifications, and the Telephone," *Journalism and Mass Communications Quarterly* 72, no. 4 (1995).

¹⁴ James E. Katz, *Connections: Social and Cultural Studies of the Telephone in American Life* (New Brunswick, NJ: Transaction Publishers, 1999).

¹⁵ Robert LaRose, "Understanding Personal Telephone Behavior," in *Progress in Communication Sciences*, ed. H. Sawhney and G. Barnett (Norwood, NJ: Ablex, 1999). LaRose's review includes: J. Adler, "Telephoning in Germany: Callers, Rituals, Contents, and Functions," *Telecommunications Policy* 17, no. 4 (1993), G. Claisse and F. Rowe, "The Telephone in Question: Questions on Communication," *Computer Networks and ISDN Systems* 14 (1987), Fischer, "Touch Someone: The Telephone Industry Discovers Sociability," *Technology and Culture* 29, no. 1 (1988), S. Keller, "The Telephone in New (and Old) Communities," in *The Social Impact of the Telephone*, ed. I. de Sola Pool (Cambridge, MA: MIT Press, 1977), LaRose, "Understanding Personal Telephone Behavior," G. Noble, "Discriminating between the Intrinsic and the Instrumental User," *Australian Journal of Communication* 11 (1987), O'Keefe and Sulanowski, "More Than Just Talk: Uses, Gratifications, and the Telephone," B. D. Singer, *Social Functions of the Telephone* (Palo Alto, CA: R & E Research Associates, 1981).

¹⁶ J. W. Dimmick, J. Sikand, and S. J. Patterson, "The Gratifications of the Household Telephone: Sociability, Instrumentality and Reassurance," *Communication Research* 21, no. 5 (1994), H. Dordick, P. Lum, and H. F. Phillips, "The Social Uses of the Telephone," *InterMedia* 11 (1983).

‘play’ with new mobile features may also prompt mobile usage. In addition, other goals, such as security, and control may be cited. Finally, as a goal, *connectivity* is so broad that it may contribute to almost any outcome: whether intrinsic (connecting with friends and family), instrumental (connecting with customers, etc), or security-related (connecting with help).

In summary, this small research study was not designed to identify an exhaustive set of the motivations for mobile usage among MSME owners. Rather, using a set of statements drawn from the list of possible dimensions mentioned above, the study reports on the subjective, integrated opinions of its participants. Why and how do MSME users *think* they use the mobile? What are their expectations of what use entails? Understanding MSMEs’ answers to these questions may help economic development practitioners and mobile phone providers design services and campaigns to get mobile phones in the hands of more MSME users. Communication and development theory, meanwhile, will benefit from an additional mapping of the reasons for adoption and use of a rapidly spreading communication technology.

Methods

The Q-sort technique, which captures the unique, subjective perspectives of a set of individuals,¹⁷ is well suited to the uses and gratifications approach to communication behaviors. In a Q study, participants roughly rank a set of 20 or more elements. The ranking criteria can almost any dimension of opinion: agreement, importance, etc. The elements themselves do not have to be mutually exclusive nor completely exhaustive of all the possible concepts that could apply. Instead, they are assumed to be simply a subset of the concepts that may be important to the general issue under examination. Elements can be derived (sampled) from third-party materials, from interviews with participants, or can be otherwise crafted according to any requirements the researcher may have.

For this exploratory study, the researcher created the Q elements. The sort contains 32 elements (statements) related to status, happiness, control, cost savings, productivity, connectivity, and security, as well as to the impact the mobile’s use may have on the participant or his/her family. (See appendix table A1.)

¹⁷ Q-methodology was developed by William Stephenson W. Stephenson, *The Study of Behavior: Q-Technique and Its Methodology* (Chicago: University of Chicago Press, 1953). Q has been used to address a variety of research topics. An excellent bibliography of Q-related materials, compiled by Steven R. Brown, is available on Peter Schmolck’s Q-Method Page. <http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/> For a detailed methodological and statistical exploration of Q, refer to McKeown and Thomas Bruce McKeown and Dan Thomas, *Q Methodology*, ed. John L. Sullivan and Richard G. Niemi, *Sage University Papers Series. Quantitative Applications in the Social Sciences; No. 07-066* (Beverly Hills, CA: Sage Publications, 1988), or to Steven R. Brown, *Political Subjectivity: Applications of Q Methodology in Political Science* (New Haven: Yale University Press, 1980).

Interviews were carried out during October, 2002, by Lydie Hakizimana, a student at the Kigali Institute of Science and Technology, under the close supervision of Jonathan Donner. The sample was opportunistic, with interviews based in Kigali's markets, streets, and small shops. Respondents included both micro-entrepreneurs involved in informal businesses: trading textiles, foodstuffs, household items, as well as owners of more established SMEs such as tailors and butcher shops.

The Q was administered in one-on-one settings. Participants were asked to sort the elements to "least describes me" to "most describes me" on a 9-point workspace. (See appendix table A2).¹⁸ All items and instructions were professionally translated into French and Kinyarwanda prior to administration. Including some open-ended questions and introduction time, each Q interview lasted approximately 20-25 minutes. As a small honorarium, subjects received a pre-paid mobile phone card worth roughly \$5.

Results

32 Rwandans (22 men and 10 women) participated in the exercise. Four additional people submitted sorts, but their results were discarded due to problems with transcription. Two people heard the instructions, but declined to participate. All participants were MSME owners; eleven were micro-entrepreneurs with no employees, nine had between one and five employees, and the remaining twelve (SME owners) had between six and twenty employees. (See appendix table A3.)

A principal components analysis revealed at least 8 factors with eigenvalues greater than 1. Several varimax-rotated solutions were examined, with the 4-factor solution chosen for its balance of parsimony and explanatory power. The four factors accounted for 61% of the initial variance.¹⁹ (See appendix table A4.)

Participants were flagged as defining a factor if they loaded significantly (approx. .50 or greater) on a single factor. Under these criteria,²⁰ 6, 5, 8, and 7 participants defined the four factors. Four participants were undefined, loading on no factor at .5 or above. Two participants loaded significantly and negatively on one factor.

¹⁸ Two workspaces helped guide the sort. The first board contained three spaces "less like me" "neutral" and "more like me" – these spaces helped respondents conduct a preliminary sort. The second workspace contained the upside-down pyramid with individual spaces for each of the 32 items.

¹⁹ The analysis was conducted using PQMETHOD, available at <http://www.rz.unibw-muenchen.de/~p41bsmk/qmethod/>

²⁰ Steven R. Brown, "A Primer on Q Methodology," *Operant Subjectivity* 16 (1993).

Consensus Items

All voices ranked “Having a mobile phone makes me feel more connected to the world” high (+4, +1, +2, +3 respectively) suggesting wide appeal of the basic connectivity function of the mobile.

All voices ranked “My family has more money because I have a mobile phone” low (-4, -3, -3, -3 respectively), suggesting no salient cause-effect between mobile acquisition and perceived family prosperity. (See appendix table A5).

Distinct Voices

Voice One: Productive

One micro-entrepreneur and five SME owners defined this factor. As shown in table 1, this voice sees the value of the mobile as a tool, an investment, or as something which helps their business’s productivity. This voice is the only one to rank “the mobile phone helps my business save money” high (+3). They also give high marks (+4) to “the phone changed the way I do business”. The phones also help this voice “get more done” (+2) and “make more money in a day” (+2). Finally, to this voice, the phone might be more of a business device (+1) and less of something to be shared with friends and family (-2).

Table 1 Factor 1: Productive

		Factors				
No.	Statement	Z-score	F1	F2	F3	F4
<i>Describes me best</i>						
2**	Getting a mobile phone changed the way I do business	1.76	+4	0	+1	+1
7	Having a mobile phone makes me feel more connected to the world	1.55	+4	+1	+2	+3
6	Having a mobile phone makes me more important	1.51	+3	+4	-2	+3
29**	My mobile phone helps my business save money	1.39	+3	-1	0	-3
19	My mobile phone helps me find work	1.37	+3	-3	+2	-2
<i>Other distinguishing (relatively high) statements</i>						
30**	My mobile phone helps me make more money in a day	0.96	+2	-3	-2	-2
17**	My mobile phone lets me get more done during the day	0.83	+2	0	+4	0
31*	I use my phone for business more than for social calls	0.68	+1	-1	-1	0
11*	I was among the first of my friends and business associates to have a mobile phone	-1.1	-2	-4	-4	-4
<i>Other distinguishing (relatively low) statements</i>						
16**	I share my mobile phone with my family or friends	-0.88	-2	+4	-4	+2
<i>Describes me least</i>						
28	My mobile phone is stylish	-1.36	-3	+1	-3	-3
25	My mobile phone gives me more control over who I talk to, and how/when I talk to them	-1.45	-3	-4	-3	-2
10	I can't do business without my mobile phone	-1.46	-3	-2	0	+4
22	I use my mobile phone for emergency calls	-1.57	-4	+1	+2	-4
8	My family has more money because I have a mobile phone	-1.59	-4	-3	-3	-3

*p<0.05, **p<0.01

Voice Two: Intrinsic

All participants defining this factor were micro-entrepreneurs. Table 2 indicates that this voice is quite different than the productivity voice. Its top items concern feelings of importance (+4) and happiness (+3), sharing the mobile (+4) and the number (+3) with friends, and staying in touch with friends (+3). This voice also asserts that the mobile is “stylish” (+1). By contrast, the voice ranks two work-items especially low: the mobile as a way to find work (-3) and the mobile as something which changed the way they do work (0).

In responses to an open-ended question as to why they purchased a mobile in the first place, three of the five participants loading on this voice reported “to be like everyone else” or to be “like their friends”.

Table 2 Factor 2: Intrinsic

No.	Statement	Z-score	F1	Factors		
				F2	F3	F4
<i>Describes me best</i>						
6	Having a mobile phone makes me more important	1.54	+3	+4	-2	+3
16	I share my mobile phone with my family or friends	1.35	-2	+4	-4	+2
12	I give my mobile phone number to many people	1.33	-1	+3	0	+4
23	Having a mobile phone makes me happy	1.23	+1	+3	-1	+2
26	I use my mobile phone to stay in touch with my friends	1.22	0	+3	+2	+1
<i>Other distinguishing (relatively high) statements</i>						
24*	My mobile phone helps me come and go without worrying about missing calls	1.01	0	+2	+1	+1
28**	My mobile phone is stylish	0.67	-3	+1	-3	-3
<i>Other distinguishing (relatively low) statements</i>						
2*	Getting a mobile phone changed the way I do business	-0.32	+4	0	+1	+1
4*	I am interested in learning about new features or mobile phone models	-0.73	0	-2	0	+2
<i>Describes me least</i>						
8	My family has more money because I have a mobile phone	-1.18	-4	-3	-3	-3
30	My mobile phone helps me make more money in a day	-1.27	+2	-3	-2	-2
19**	My mobile phone helps me find work	-1.52	+3	-3	+2	-2
25	My mobile phone gives me more control over who I talk to, and how/when I talk to them	-1.59	-3	-4	-3	-2
11	I was among the first of my friends and business associates to have a mobile phone	-1.69	-2	-4	-4	-4

*p<0.05 **p<0.01

Voice Three: Convenient

Both micro-entrepreneurs and established SME owners defined this factor. Table 3 indicates that like the productivity voice, this voice likes the mobile as a time-saver (+3) and way to get more done in a day (+4). The voice is unique, however, in reporting that business has become easier with the mobile (+4). Perhaps it is the way the mobile helps them stay in contact with suppliers (+3) and to find out prices (+1) that makes it so convenient. Though participants defining this factor use the mobile to stay in touch with their family (+3), they do not share the mobile with them (-4).

Table 3 Factor 3: Convenient

No.	Statement	Z-score	Factors			
			F1	F2	F3	F4
<i>Describes me Best</i>						
5**	My business is easier now that I have a mobile phone	1.74	-1	-1	+4	-1
17**	My mobile phone lets me get more done during the day	1.54	+2	0	+4	0
15	I use my mobile phone to stay in touch with my family	1.47	0	+2	+3	0
14**	My mobile phone saves me time	1.21	0	0	+3	0
3**	I use my mobile phone to stay in touch with my suppliers	1.09	0	0	+3	0
<i>Other distinguishing (relatively high) statements</i>						
21**	My mobile phone helps me keep informed about prices in my business	0.76	-1	-1	+1	-1
10**	I can't do business without my mobile phone	-0.15	-3	-2	0	+4
<i>Other distinguishing (relatively low) statements</i>						
23**	Having a mobile phone makes me happy	-0.36	+1	+3	-1	+2
6**	Having a mobile phone makes me more important	-1.09	+3	+4	-2	+3
<i>Describes me Least</i>						
8	My family has more money because I have a mobile phone	-1.26	-4	-3	-3	-3
25	My mobile phone gives me more control over who I talk to, and how/when I talk to them	-1.27	-3	-4	-3	-2
28	My mobile phone is stylish	-1.28	-3	+1	-3	-3
16**	I share my mobile phone with my family or friends	-1.6	-2	+4	-4	+2
11	I was among the first of my friends and business associates to have a mobile phone	-2.16	-2	-4	-4	-4

*p<0.05 **p<0.01

Voice Four: Indispensable

All seven of the participants defining this factor had less than five employees. Table 4 suggests that this voice is differentiated by its highest-rated statement – they simply cannot do their business without the mobile (+4). Distributing their number to many people (+4), they depend on the mobile to find new customers (+3). But, unlike the productivity and convenience groups, the statements they rate high have little to do with something that has changed the way they do business. It may be simply the connectivity with customers that allows their business to function.

Table 4 Factor 4: Indispensable

No.	Statement	Z-score	Factor			
			F1	F2	F3	F4
<i>Describes me Best</i>						
10**	I can't do business without my mobile phone	1.69	-3	-2	0	+4
12	I give my mobile phone number to many people	1.41	-1	+3	0	+4
7	Having a mobile phone makes me feel more connected to the world	1.36	+4	+1	+2	+3
13**	My phone gives me access to new customers	1.36	+1	0	0	+3
6	Having a mobile phone makes me more important	1.32	+3	+4	-2	+3
<i>Other distinguishing (relatively high) statements</i>						
4**	I am interested in learning about new features or mobile phone models	1.26	0	-2	0	+2
25	My mobile phone gives me more control over who I talk to, and how/when I talk to them	-0.77	-3	-4	-3	-2
<i>Other distinguishing (relatively low) statements</i>						
19**	My mobile phone helps me find work	-0.52	+3	-3	+2	-2
<i>Describes me Least</i>						
29*	My mobile phone helps my business save money	-0.93	+3	-1	0	-3
8	My family has more money because I have a mobile phone	-1.24	-4	-3	-3	-3
28	My mobile phone is stylish	-1.72	-3	+1	-3	-3
11	I was among the first of my friends and business associates to have a mobile phone	-1.88	-2	-4	-4	-4
22	I use my mobile phone for emergency calls	-1.91	-4	+1	+2	-4

*p<0.05 **p<0.01

Discussion

The results support the expectation that MSME users approach mobile phones from distinct perspectives. These four factors represent different sets of intended uses and expected gratifications from mobile phone ownership, each of which resonates with dimensions identified in other, more ICT-dense environments such as the US and Europe. While some participants value mobiles for clearly instrumental reasons, others value them for intrinsic reasons.

The existence of an intrinsic voice, focused on style, happiness, and social status, is certainly not surprising, given the way mobiles have been socially constructed and marketed as status symbols and consumption items.²¹ However, it is worth noting just how pervasive this construction has become. Indeed, the voice was defined mostly by people likely to be the poorest among an already poor set of respondents; factor two was defined entirely by micro-entrepreneurs. To participants defining the intrinsic factor, the mobile's utility in pursuing self-presentational/social goals such as "to be like everyone else" and "to be more important" is more salient than its utility a purely economic (business) sense.²²

Within the instrumental voices, the different weightings of the "productivity" and "convenience" statements are interesting. Some did see the mobile as a time saver, or as an investment that allowed one to get more done, but others, even some in the instrumental groups, see the mobile as a cost. ("High cost" was also a commonly mentioned theme in the open-ended question about what respondents liked least about the mobile.) Though the numbers involved are too small to say for certain, it is worth noting that the "productive" and "convenient" voices had higher proportions of respondents with more than 5 employees. Pointing back to Duncombe and Heeks²³, who argue that the information and communication needs of MSMEs are mostly quite simple, it might be the case that productivity and convenience are functions that are more attractive to the more established, more complex businesses. Conversely, unlike basic connectivity (rated high by all voices), the convenience and productivity functions might not resonate well with all MSME users as an argument as to why to purchase a mobile.

²¹ Sean Smith, "Advertising Is the Official of Advanced Capitalism: Mobile Telephones and the Interpellated Subject," *Social Alternatives* 17, no. 4 (1998), Valentin Varbanov, "Bulgaria: Mobile Phones as Post-Communist Cultural Icons," in *Perpetual Contact: Mobile Communication, Private Talk, Public Performance*, ed. James E. Katz and Mark Aakhus (Cambridge, UK: Cambridge University Press, 2002).

²² Further studies tracking impact (as opposed to uses and gratifications) are necessary to determine the nature of the economic impact of mobile usage by MSMEs.

²³ Duncombe and Heeks, "Information and Communication Technologies and Small Enterprise in Africa: Lessons from Botswana."

Another issue concerns a distinction between the *dial tone* and the *mobile phone*. Of the voices, the ‘productivity’ and ‘indispensable’ voices might be speaking about either technology, while the ‘intrinsic’ and ‘convenient’ voices are likely to be more closely tied to the display and mobility functions of the mobile, respectively. Further study is necessary to isolate a “dial tone effect” from a “mobility effect”, especially in the developing world, where the acquisition of the mobile is likely to also herald the first acquisition of a dial tone.

The ‘convenient’ voice suggested they use the mobile, presumably at work, to keep in touch with family and friends. This may be an inversion of the “border crossing” as described by Geisler, et. al.²⁴ Instead of using a mobile technology to take work home, users may be using the mobile technology to bring home to work – in a workplace without land-lines, the mobile may be the only way for a worker to keep in touch with his/her family.

As a small-group methodology, the Q methodology is better suited for uncovering patterns and for generating hypotheses than it is suited for market mapping or to the generalization of dimensions of opinion across large numbers of people. The responses of these 32 MSME owners in Rwanda may be representative of larger groups – but other research is required. These studies should pursue the MSME uses and gratifications approach in more detail, by a) replicating the Q in other nations, with a slightly refined set of statements or b) drawing on the insights from the Q to design more representative, survey-style inquiries into the motivations for mobile usage among MSMEs.

In summary, by finding multiple perspectives, some intrinsic, and some more instrumental, the study supports Duncombe and Heeks’²⁵ assertion that the academic and development communities should not treat all MSMEs as if their needs were equivalent. Development practitioners (and mobile phone providers) can benefit from looking at this group of MSME owners as complex, goal-seeking consumers of a new technology, and can design distinct or complementary campaigns to appeal to the various intrinsic and instrumental voices. Meanwhile, theoreticians can use this glimpse into the minds and motivations of the Rwandan MSME owners to further plumb what the mobile means to the kinds of people who will make up many of the *next* billion mobile phone users.

²⁴Geisler et al., *Border Crossings: The Social Transformation of the Boundary between Work and Life by It Gone Mobile*. See also Gant and Kiesler, "Blurring the Boundaries: Cell Phones, Mobility, and the Line between Work and Personal Life."

²⁵ Duncombe and Heeks, "Information and Communication Technologies and Small Enterprise in Africa: Lessons from Botswana."

Appendix

Table A1 List of Statements

<u>No.</u>	<u>Theme</u>	<u>Statement</u>
1	Connectivity (instrumental)	I use my mobile phone to stay in touch with my customers
2	Other	Getting a mobile phone changed the way I do business
3	Connectivity (instrumental)	I use my mobile phone to stay in touch with my suppliers
4	Other	I am interested in learning about new features or mobile phone models
5	Productivity	My business is easier now that I have a mobile phone
6	Status	Having a mobile phone makes me more important
7	Intrinsic	Having a mobile phone makes me feel more connected to the world
8	Productivity	My family has more money because I have a mobile phone
9	Status	I like customizing my mobile phone with accessories like special sounds and carrying cases
10	Other	I can't do business without my mobile phone
11	Other	I was among the first of my friends and business associates to have a mobile phone
12	Other	I give my mobile phone number to many people
13	Connectivity (instrumental)	My phone gives me access to new customers
14	Productivity	My mobile phone saves me time
15	Connectivity (intrinsic)	I use my mobile phone to stay in touch with my family
16	Other	I share my mobile phone with my family or friends
17	Productivity	My mobile phone lets me get more done during the day
18	Other	I keep my phone with me at all times
19	Information	My mobile phone helps me find work
20	Intrinsic	I enjoy talking to my friends and family on my mobile phone
21	Information	My mobile phone helps me keep informed about prices in my business
22	Security	I use my mobile phone for emergency calls
23	Intrinsic	Having a mobile phone makes me happy
24	Mobility	My mobile phone helps me come and go without worrying about missing calls
25	Other	My mobile phone gives me more control over who I talk to, and how/when I talk to them
26	Connectivity (intrinsic)	I use my mobile phone to stay in touch with my friends
27	Security	My mobile phone makes me feel more secure
28	Status	My mobile phone is stylish
29	Productivity	My mobile phone helps my business save money
30	Productivity	My mobile phone helps me make more money in a day
31	Other	I use my phone for business more than for social calls
32	Intrinsic	My family is happier because I have a mobile phone

Table A2 Structure of Q-Sort Task

Score	-4	-3	-2	-1	0	1	2	3	4
Number of Elements	2	3	4	4	6	4	4	3	2

Table A3 Participants, by Gender, Occupation, Number of Employees, and Factor Definition

Occupation	# of Employees	Gender	Age	Occupation	# of Employees	Gender	Age
<u>Factor 1: Productive</u>				<u>Factor 4: Indispensable</u>			
Vendor	0	M	25	Fisherman	0	M	--
Importer	6	M	27	Vendor	0	M	24
Shop Owner	10	M	33	Flour Vendor	0	F	35
Shop Owner	10	M	33	Jeans Vendor	0	M	25
Shop Owner	12	M	43	Clothing Vendor	2	M	26
Beauty Shop	14	F	34	Toy and Shoe Vendor	3	M	32
				Tailor	4	M	37
<u>Factor 2: Intrinsic</u>				<u>Did not Define a Factor</u>			
Vegetable Vendor	0	M	48	Milk vendor	0	M	24
Cabbage Seller	0	F	37	Baby Store	3	F	30
Potato Vendor	0	F	38	Phone Sales	3	M	33
Vegetable Vendor	0	F	37	Shop Owner	7	F	36
Bean Vendor	1	F	35	Butcher Shop	7	M	38
				Bakery	20	M	50
<u>Factor 3: Convenient</u>							
Taxi Driver	0	M	25				
Tailor	2	F	22				
Tailor	3	F	28				
Mobile Phone Sales	4	M	42				
Shop Owner	8	M	40				
Bookshop Owner	8	M	30				
Butcher Shop Owner	11	M	40				
Shop Owner	15	M	37				

Table A4 Correlations Between Factors

	F1	F2	F3	F4
F1	1.00			
F2	0.18	1.00		
F3	0.32	0.14	1.00	
F4	0.33	0.41	0.15	1.00

Table A5 Consensus Items

The following items did not significantly distinguish between any of the factors (voices):

		Consensus Items			
No.	Statement	Factors			
		F1	F2	F3	F4
1*	I use my mobile phone to stay in touch with my customers	+1	0	1	0
7*	Having a mobile phone makes me feel more connected to the world	+4	1	2	3
8**	My family has more money because I have a mobile phone	-4	-3	-3	-3
9*	I like customizing my mobile phone with accessories like special sounds and carrying cases	-2	-2	-2	-1
20**	I enjoy talking to my friends and family on my mobile phone	-2	-2	-1	-1

*=does not distinguish between any pairs at $p < 0.01$

**=does not distinguish between any pairs at $p < 0.05$