Market Demand and Innovation: The Case of M-pesa

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Outline

• Background and Literature
  – Demand-pull vs. science-push theories
  – The context of innovation
  – Entrepreneurs and innovation

• M-pesa
  – Invention and development
  – Diffusion

• Food for thought
Motivation

• Design-context fit: The match/mismatch of innovation with its context
• The unsuitability of innovation from the ‘north’ in the ‘south’
• Demand-side dimensions, social need explains this mismatch
• Deployment of appropriate technologies, grassroots innovation, social innovation seen as solutions
• The innovative ‘Schumpeterian’ entrepreneur
Science-push vs. Demand-pull theories

• **Two competing conceptualisations of innovation** (Nelson & Winter, 1977; Freeman, 1979, 1996; Kamien and Schwartz, 1982; Rothwell, 1994)

• The origin and development of science-push theories:
  – Linear model of innovation (Basic science -> technology -> production)

• Demand pull theories of innovation:
  – Demand seen as a factor of innovation
  – Demand-pull model was formalised, then integrated into multi-dimensional models (Kline & Rosenberg, 1986).
  – Eventually, demand pull theories lost their autonomous status after Dosi’s (1982, 1988) discussion of ‘technological paradigms’
  – Has this model been side-lined in literature?

• ‘Coupling’ science and discoveries of need was seen as an integrated view (Gruber and Marquis, 1969; Myers and Marquis, 1969; Rothwell & Robertson, 1973)

• There are competing values underlying these conceptualisations of innovation: values of **science** and values of **society** (Godin & Lane, 2013)
Science-push vs. Demand-pull theories contd.

• Demand vs. need,
  – ‘Demand’ and ‘need’ were used interchangeably, then consolidated, eventually the term ‘need’ disappeared in innovation studies in economics. (Myers & Marquis, 1969; Schmookler, 1962; Rothwell & Robertson, 1973)
  – Demand refers to a precise economic concept (a function of price, economic conditions), as opposed to human and social needs (Langrish et al, 1972; Rothwell & Robertson, 1973)
  – Social need is seen as an inducer of innovation in public organisations (OECD, 1971), and applied research was seen as better suited to address social needs (Schmookler, 1968)
  – However, when public organisations do not play this role, who does?
Northern vs. Southern innovative environments

• Kaplinsky (2011) compares innovation in high-income vs. low-income contexts:
  – In high income contexts: Innovations are designed to function on reliable, sophisticated, network-driven infrastructure, and target high-income customers. Innovation is capital intensive.
  – In low income contexts, the opposite is true. Under-developed infrastructure. Little or no capital. Little focus on basic research and R&D.

• Foreign ‘northern’ technology imported into these contexts are ill-suited (Carr, 1985) and risky (Schumacher, 1973).

• As a consequence, the needs of customers in low-income countries have not been met (Chataway et al, 2009). Need for ‘appropriate’ technologies, grassroots innovation, social innovation.
The Schumpeterian Entrepreneur

• Schumpeter defined innovation as “new combinations” of new or existing knowledge, resources, equipment, etc (Schumpeter 1934, pp. 65)

• The innovative entrepreneur in a low income context exemplifies this combinatory approach. Using existing technologies, ideas, concepts, both indigenous and ‘imported’, they develop products/processes uniquely differentiated to the needs of their local environments, with a capitalistic mindset (Kaplinsky, 2011).

• Innovations in this sphere have been referred to a “below-the-radar” (Chataway et al, 2009).

• Extant literature does not discuss the origin, development and diffusion of these innovations in low-income contexts, and not much is known about the local entrepreneur operating in these environments.

• I use a case study of M-pesa, a mobile-money transfer innovation in Kenya to contribute to this nascent discussion.
The Case of Mpesa

• The environment: Limited ‘modern’ electronic banking infrastructure, thus large sections of the market were unreached. Expensive and inaccessible money transfer systems. Lack of trust in banking systems (a cultural phenomenon). Relatively highly developed mobile telecom network. High cellular-phone penetration of 71% (Mas & Morawczynski, 2009; CCK, 2010).

• Need: Access to financial services

• The innovation: Leverage mobile telecommunications infrastructure for financial services. Provide ‘traditional’ banking services outside banking network

• Diffusion: Rapid adoption of M-pesa across the country, and in neighbouring countries. M-pesa has now been adopted by 21 million Kenyans (Ferguson, 2010; Pyler, Haas & Nagarajan, 2010)

• Disruptive effect: Industry convergence of telecommunications and banking, regulatory dilemmas.
Food for thought

• Should we revisit/re-orient innovation theory (demand pull theories) when explaining innovation in low-income environments, where ‘demand’ is perceived as ‘need’?

• Is local innovation arising from social need sustainable? Does basic research (science-push) play a role?

• What are the implications for policy?
  – Investment in applied research vs./and basic research
  – Support for local technological entrepreneurship
  – Regulation to facilitate innovation outside mainstream trajectories
References


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