

# Development Informatics

## Working Paper Series

The Development Informatics working paper series discusses the broad issues surrounding information, knowledge, information systems, and information and communication technologies in the process of socio-economic development

*Paper No. 26*

### **SMEs and E-commerce in Developing Countries: *Frameworks for Assessing the Role of Change Agents***

**RICHARD DUNCOMBE  
&  
ALEMAYEHU MOLLA**

2006

**ISBN: 1 904143 77 6**

Published *Development Informatics Group*  
by: **Institute for Development Policy and Management**  
University of Manchester, Precinct Centre, Manchester, M13 9QH, UK  
Tel: +44-161-275-2800/2804      Email: [idpm@manchester.ac.uk](mailto:idpm@manchester.ac.uk)  
Web: <http://www.sed.manchester.ac.uk/idpm/dig>

**View/Download from:**

<http://www.sed.manchester.ac.uk/idpm/publications/wp/di/index.htm>

**Educators' Guide from:**

<http://www.sed.manchester.ac.uk/idpm/publications/wp/di/educdi.htm>

## Table of Contents

ABSTRACT .....	1
<b>A. INTRODUCTION .....</b>	<b>2</b>
<b>B. THEORETICAL BACKGROUND .....</b>	<b>3</b>
B1. CHANGE-AGENCY THEORY .....	4
B2. MOTIVATION-ABILITY THEORY .....	5
B3. OTHER FACTORS .....	8
<b>C. NOTES ON RESEARCH METHODS .....</b>	<b>9</b>
<b>D. PRESENTATION AND ANALYSIS OF RESULTS .....</b>	<b>10</b>
D1. IDENTIFICATION AND ANALYSIS OF CHANGE AGENT ROLES .....	10
D2. E-COMMERCE SME CLASSIFICATION SCHEME AND PROFILING FRAMEWORK.....	13
D3. E-COMMERCE CHANGE AGENT CLASSIFICATION SCHEME AND PROFILING FRAMEWORK .....	17
<b>E. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS .....</b>	<b>21</b>
REFERENCES .....	25
<b>APPENDIX 1. UGANDA CASE STUDIES.....</b>	<b>29</b>

# **SMEs and E-commerce in Developing Countries: *Frameworks for Assessing the Role of Change Agents***

**Richard Duncombe**

Development Informatics Group, IDPM, University of Manchester, UK  
richard.duncombe@manchester.ac.uk

&

**Alemayehu Molla**

School of Business Information Technology, RMIT University, Melbourne, Australia  
alemayehu.molla@rmit.edu.au

2006

## **Abstract**

The purpose of this working paper is to understand the role of change agents in the promotion of e-commerce among SMEs in developing countries, an area where there is little research coverage. The paper argues that both SMEs and change agents in developing countries face unique challenges that call into question the applicability of conventional theory of change agency and SME-led e-commerce adoption. Using preliminary data collected from Uganda and the theoretical lenses of change agency and motivation-ability theory, a framework is presented that explains how change agents can fulfil an effective role in assisting SMEs to benefit from e-commerce.

A five point criteria categorises the change agents identified through field research, which are then assessed according to a four-stage SME and change agency-profiling framework. On this basis the paper proposes a role-based change agency intervention model that assesses the potential of SMEs in developing countries to benefit from e-commerce adoption. The paper makes an original contribution to theory of e-commerce adoption, as well as providing an assessment framework to assist practitioners in their work to formulate intervention strategies and to assist both SMEs' and agencies' e-commerce initiatives. The paper concludes by highlighting some of the lessons that emerged from Ugandan experience and outlines future research intentions.

## A. Introduction

Despite predictions that show an unabated increase in e-commerce revenues, employment figures and number of participating small and medium enterprises (SMEs), e-commerce growth for SMEs is confined predominantly to the industrialised countries (UNCTAD, 2004). The highly skewed distribution of growth in e-commerce also implies an unbalanced spread of benefits. There is particular concern as to how growth of e-commerce is going to impact upon low-income developing countries where SMEs already suffer the greatest market access and business growth constraints.

There is evidence of enhanced use of e-commerce by early adopters in developing countries (UNCTAD, 2004; Wresch, 2003). Results of country and sector-based surveys indicate that use of e-commerce technologies has enhanced existing business-to-business (B2B) trading relationships, with SMEs using e-commerce technologies to exchange information, to coordinate logistics and to improve communications via regional or global supply chains (Humphrey, et.al, 2003). There is also evidence of a growing number of SMEs making use of web-based marketing techniques that are effective for targeting niche export markets, as well as the overseas diaspora community (Moodley, et.al, 2003).

The benefits of e-commerce have been widely touted by the international donor community, and developing country governments have been encouraged to develop policy frameworks and enabling environments that will be conducive to further e-commerce development, and to take action to ameliorate the considerable *e-readiness* constraints that limit technological, human, financial and institutional development for SMEs (Bridges, 2003; Esselaar and Millar, 2002). E-readiness has been framed using a range of technical, financial, social, physical and economic indicators that seek to provide broad national assessments (refer to: Bridges, 2003). However, as pointed out by Molla (2004) these country-level assessments have limited usefulness in explaining the manner in which progress toward e-readiness affects the decisions of individual SMEs to adopt e-commerce, and they do little to explain the factors that influence success or failure of e-commerce adoption initiatives.

This working paper contends that an appreciation of developing country readiness for e-commerce needs to move beyond solely a national perspective and, instead, embrace a multi-level analysis. Such an approach can contribute to understanding how change at the macro level can be effectively linked to the micro level where SMEs operate and make real decisions concerning e-commerce adoption. Such an approach identifies a greater need to examine the influence of the *change agents* that assist SMEs in developing e-commerce initiatives. At present there is limited understanding of the nature of such change agents, and their role and performance in processes of e-commerce adoption in developing countries. This paper addresses this gap in research by assessing the capabilities and motivations of SMEs that are adopting e-commerce, as well as examining the capabilities and motivations of the change agents, that within their defined roles seek to influence and assist SMEs. The working paper presents the results of a preliminary round of fieldwork and contributes to an exploratory approach to theory building (Montealegre, 1999; Eisenhardt, 1989).

Thus, the objectives of this paper are threefold:

- First, to identify change agents associated with cases of e-commerce adoption, and to define the roles that different agents play in the process of developing e-commerce capabilities for SMEs in a developing country environment.
- Second, to propose an evidence-based theoretical framework for understanding the profile of change agents and SMEs that are undertaking e-commerce initiatives.
- Third, to suggest a model for change agent intervention.

Section B presents the theoretical background to the research in terms of theories of change agency and motivation-ability as applied to change agents and SMEs in developing countries. Section C outlines the research methods employed to construct case studies of the SMEs and change agents that formed the evidence base for theory building. Section D presents and analyses results: first, identifying and analysing change agents and their roles; second, suggesting an e-commerce SME classification scheme and profiling framework; and third, suggesting a linked framework for change agents. Section E presents the conclusions to the research, putting forward a model of intervention for change agents – based around identifying SME needs, developing competency, and tailoring intervention strategies according to the temporal phase of e-commerce adoption.

The theoretical frameworks presented in this paper have been developed from an evidence-base that focuses on a single country (Uganda). SME case studies were constructed for six enterprises at different stages of e-commerce evolution (detailed in Appendix 1) alongside ten case studies of organisations that were identified as change agents. The type of change agents identified included those that were government-run and wholly subsidised; fee-paying membership organisations; non-governmental or donor organisations; and exclusively private sector firms.

## **B. Theoretical Background**

The comparatively slow progress toward e-commerce adoption in developing countries has focused research on the identification of key constraints (Lertwongsatien, et.al, 2004; Purcell, et.al, 2004). As indicated, constraints have been defined primarily at the macro-level, with less focus on the market, resource and organisational factors that influence e-commerce adoption at the meso and micro-levels. In this respect, there is a gap in knowledge concerning how change agents act to remove constraints and intervene to effect change. Change agency theory allied to an understanding of the motivations and abilities of both SMEs and change agents provides a suitable framework for understanding this process.

## **B1. Change-agency theory**

Change agency theory arises from action research, and organisational development research and practice, and seeks to understand the role of agents (such as consultants and professionals) in planning and managing change and innovation (Jones, 2004). The theory has been found to be of particular relevance for understanding innovation associated with e-commerce adoption in SMEs, where financial, managerial, informational and technological constraints tend to restrict innovativeness and entrepreneurship (Mole, 2002; de Berranger, Tucker & Jones, 2001).

A change-agent is defined as an individual or organisation that influences a client's innovation-decision in a direction that the agent considers desirable (Rogers, 1995). A change-agent can therefore seek to encourage the adoption of new ideas, practices and technologies, but it can also slow down the process and prevent the adoption of certain innovations that are deemed to produce undesirable results. Change agents can be either internal or external (Jones, 2004). Internally, the owner/managers of SMEs and other 'intrapreneurial' forces can act as champions, advocates and leaders of change. In fact, owner-managers tend to have substantial influence to promote innovation and innovativeness because of their familiarity with the organisational systems of SMEs (Murphy, 2002). External change agents, on the other hand, represent organisations that exist in the social and market network of an SME, seeking to influence and regulate innovation practices.

Change agents operate at different levels. External change-agents operate at macro, meso and micro levels; internal change agents operate at the micro level only (Schulpen and Gibbon, 2002). The three categories are expanded upon below:

- *Macro level:* change-agents seek to enact policy and regulation in a way that will improve the enabling environment for SMEs. Such change agents may also act to achieve organisational process improvements and industry-wide transformations that can filter down more quickly to influence innovation decisions (Poon and Swatman, 1999). As well as providing the necessary infrastructure, this may also involve sector-based strategies to develop identified market opportunities. A combination of government, donors and private sector service providers all play a key role at this level in developing countries.
- *Meso level:* change-agents seek to influence clients more directly. According to Rogers (1995) such change agents undertake a number of interrelated activities: they create awareness based on a need for change on the part of the client; they seek to build knowledge on the basis of effective information-exchange and communication; they diagnose business problems and opportunities; they create intent for change in the client and translate intent into action through provision of resources and continuous support.
- *Micro level:* change-agents may be the owner/managers of the SME. They may also be other SMEs or market actors that form part of the immediate social network of the SME (Shiels, McIvor & O'Reilly, 2003; Murphy, 2002). The success of owner/managers in exploiting formal and informal ties and networks will be a major determinant of their ability to overcome resource deficiencies and other impediments to innovation (Jones, 2004). In cases where SMEs belong to commodity (value) chains, SME clients can also be

important agents of change – using their influence to push certain innovative practices.

The role of external change agents has been approached in a number of different ways. Havelock and Havelock (1973) identify roles of catalyst, solution giver, process helper, and resource linker. Campbell (1989) argues that change agents often address the failures of the marketplace in terms of access to market information and essential services and serve as business incubators by providing business development services (BDS) and finance to SMEs. King et al (1994) define knowledge deployment, knowledge building, mobilisation and subsidy as important interventions that change agents use to influence innovation in SMEs; whilst Kiggundu (2002) focuses more simply on change agents either as solution facilitators or solution providers.

All the conventional literature, however, assumes that change agents have the required competency to undertake the key change agency roles prescribed. Such assumptions might not hold in many developing countries where the change agents themselves exhibit widely differing profiles, and are variously constrained, often due to substantial resource and/or capacity limitations. Likewise, not all SMEs are at the same level of change and innovation readiness and there is a need to understand their specific problems. In developing countries, it is likely to be a requirement that SME solutions are flexible, taking into account, often considerable, resource-based constraints. It will be essential, therefore, to understand and contrast the ability and motivation of both the SMEs and the change agents. Motivation-ability theory offers a relevant framework to form such an understanding.

## **B2. Motivation-ability theory**

Performance has long been defined as a function of ability and motivation (Bird, 1989). Motivation-ability theory – attributed to Merton (1957) – postulates that a combination of organisational ability and motivation shapes the nature and intensity of actions and outcomes.

### **a) Organisational ability**

Organisational ability has been defined in a variety of ways. Hostager et.al (1998) identify awareness, knowledge, skill, creative thinking and experience as critical abilities that help businesses to recognise opportunities in the environment. Grewal et.al (2001) define ability more simply as a two-dimensional construct of learning and capability. In the SME literature, various authors have recognised the impact of the ability of SMEs in the innovation process. For instance, Atherton and Hannon (2000) argue that SMEs' effectiveness in managing innovation requires the development of internal capabilities related to technical know-how. Much research into SMEs and adoption of e-commerce technologies has taken a resource-based view, stressing the meshing of internal – human, technological and financial resources – leading to the creation of core competencies and competitive advantage in the market place (Caldeira & Ward, 2003; Cobbenhagen, 2000; Yu, 2001; Yap, Soh & Raman, 1992).

Kanter (1983) identifies three sets of abilities essential for influencing change effectively. These include: a) persuasive skills to convince others to invest in change

initiatives and resources b) participatory management, and c) integrating individual change initiatives to wider organisational orientations. Campbell (1989) on the other hand, argues that the effectiveness of business incubators as change agents depends upon accumulating slack (underused) resources, developing quality management and service provision capability. For the purposes of this paper, organisational ability can be considered in three main categories.

- *Organisational Readiness.* We define organisational readiness as the stock of human, technological and financial resources that an SME or change agent possesses. These resources shape the input based competencies required to create and deliver products and services to customers or clients. Iacovou (1995) uses financial (availability of finance to pay for e-commerce solutions) and technological resources (level of sophistication of ICT usage and ICT management) as two key indicators of organisational readiness affecting use of e-commerce. Organisational readiness can also be expanded to include intangible factors (awareness and commitment) particularly relevant to the uptake of e-commerce in developing country environments (Molla, 2004).
- *Organisational Capability.* This refers to the relationship between the tangible resources described above and other intangible resources that give rise to know-how (how to do something). Capability emphasises invisible assets such as organisational reputation built up over time and embedded in SME routines. Coyne (1986) in Hall (1993) highlights: a) *regulatory capability*, which arises from the possession of specific knowledge resources - primarily intellectual property rights (IPR), contracts (formal or informal) and trade secrets; b) *positional capability*, which refers to the unique positions and reputation developed within commodity chains; c) *functional capability*, which relates to the know-how, skills and experience of employees and other members of the SME or SME network (such as clients and suppliers) to do specific tasks.
- *E-commerce Capability.* Theories of take up of e-commerce technologies tend to make use of staged models (Shiels, McIvor & O'Reilly, 2003; Daniel, Wilson and Myers, 2002; Knol & Stroeken, 2001). Staged models of e-commerce evolution emphasise a move from less to more sophisticated applications, as well as from an emphasis on external communication to internal business process integration. Likewise for change agents, but their e-commerce capability will reflect not only their own level of utilisation of e-commerce but also the specific expertise they are able to offer. In developing countries, change agent capability will stretch from very basic offerings (such as the ability to communicate by email) to expert offerings (such as the ability to showcase or to offer integrated business solutions).

## **b) Motivational factors**

Organisational behaviour literature also emphasises the criticality of motivation. At present such factors are under researched in developing countries. However, the literature concerning e-commerce adoption suggests that the factors that propel change forward arise from either 'agent push' or 'SME pull' forces. SME-pull refers to e-commerce adoption driven by a combination of internally perceived benefits and management commitment to change (Daniel, 2003; Mirchandani and Motwani, 2001; Poon and Swatman, 1999). In the SME pull context, SMEs control their own choices,



are knowledgeable enough to understand the potential of e-commerce and have developed a need for specific e-commerce solutions as a route to realising market opportunities. E-commerce agent-push, on the other hand, refers to e-commerce adoption mainly driven by external forces (Elsammani et al, 2004). Here, SMEs are subject to market and change agent forces over which they have little control. In this sense, e-commerce-based innovation requires not only awareness raising and the building of internal knowledge resources, but also changes in the attitudes and perceptions that guide decision making processes for SMEs (Jones, Hecker & Holland, 2003).

There is little research from developing countries that assesses the relative importance of internal and external motivational factors. Within the broader literature, however, three possible types of motivation for change have been highlighted.

- *Efficiency.* The need for greater efficiency is often identified as the driving motivational force behind innovation and innovativeness (Grewal et al, 2001). Specifically, research has considered the implications of the dynamics of market forces and the need to achieve competitiveness through cost leadership and differentiation strategies (Slater and Narver, 1995). Such an approach requires judicious use of scarce resources to build capabilities, pre-empt competition and improve customer service.
- *Legitimacy.* The pursuit of legitimacy within the wider social context is one of the motivating factors affecting organisational behaviour (DiMaggio and Powell, 1983). The emphasis here is on actions that are induced because of the need to meet certain regulatory demands. Agents acting at various levels (including governments and industry regulators) use coercive power to enforce certain behaviour or offer inducements (such as through financial incentives or compliance with quality standards) that encourages or discourages certain behaviour or actions on behalf of SMEs (Grewal et al, 2001; Meyer and Scott, 1992).
- *Mimicking.* Another dimension of motivation that is well researched in marketing literature is the mimicking motive (Dickson 1992). Central to this thesis is the notion that SMEs tend to copy the behaviours and actions of their successful competitors irrespective of efficiency or legitimacy considerations, thus mitigating the risk of innovation and increasing the likelihood of success. For instance, the mimicking motive dominated early adoption of Websites and the development of the Dotcom boom. In the context of change agents' intervention in SMEs, mimicking may involve the adoption of the same type of packaged software in all situations irrespective of the specific requirements of SMEs.

To summarise on the basis of the above arguments, organisational ability can be looked at from two distinct dimensions. On the one hand, there is ability related to the stock of human, financial and technological resources, and on the other hand, there is ability related to the technical and managerial know-how required to use those resources and get maximum returns out of them. In this sense, whilst organisations might have more or less the same level of resources, they might differ in their ability to deploy and exploit those resources. The literature also suggests that motivations of efficiency, legitimacy and mimicking may have some influence in shaping the decision-making processes that lead to the adoption or non-adoption of e-commerce.

It should also be stressed that organisational ability and motivational factors are applicable both to SMEs and to the change agents that seek to influence them. There is a key requirement, therefore, to identify such change agents active in developing countries, and to clarify their roles and performance. Before we attempt to do so, however, there are two important factors that are likely to affect the intersection of SMEs and change agents in the domain of e-commerce – the commodity-chain position and the temporal phase of e-commerce. The following section discusses these two points.

### **B3. Other factors**

A further aspect of organisational ability relates to the capabilities required for market access. E-commerce is widely believed to offer SMEs potential to access and link to commodity chains. Previous SME research from developed countries indicates that in cases where SMEs belong to established market networks, competitive and industry pressure through trading partners act as drivers of innovation (Kuan and Chau 2001; Iacovou et al, 1995). Capturing the relative commodity chain position of SMEs and change agents can demonstrate to what extent such forces are influencing e-commerce uptake and use. For example, when SMEs in developing countries engage in import and export trade they come under the influence of their stronger trading partners. The literature suggests this is particularly so when stronger northern clients (occupying a downstream commodity chain position) exercise their value chain power to specify the design, quantity and quality of the products of SMEs. SMEs can be relatively weak players in such relationships. For instance, in the horticulture industry, where supermarkets directly control the process and standards of how overseas' suppliers produce, package and distribute fresh horticultural produce (Dolan and Humphrey, 2001). Many SMEs in developing countries, however, may not be linked to any established commodity chains at all and will operate outside – or *peripheral* – to such networks.

E-commerce adoption will also be subject to temporal considerations. A number of studies have identified distinct phases of e-commerce adoption. The *Initiation* phase precedes adoption and involves forging effective communication links with clients or prospective clients. At this stage, perception and awareness of market opportunities is paramount and is derived largely from existing commercial relationships, as well as through the influence of change-agents (de Berranger, Tucker and Jones, 2001). The *adoption* phase involves key decision-making processes – whether to adopt or not adopt – involving choice of technology and business strategy. Research suggests that the key incentives for adoption in developing countries are high use by customers and suppliers and access to know-how. Key dis-incentives have been identified as security and intellectual property (IP) concerns, legal and liability concerns, high costs of development, limited know-how and unproven benefits (Cloete, et.al, 2002).

*Implementation* follows adoption and involves more complex processes that require higher levels of specialist knowledge and know-how (Jones, Hecker & Holland, 2003; Mirchandani & Motwani, 2001). Evidence shows that in developing countries SMEs experience considerable difficulties in acquiring specialist knowledge. E-commerce implementation tends to be experimental, with real examples often characterised by 'learning by doing', a process often beset by errors, setbacks and additional or unplanned costs (Chau & Turner, 2003; Cloete, et.al, 2002). Finally, comes

*assimilation* which has been defined as the extent to which the use of e-commerce technologies become diffused across organisational work processes and routinised within the activities associated with those processes (Molla, 2004; Daniel, 2003). It is clear from these approaches that different organisational abilities are likely to be associated with each temporal phase.

## **C. Notes on Research Methods**

The fieldwork conducted in Uganda during 2003/2004 was based on the use of contextual case studies (Yin, 1994) which served as an appropriate method to assist in building an evidence-based theoretical framework by providing the necessary detail and richness of data required to support a broad and inductive model-building and testing process (Klein & Myers, 1999; Eisenhardt, 1989).

Uganda was chosen as a case country because it has an established ICT policy framework that aims to promote technology upgrading via e-commerce amongst SMEs. This forms part of the Government of Uganda Medium-term Competitive Strategy (2000-2005) that aims to create an enabling business environment for the private sector to compete, particularly in the export sector. The policy also promotes the use of e-commerce to facilitate access to information and markets by small producer groups – particularly those located outside the main urban centres. Field data from Uganda was able to illustrate a broad range of e-commerce experiences for SMEs, ranging from the majority who made no use of e-commerce, to the small number that were fully enabled to conduct transactions online. Uganda also has an evolving technical, human and regulatory infrastructure that is at least partly facilitative of e-commerce development for SMEs.

A total of six SME cases were constructed based on semi-structured interviews carried out with owner/managers. The cases were chosen, firstly, on the basis that they were able to reflect the position of SMEs at different stages of e-commerce evolution, and secondly, in order to provide a profile that reflected key sectors of the economy in Uganda. Although the evidence was based on a relatively small number of case studies, such cases were indicative of current developments in e-commerce for SMEs located in a developing country.

The influence of change agents was identified by extracting data from the SME case studies and conducting an analysis that defined the roles of all the external actors that impinged on the process of e-commerce adoption. SME case studies were drawn from three sub-sectors of the Uganda economy where opportunities for e-commerce initiatives have been the greatest – the non-traditional agricultural export sector; the tourism and crafts sector; and the IT sector (off-shore data entry and IT outsourcing).

Specific data was collected from SMEs and change agents that measured and compared various aspects of their readiness and capability including an assessment of their financial, technical and human resources, as well as an assessment of the status of e-commerce capability according to the level and effectiveness of e-commerce resources deployed. SMEs were also assessed according to their level of technical and managerial know-how, and respondents were asked to identify the key internal and external motivations for e-commerce adoption.

Qualitative data from interviews was used to build up a picture of e-commerce evolution within the SME and to identify the influence of key change agents in the processes that led to e-commerce adoption. A total of ten change agent interviews were carried out in addition to the SMEs. The role of external agents in overcoming barriers to e-commerce was gauged, as was their influence over the key decision-making processes of their clients concerning e-commerce. The effectiveness and the relative impact of different forms of change agent intervention were also ascertained. Interviews with change agents also served to cross-check responses from the corresponding SMEs in order to verify data.

Individual profiles for each of the six case study SMEs are outlined in Appendix 1, each of which contains a profile of the e-commerce change agents identified according to the roles that they performed.

## **D. Presentation and Analysis of Results**

As indicated in the introduction, previous e-commerce adoption studies have tended to focus too much at the macro-level on issues such as national policy and infrastructure. This paper contends that an understanding of the role of external change-agents acting at the meso- and micro-level will be central to understanding e-commerce adoption processes for SMEs in developing country environments.

In the following section, informed by the case evidence collected from Uganda and the theoretical frameworks discussed in the preceding section, we carry out three separate analyses. The first analysis (section D1) uses a role-based approach to categorise the functions performed by the external change agents identified from the Uganda case studies. The second analysis (section D2) presents an SME e-commerce classification scheme constructed on the basis of the key indicators of organisational readiness and capability outlined in section B. Data extracted from the case studies is used to suggest a profiling framework for e-commerce development within SMEs. The third analysis (section D3) constructs a similar classification and profiling framework for change agents.

### **D1. Identification and analysis of change agent roles**

Analysis of the case studies led to identification of seven distinct roles for external e-commerce change agents active in e-commerce adoption initiatives. These roles were differentiated on the basis of the activity conducted by the change agent, the purpose of the services offered, the potential clientele, and the required competency associated with the change agency role. The agency roles are laid out in Table 1 and have been categorised as follows: business incubation (BI); business promotion (BP); knowledge dissemination (KD); solution provision (SP); e-commerce facilitation (EF); e-commerce intermediation (EI); and e-commerce catalyst (EC). Appendix 1 provides details of the identified change agents in the final column.

**Table 1. Classification of Roles of E-commerce Change-agents**

<i>Agency Role</i>	<i>Activity</i>	<i>Examples of offering</i>	<i>Typical clientele</i>	<i>Required competencies of change agents</i>	<i>Examples of change agents from Uganda</i>
Business Incubation (BI)	Assists in the survival and growth of new and recently established SMEs.	Rents; Business development services (BDS); Business assistance (such as management, marketing, finance).	Predominantly SMEs, but also training institutions, solution providers, e-commerce intermediaries.	Low cost of operation. Quality management. Service standard. Slack resources.	Business assistance agencies (e.g., Enterprise Uganda, BUDS-SSE).
Business Promotion (BP)	Promotes the development of SMEs.	Primarily credit assistance and/or subsidy. Advocacy role.	Predominantly SMEs.	Slack resources.	Business promotion agencies (e.g., UWEA, USSIA, UEPB).
E-commerce Knowledge Dissemination (KD)	Strives to create awareness and capability to implement and sustain e-commerce.	E-commerce and other related training, seminars and workshops.	SMEs, solution providers, e-commerce intermediaries.	SME relevant training.	Wide range including business assistance and promotion agencies.
E-commerce Solution Provision (SP)	Established to offer e-commerce business and technical solutions.	Web development & hosting, business solutions.	SMEs and other businesses, e-commerce intermediaries.	SME-specific e-commerce solutions. Price competitiveness.	Local providers (e.g., consultants/ISPs/web-designers). International providers (e.g., clients, consultants).
E-commerce Facilitation (EF)	Creates conducive and enabling environment for the conduct of e-commerce.	Technological, legal and financial infrastructure.	SMEs and other businesses, e-commerce intermediaries.	Robust, accessible, infrastructure. Affordable access.	Infrastructure providers (e.g., MTN, Uganda Telecom) Network access providers (e.g., ISPs, Telecentres, Internet cafes).
E-commerce Intermediation (EI)	Aggregates information, enables transactions between buyers and sellers and facilitates access to technology platforms.	Information aggregation. Market place match making. Market access points.	SMEs and other members of the value chain	Aggregation. Brokering. Client base.	Sector-based agents/brokers (e.g., Exposure Africa, Uganda Commodity Exchange).
E-commerce Catalyser (EC)	Provides direct access to clients as well as technology platforms.	Best practices and business transaction modus operandi and standards.	SMEs	Market access. Effective use of e-commerce. Enforcing standards.	Major clients or sector-based agents/brokers (e.g., Wall Associates).

## Analysis and observations

The case studies highlighted a number of observations concerning external change agents. It was apparent that a wide range of change agents exerted influence over the e-commerce initiatives conducted by SMEs, and individual change agents often performed a combination of the roles outlined. For example, in the case of Cayman Consults (case study 6: appendix 1) a total of seven separate change agents were identified, each of which had been actively involved to differing degrees in influencing e-commerce initiation and adoption for the SME. In this case, there appeared to be a fairly high degree of coordination between the agents, and thus between the roles they fulfilled, although this was not observable in all the case studies where change agents often lacked coordination.

Evidence also suggests that some change agents played more important roles than others. These can be broadly categorised as constituting *primary* or *secondary* agents. Primary agents performed catalysing (EC) and intermediation (EI) roles, and tended to be those that occupied a down-stream position, and were well integrated in core commodity chains. Such agents were not only able to provide access to essential e-commerce resources and technical platforms, but also created forward linkages to the market and access to new clients (and tended to be located overseas). In contrast, secondary change agents tended to perform incubation (BI), promotion (BP) and knowledge dissemination (KD) roles and were often based locally. They tended to take on a position that was peripheral to core commodity chains, providing complementary resources such as training, finance, access to infrastructure or technical assistance (but in some cases fulfilling a more important coordinating role). In consequence secondary change agents appeared to be more influential at the initiation stage of e-commerce initiatives, but were less able to stimulate and influence adoption and implementation processes. In fact, in one case (case study 4) secondary change agents were observed to have been at least partially responsible for decision-making processes that resulted in delayed adoption and wasted resources.

The competencies required by change agents also varied considerably – in line with their product or service offerings and with their clientele. In this context, competency is defined as a combination of the areas of work or tasks that the change agent is competent to undertake together with the personal and managerial skills necessary to compete those tasks and thus act as effective agents of change. SME clients in Uganda had particular needs for change agents with competency in relation to raising the quality of SME management, complying with product and customer service standards, delivering low cost business solutions (that may or may not utilise e-commerce), and deploying slack (underused) resources more efficiently. Two further areas of required change agent competency were identified; firstly, technical competency both for solution provision and facilitating access to networks and infrastructure; and secondly, those areas of competency concerned with market entry and access to new clients and customers through effective commodity chain brokering and/or marketing services.

The extent of involvement of change agents also varied considerably. The type of activities undertaken were observed to lie on a spectrum of ever increasing involvement with e-commerce, that moved from no effective support for e-commerce, to awareness raising, to the provision of both generic and e-commerce specific

training, through to tailored solution provision and the integration of e-commerce into business support packages, and finally, to the facilitation of market access through brokering activities via trading portals and other on-line exchanges. A priority focus for the majority of Uganda-based change agents, however, was to raise awareness and to build SME-relevant training capacity – both for generic use of ICTs, and through the provision of specific e-commerce solutions to individual SMEs.

## **D2. E-commerce SME classification scheme and profiling framework**

On the basis of our analysis of the literature, and taking into account the case study evidence presented, we can propose five dimensions to classify e-commerce development within SMEs in developing countries. The dimensions are: organisational readiness, organisational capability, e-commerce capability, e-commerce motivation, and commodity chain position. The five dimensions are further sub-divided according to the key factors that influence e-commerce adoption that were identified and outlined in the literature review (section B).

In Table 2 each dimension is assigned descriptors that reflect four states of development: starting from the *foundation state*, through the *exploratory state*, to the *graduation state*, and finally the *expert state*. The descriptors have been benchmarked against the level of *e-commerce capability* exhibited by the enterprises using data extracted from the case studies. Foundation state SMEs made no use of computers and had no on-line capabilities; exploratory state SMEs had access to e-mail and on-line information; graduation state SMEs had developed a website but with no advanced capabilities, whilst expert state SMEs utilised more advanced websites with interactive (and in one case, transacting) capabilities, as well as having integrated some back office functions (refer to Table 2).

**Table 2. E-commerce Four-States Classification (SMEs)**

<i>Dimension</i>	<i>Foundation state</i>	<i>Exploratory state</i>	<i>Graduation state</i>	<i>Expert state</i>
<b>Organisational Readiness</b>				
<i>Awareness:</i>	No awareness of opportunities, threats, perceived benefits or risks of e-commerce	Little awareness of opportunities, threats, perceived benefits, risks of e-commerce	Growing awareness of opportunities, threats, actual benefits, risks of e-commerce	High awareness of opportunities, threats, actual benefits, risks of e-commerce
<i>Human resources:</i>	No ICT literacy and no access to computers for employees	Some ICT literacy with restricted access to computers for employees	Most employees ICT literate but with restricted access to computers	Most employees ICT literate with unrestricted access to computers
<i>Technological resources:</i>	Use only non-digital technologies. Have yet to adopt computers. No direct access to digital networks	Use computers for administrative work. Access to the Internet for external communication purposes (email)	Connected to the Internet with a web presence	A web presence with some back office applications. Might have a local area network
<i>Financial resources:</i>	Severe financial resource constraints. (High-perceived costs of ICT and low perceived benefits)	High financial resource constraints. (High-perceived costs of ICT and some perceived benefits)	Some financial resource constraints. (Lower perceived costs of ICT and some perceived benefits)	Sufficient financial resources. (Lower perceived costs outweighed by high-perceived benefits)
<i>Commitment:</i>	No vision and commitment to e-commerce	Some (unclear) vision on e-commerce but no demonstrable commitment	Clear vision on e-commerce and some demonstrable commitment	Strategic vision and demonstrable commitment to e-commerce
<b>Organisational Capability</b>				
<i>Regulatory capability:</i>	SME does not possess IPR, contracts, and trade secrets	SME does not possess IPR and trade secrets but have some contracts	SME does not possess IPR, might have some trade secrets and contracts	SME possesses some IPR, might have some trade secrets and quite a lot of contracts
<i>Positional capability:</i>	Stand-alone initiatives, and do not belong to established commodity chains	Some partnering with traders, but no reputation within commodity chain	Belong to established commodity chains and developed some reputation	Well established in commodity chain with good reputation
<i>Functional capability:</i>	Very-low 'know-how' of business planning, network, information and technology management	Some 'know-how' of business planning, network, information and technology management	Adequate 'know-how' of business planning, network, information and technology management	Good 'know-how' of business planning, network, information and technology management.



<b>E-commerce Capability</b>	None, but may use ICTs and non-digital applications (e.g., telephones, fax, mobile phones)	Starting out with e-mail and some access to on-line information	Web presence with or without interactive and transacting capability	Web presence possibly with transacting capability and some business process integration
<b>Motivation</b>				
<i>Motivation for change (efficiency/mimicking/legitimacy)</i>	No defined motivation for e-commerce	Mostly undefined, when defined, predominantly driven by mimicking	Some efficiency and legitimacy drivers but still shows mimicking tendency	Predominantly efficiency and legitimacy driven.
<i>Motivator of change (push/pull factors)</i>	Predominantly agent push (resource) driven	Push driven with limited demonstration of pull (market drivers)	Pull driven but still exposed to push forces	Predominantly SME pull (market) driven
<b>Commodity Chain Position</b>	SMEs located outside core commodity chains.	SMEs tend to be located up-stream and their proximity to core commodity chains is peripheral.	SMEs tend to be located up/down-stream and are well integrated into core commodity chains.	SMEs tend to be located down-stream and are well integrated into core commodity chains.

## **Analysis and observations**

The framework presented in Table 2 is one that has yet to be fully tested in the field. However, the small number of case studies conducted in Uganda give rise to a number of observations.

SMEs identified at a foundation state severely lacked organisational readiness. They were heavily constrained by deficiencies in human, technological and financial resources and lacked core business capabilities. ICT use, if any, tended to be rudimentary without automation of basic business processes. They tended to be unaware of opportunities. They tended to operate outside established value chains and did not come under the pressure of external clients. Here, survival remained the main motive (case studies 1 & 2). The other SMEs surveyed were at a higher level than this. Those at an exploratory level did not yet know the requirements to conduct operations in an electronic market effectively, and had low e-commerce capability, but their organisational readiness and capability to learn the particulars of doing business in the marketplace was somewhat higher. E-commerce implementation tended to be experimental (case study 3 & 4). Others were moving from an exploratory state towards an expert state. These were graduation level SMEs and they demonstrated growing (and sometimes high) organisational readiness and capability in some (but not all) aspects (case study 5). Their e-commerce capability tended to be in advance of their organisational capability, and they tended to be less influenced by mimicking behaviour, and increasingly able to take on a strategic approach to e-commerce driven by the need for greater efficiency. Only one case study could be categorised at the expert state (case study 6).

Although the developmental state of the SMEs surveyed could be approximated as foundation, exploratory, graduation or expert, individual case studies indicated that SMEs tend to exhibit differing states of development across the five dimensions of the framework. For example, an SME may have a growing awareness of, and commitment to, developing an e-commerce capability, but lack the resources (either human, technical or financial) to initiate change. An SME may command the necessary resources, but lack the positional capability to participate in key commodity chains. Generally speaking, however, SMEs that have low organisational readiness and capability are also likely to have no clearly identifiable motivation for e-commerce. Those SMEs with greater organisational readiness and capability may approach e-commerce because of mimicking motives. It may be only SMEs with adequate resources and some core capabilities that pursue e-commerce on the basis of efficiency and/or legitimacy grounds.

Another observation concerns the interplay between the push and pull forces that are driving e-commerce adoption. The small number of cases made conclusions uncertain, but for early adopters in Uganda, agent push tends to dominate. This may be expected given that most SMEs in developing countries are at an early stage of e-commerce evolution. As a result, SMEs vary considerably according to their ability to drive e-commerce development from within. Internal change agents are not common with most changes driven by external forces. External agents are required in the first instance to raise awareness, to build internal knowledge resources, to change attitudes and influence the decision-making processes that can initiate e-commerce. As indicated in section D1, secondary change agents that are locally based played a

key role in this regard. However, owner/managers who were early adopters did exert a great deal of influence over organisational capability and readiness, and in some cases were instrumental in initiating and sustaining contact with external agents. Hence, the motivational factors that impinge on the interaction between owner/managers and external change agents are likely to be paramount.

### **D3. E-commerce change agent classification scheme and profiling framework**

The classification scheme and profiling framework for change agents is based around the five dimensions used just above to classify e-commerce development for SMEs: organisational readiness, organisational capability, e-commerce capability, e-commerce motivation, and commodity chain position. The sub-divisions and the descriptors are adapted according to the aspects of e-commerce development that differentiate change agents from SMEs. Within the analysis framework the change agents were benchmarked in accordance with the e-commerce expertise they were able to offer, rather than their own capability.

Applying a common profiling framework to change agents and SMEs has the advantage of imposing common (but flexible) criteria to each, which enables the assessment of SMEs and change agents to be compared and differentiated solely according to the roles they perform and the competencies they can bring to e-commerce initiatives. This provides an effective means for understanding and prioritising interventions within multi-agent initiatives. Thus, competency deficiencies apparent in SMEs can be supplemented by the competency strengths of change agents. SMEs may also bring competency strengths in areas where agents are deficient.

**Table 4. E-commerce Four-States Classification (Change-agents)**

<i>Dimension</i>	<i>Foundation state</i>	<i>Exploratory state</i>	<i>Graduation state</i>	<i>Expert state</i>
<b>Organisational Readiness</b>				
<i>Awareness:</i>	No awareness of e-commerce solutions, training requirements, business models, technologies and interventions	Little awareness of e-commerce solutions, training requirements, business models, technologies and interventions	Growing awareness of e-commerce solutions, training requirements, business models, technologies and interventions	High awareness of e-commerce solutions, training requirements, business models, technologies and interventions
<i>Human resources:</i>	Human resource skills relevant to their domain of activity severely lacking	Human resource skills relevant to their domain of activity lacking.	Some human resource skills relevant to their domain of activity	Adequate human resource skills relevant to their domain of activity
<i>Technological resources:</i>	Agents use only non-digital technologies and have yet to adopt computers No integration of ICT in agency systems and strategy	Agents use some ICT applications to support their offerings Some integration of ICT in agency systems and strategy	Agents rely on ICT applications in their offerings Growing integration of ICT in agency systems and strategy	Agents showcase e-commerce relevant applications High integration of ICT in agency systems and strategy
<i>Financial resource:</i>	Severe resource constraints Reliance on external donor inputs	High resource constraints Nominal provision for self financing of initiatives	Some resource constraints Growing provision for self financing of initiatives	Less severe resource constraints Predominantly self financed initiatives
<i>Commitment:</i>	No commitment to e-commerce and SME support	Some demonstrable commitment to SME support but not to e-commerce support	Some demonstrable e-commerce commitment but not to SME support	Demonstrable commitment to e-commerce and to SME support
<b>Organisational Capability</b>				
<i>Regulatory capability:</i>	Agent does not possess IPR, contracts, and trade secrets	Agent does not possess IPR and trade secrets but have some contracts with clients	Agent does not possess IPR, might have some trade secrets and contracts with clients	Agent possesses some IPR, might have some trade secrets and quite a lot of contracts with clients
<i>Positional capability:</i>	Able to carry out advocacy role but have not developed either generic SME or e-commerce relevant reputation in their domain	Generalists – able to carry out advocacy role and have developed generic SME reputation in their domain	Hybrids – have developed generic SME and some e-commerce specific reputation in their domain	Specialists – have developed good SME and e-commerce relevant reputation in their domain.

<i>Functional capability:</i>	Agent lacks required competence in their domain of activity to influence e-commerce adoption in SMEs	Agents have some competence in their domain of activity to influence e-commerce adoption in SMEs	Agents have growing competence in their domain of activity to influence e-commerce adoption in SMEs	Agents are fully competent in their domain of activity to influence e-commerce adoption in SMEs
<b>E-commerce capability</b>	Agent able to offer generic (non-e-commerce specific) business development services, training and access to finance	Agent able to offer predominantly non-e-commerce complemented with some e-commerce related services.	Agent able to offer predominantly e-commerce complemented with some non e-commerce related services.	Agent able to offer predominantly e-commerce related services
<b>Motivation</b>				
<i>Motivation for change (efficiency/ mimicking/ legitimacy)</i>	No defined motivation for e-commerce	Mostly undefined, when defined, predominantly driven by mimicking	Some efficiency and legitimacy drivers but still shows mimicking tendency	Predominantly efficiency and legitimacy driven.
<i>Motivator of change (push/pull factors)</i>	Fully subsidised services to promote SME development	Nominal service charged to client combined with subsidy	Near full cost of service charged to client supported by small subsidy	Market rate charged to client
<b>Commodity chain position</b>	Agency located outside core commodity chains.	Agency tends to be located up stream and their proximity to core commodity chains is peripheral.	Agency tends to be located up/down-stream and integrated into core commodity chains.	Agency tends to be located down-stream and well integrated into core commodity chains.

## Analysis and observations

Change agents constituted a broader range of organisational forms than enterprises. Change agents were observed to be: government-run and wholly subsidised, or fee-paying membership organisations, or non-governmental or donor organisations, or exclusively private sector. Thus, the motivations of agents also varied considerably – largely determined by the degree of financial incentive (or financial risk) that existed within the agent-client relationship. These ranged from the market-rates charged by private sector providers to the partly- or fully-subsidised services provided by government agencies or donors. Differing motivations raised a number of agency problems centred round asymmetries in the relationship between agent and client. Clients (enterprises) often had difficulties in gauging whether or not change agents had the required capability, and whether agents would act in a responsible manner. Evidence suggests that overcoming these ‘moral hazards’ is important for achieving trust between agents and clients, and thus ensuring success of e-commerce interventions (Mole, 2002).

Agents also varied considerably according to the services they were able to offer (as outlined in Table 1). The ability of the change agent to perform the roles identified can be assessed according to their developmental state. Those agents at the *foundation* level were largely restricted to raising awareness of e-commerce: primarily through developing greater understanding and definition of market opportunities, and through taking greater cognisance of owner/manager (client) perceptions. Those at an *exploratory* level were more concerned with general business diagnostics, resource acquisition strategies and deployment of resources. For example, typical interventions would involve injections of new resources to enhance organisational readiness; the upgrading of organisational and/or e-commerce capabilities through training provision and enhancement of motivational factors (such as through financial or non-financial incentives). Those at the *graduation* and the *expert* levels were more centrally involved with e-commerce solution provision. Such change agents were able to demonstrate growing integration of ICT in agency systems and strategy, and in some cases had the ability to showcase e-commerce-relevant applications. Those at the expert level showed a greater level of development in these areas, as well as having greater focus on resource consolidation, market expansion and/or market re-positioning of the enterprise to create better commodity chain integration, as well as planning for new infrastructure and legislation.

Secondary change agents tended to be at a lower developmental state, but were able to play an important role in the initiation and early adoption phase of e-commerce. Primary change agents tended to offer the high level competencies that were required in the later implementation and assimilation phases. This suggests (in the light of the profiling analysis presented in Table 1) that interventions for competency building need to be differentiated, not only according to the differing roles change agents perform, but also according to different temporal phases. The precise requirements are not yet clear, but evidence from the case studies suggests that in the initiation phase there will be a requirement to create need for change, to create awareness of market opportunities, to build knowledge, and suggest e-commerce solutions. At the adoption phase, skills will be required to transfer knowledge, mobilise resources, manage experimentation and assist decision-making. At the implementation and

assimilation phases, there will be greater needs in relation to knowledge deployment, building competence, continuous support, and solution expansion and evolving strategy.

It is clear, however, that change agents vary considerably in their ability to influence the development of e-commerce initiatives. We have seen this in relation to the differing roles that change agents perform. Ideally, the five dimensions – organisational readiness, organisational capability, e-commerce capability, motivation and a favourable commodity chain position – need to be developed in unison. However, like the enterprises they are seeking to assist, change agents display different degrees of development and performance in each dimension.

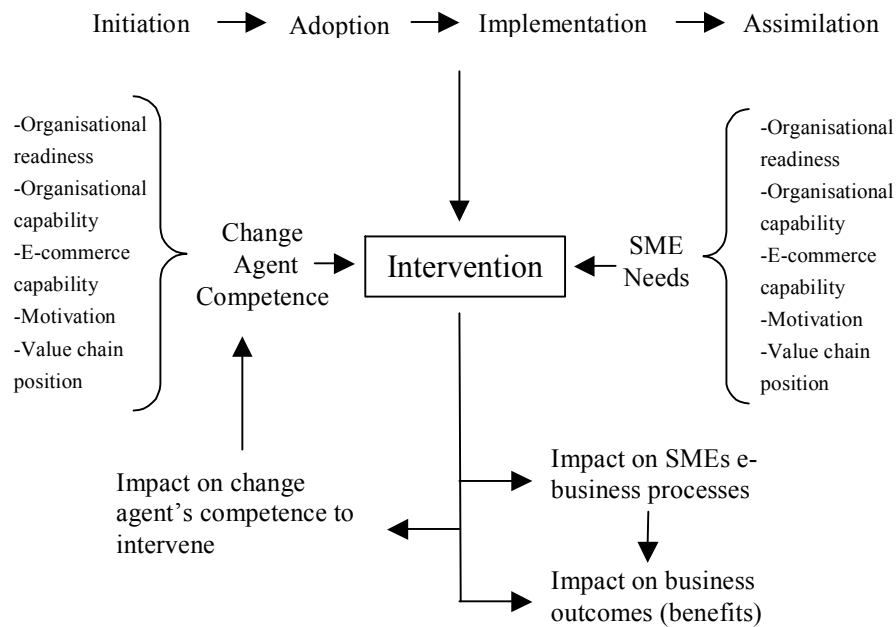
## **E. Conclusions and Future Research Directions**

This research represents a preliminary investigation of the role of change-agents in the promotion of e-commerce for SMEs in developing countries drawing upon case study evidence from Uganda. The intention of this paper is to provide an evidence-based framework that will form the theoretical basis for future research in the area. Although the evidence was based on a narrow range of case studies, such cases were indicative of current developments in e-commerce for SMEs located in a developing country, and a range of valuable, if tentative, conclusions have arisen.

It is clear that external change agents are playing an important role in stimulating e-commerce development for SMEs in Uganda. Agents have been identified as taking on a range of specialist and non-specialist roles and have been categorised as either primary or secondary change agents, with market or commodity chain proximity identified as the key determinant of their primary or secondary status. The ability of change agents to interface effectively with the market seems to be a key factor in their success in stimulating not only e-commerce adoption but, crucially, effective implementation and assimilation of e-commerce technologies and associated business practices.

Fig.1 suggests a framework for understanding how intervention for change agents and SMEs might be approached, highlighting the importance of three key elements. Firstly, a requirement for assessment of SME needs (such as through the application of effective business diagnostics); secondly, an understanding of the level of change agency competency to intervene and fulfil those needs; and thirdly, an appreciation of the temporal phase of e-commerce at which intervention is occurring.

**Fig 1. A model of change agent intervention**



It is accepted practice that intervention targeted at promoting business development in developing countries should be formulated on the basis of a thorough understanding of SMEs needs (Duncombe & Heeks, 2002). The SME profiling framework presented (Table 2) constitutes a basis upon which such a needs assessment for e-commerce can be built. This approach is in line with Atherton and Hannon (2000) whose model of assessing capabilities forms the first building block of managing the innovation process for SMEs. Identification of critical gaps in competency can provide the basis of the assessment, by assessing needs across the five dimensions of organisational readiness, organisational capability, e-commerce capability, motivation and value chain position, with intervention strategies being differentiated accordingly. Needs identification could take place on the basis of analysis of the individual enterprise or possibly on the basis of a sub-sector approach to business assistance, such as suggested by Haggblade & Gamser (1991).

The second component of the model relates to the change agents' competency to intervene. This paper suggests that competency should be defined according to the change agents' roles (Table 1). Thus change agents themselves may have critical gaps in competency that require intervention strategies for capacity building. The precise requirements of change agents are not yet clear from the evidence base available, but it is likely that interventions will need to be differentiated on the basis of: a) the developmental state of the change agent, b) the characteristics of the change agent (e.g., for profit or not for profit) and c) the temporal phase of e-commerce.

This suggests that the static model that seeks to profile and compare enterprises and change agents put forward in this paper needs to be supplemented with a temporal model that is dynamic in nature – that recognises e-commerce adoption as an ongoing 'developmental' process rather than a one-off event. Four temporal phases of *initiation, adoption, implementation and assimilation* have been suggested, drawing



upon a developmental idea that already has a strong basis in the literature. This emphasises the role change agents have in sequencing, timing and combining various interventions effectively. As Van Slyke (1998) points out, e-commerce is a cluster of interrelated technologies and innovations, and, as suggested by the evidence from Uganda, its adoption and implementation is the result of multiple actions by multiple agents whose ability to coordinate activities over time varies.

A number of final points can be made related to the approach taken in this paper – issues that will need to be addressed as the research continues.

First, the focus of this research has been to consider e-commerce as a potential strategy for business development for SMEs in developing countries. The use of e-commerce, however, constitutes only one ingredient for improved business performance, and needs to be considered alongside a range of other intervention strategies that relate to access to finance and the provision of other business development services. However, the framework suggested in this paper – which is representative of an integrated business development model – may provide a suitable vehicle for analysing broader business and sector development objectives.

Second, linear models of e-commerce development have been criticised for being too mechanistic and technology driven, rather than focusing on the human resource and knowledge-based factors that guide business growth and development. Linear models also fail to reflect the true complexity of the innovation process and the diverse needs of enterprises according to their market, their sector orientation and their access to resources (Martin and Matlay, 2001). The framework approach suggested in this paper reinforces this critique and represents a more holistic, differentiated and adaptable approach that departs from simplistic step-by-step models of e-commerce evolution.

Third, the case studies identified key roles for change agents. However, they also highlighted some important restrictions on change agent action at the meso (intermediary) level. Such formal change-agents often acted outside of the social networks of SMEs and faced social marginality, often focusing too heavily on formal organisational roles, thus negating the importance of informal processes at the micro level where underlying social networks have been shown to provide key conduits for innovation in developing countries (Murphy, 2002). Informal change-agents, however, were less easy to identify, as they tended to be more highly integrated into the social and market networks of SMEs, exhibiting higher degrees of trust and confidentiality with owner/managers (Rogers, 1995). It is clear, however, that as the assessment framework is developed it should take full account of the influence of both formal and informal change agents. It will also be necessary to assess the role and influence of change agent interventions in comparison with other ‘non-agent’ factors.

Future research will continue to examine organisational processes and modes of intervention, drawing upon change agent and motivation-ability theoretical frameworks, building upon the findings outlined. Further research is needed to test, validate, and modify the framework presented in this paper through strengthening the evidence base. Future research can also be directed at developing the assessment tools to assess impact of agency-driven e-commerce interventions in three areas (refer to Fig 1). Firstly, to assess the impact of e-commerce initiatives on change agent

competency; secondly, to assess the impact of e-commerce initiatives on SME business processes; and thirdly, to assess the impact of e-commerce initiatives on business outcomes (principally the benefits associated with e-commerce adoption).

It is hoped this paper can be used to suggest improvements and modifications to existing theories of e-commerce adoption for SMEs in developing countries, and contribute to a renewed understanding of change agency theory in this area; as well as providing a practical approach to assist agencies in developing their own evaluative frameworks for assessing e-commerce and SME development initiatives.

### *Acknowledgement and Note*

Particular thanks are extended to Robert Kintu and Barbara Nakangu who carried out the fieldwork for this research on behalf of FIT (Uganda) Ltd. Part of the fieldwork for this research was undertaken as one element of a project funded and managed by the Commonwealth Telecommunications Organisation (CTO) as part of the UK Department for International Development's "Building Digital Opportunities Programme": views expressed here are those of the authors and not those of CTO or DFID. The research forms part of a wider research strategy for IDPM's Development Informatics Group, which aims to develop and disseminate theoretically-grounded and practice-oriented understanding of information and ICTs in socio-economic development. It draws on IDPM's existing work on ICTs and small enterprise development, as well as its work on trade and globalisation.

## References

- Akkeren, J. & Cavaye, A. (1999) Factors affecting the adoption of e-commerce technologies by small business in Australia – An empirical study.  
<http://www.acs.org.au/act/events/io1999/akkern.html> [Accessed 08/04/05]
- Atherton, A. & Hannon, P. D. (2000) Innovation processes and the small business: a conceptual analysis, *International Journal of Business Performance Management*, Vol.2 (4): 276-292.
- Bird, B. (1989) *Entrepreneurial Behaviour*, Glenview, IL: Scott Foresman & Company.
- BRIDGES (2003) World Economic Forum-NEPAD E-Africa Commission E-Readiness Policy Programme: Building capacity to narrow the digital-divide in Africa from within.  
[on-line] <http://www.bridges.org>
- Caldeira, M.M. & Ward, J.M. (2003) Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises, *European Journal of Information Systems* (2003) 12: 127-141.
- Cambell, C. (1989) Change agents in the new economy: Business incubators, and economic development. *Economic Development Review*, Spring: 56-59
- Chau, S.B. & Turner, P. (2003) A four phase model of electronic commerce business transformation amongst small to medium sized enterprises: preliminary findings from 34 Australian case studies, School of Information Systems, University of Tasmania, Australia.  
Available from: [www.infosys.utas.edu.au/publications/research/2002](http://www.infosys.utas.edu.au/publications/research/2002) [Accessed 08/04/05]
- Cloete, E., Courtney S. & Fintz J. (2002) Small business acceptance and adoption of e-commerce in the Western-Cape province of South-Africa, *Electronic Journal of Information Systems in Developing Countries*, Vol.10 (4):1-13.
- Cobbenhagen, J. (2000) *Successful innovation - towards a new theory for the management of small and medium-sized enterprises*, Cheltenham UK: Edward Elgar.
- Coyne, K. P. (1986) Sustainable competitive advantage – What it is and what it isn't, *Business Horizons*, Vol. 29 (January-February): 54-61.
- Daniel, E. (2003) An exploration of the inside-out model: e-commerce integration in UK SMEs, *Journal of Small Business and Enterprise Development*, Vol.10 (3): 233-249.
- Daniel, E. Wilson, H. & Myers, A. (2002) Adoption of e-commerce by SMEs in the UK: toward a stage model, *International Small Business Journal*, Vol.20 (3): 253-270.
- de Berranger, P., Tucker, D. & Jones, L. (2001) Internet diffusion in creative micro-businesses: identifying change-agent characteristics As critical success factors, *Journal of Organizational Computing and Electronic Commerce*, Vol.11: 197-214.
- Dickson, P. R. (1992) Toward a general theory of competitive rationality, *Journal of Marketing*, Vol.56 (January):69-83
- DiMaggio, P. J. & Powell, W. (1983) The iron cage revisited: institutional isomorphism and collective rationality in organizational behaviour, *American Sociological Review*, Vol.48 (April): 147-160.
- Duncombe, R.A. & Heeks, R.B. (2002) Enterprise across the digital divide: information systems and rural micro-enterprise in Botswana, *Journal of International Development*, Vol.14 (1): 61-74.
- Duncombe, R.A. (2004) Growth and formalisation of information systems in developing country SMEs, *Development Informatics Working Paper No 19*, IDPM, The University of Manchester, UK.

Available from <http://idpm.man.ac.uk/publications/wp/di/index.shtml>

Eisenhardt, K.M. (1989) Agency theory: an assessment and review, *The Academy of Management Review*, Vol.14 (1): 57-74.

Elsammani, Z.A, Hackney, R. & Scown, P. (2004) SMEs adoption and implementation process of websites in the presence of change agents, in Nabeel A.Y.Al-Qirim (ed) *Electronic Commerce in Small to Medium-sized Enterprises: Frameworks, Issues and Implications*, Idea Group Publishing, London.

Esselar, P. & Miller, J. (2002) Towards electronic commerce in Africa: a perspective from three country studies, *The Southern African Journal of Information and Communication*, Vol.2 (1), Johannesburg, Wits University Pubs.

Grewal, R., Comer, J. M., & Metha, R. (2001) An investigation into the antecedents of organisational participation in business-business electronic markets, *Journal of Marketing*, Vol.65 (3): 17-34

Hagglblade, S. & Gamsler, M. (1991) A field manual for sub-sector practitioners, Gemini, The World Bank, Washington, D.C.

Hall, R. (1993) A framework linking intangible resources and capabilities to sustainable competitive advantage, *Strategic Management Journal*, Vol.14 (November): 607-618.

Havelock, R. G. & Havelock M. C. (1973) Training for change agents, Institute for Social Research, University of Michigan, USA.

Hostager, T. J, Neil, T. C., Decker, R. L. & Lorentz, R. D. (1998) Seeing environmental opportunities: effects of intrapreneurial ability, efficacy, motivation and desirability, *Journal of Organisational Change Management*, Vol.11 (1): 11-26.

Humphrey, J., Mansell, R., Pare, D. & Schmitz, H. (2003) The reality of e-commerce with developing countries, Institute for Development Studies, University of Sussex.

Iacovou, C. L., Benbasat, I. & Dexter, A. A. (1995) Electronic data interchange and small organisations: adoption and impact of technology, *MIS Quarterly* Vol.19 (4): 465-485.

Jones, C., Hecker, R. & Holland, P. (2003) Small firm Internet adoption: opportunities forgone, a journey not begun, *Journal of Small Business and Enterprise Development*, Vol.10 (3): 287-297.

Jones, O. (2004) Innovation in SMEs: intrapreneurs and new routines, in Jones, O. & Tilley, F. (ed) *Competitive advantage in SMEs: Organising for Innovation and Change*, London, Wiley.

Kanter, R. M., (1983) The Change Masters, *Management Review*, Vol.72: 18-23.

Kiggundu, J. (2002) Designing e-commerce strategies: roles of governments and non-governmental actors, Report produced for the Ugandan Investment Authority by the United Nations Conference on Trade and Development (UNCTAD).

Available from <http://www.wugandainvest.com> [Accessed 08/04/05]

King, J.L., Gurbaxani, V., Kraemer, K.L., MacFarlan, F.W., Raman, K.S., & Yap, C.S. (1994) Institutional factors in information technology innovation. *Information Systems Research*, Vol.5 (2): 139-169.

Kinyanjui, M.N. & McCormick, D. (2002) E-commerce in the garment industry in Kenya: usage, obstacles and policies, Report for project: E-commerce for Developing Countries: Building an Evidence Base for Impact Assessment, Institute for Development Studies, Sussex.

Available from <http://www.gapresearch.org> [Accessed 08/04/05]

Klein, H.K. & Myers, M.D. (1999) A set of principles for conducting and evaluating interpretive field studies in information systems, *MIS Quarterly*, Vol.23 (1): 67-94.

- Knol, W.H.C. & Stroken, J.H.M. (2001) The diffusion and adoption of information technology in small- and medium-sized enterprises through IT scenarios, *Technology Analysis & Strategic Management*, Vol.13 (2): 227-245.
- Kuan, K. K.Y., & Chau, P.Y.K. (2001) A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework, *Information & Management*, Vol.38: 507-521.
- Lertwongsatien, C., Wongpinunwatana, N. & Achakulwisut, A. (2004), Factors influencing e-commerce adoption in small and medium businesses: an empirical study in Thailand: in Nabeel A.Y. Al-Qirim (ed) *Electronic Commerce in Small to Medium-sized Enterprises: Frameworks, Issues and Implications*, Idea Group publishing, London.
- Martin, L.M. & Matlay, H. (2001) Blanket approaches to promoting ICT in small firms: some lessons from the DTI ladder adoption model in the UK, *Internet research: electronic networking applications and policy*, Vol.11 (5): 399-410.
- Merton, R. K. (1957) *Social Theory and Social Structure*, The Free Press, Glencoe, IL
- Meyer, J. W. & Scott, W. R. (1992) *Organisational Environment: Ritual and Rationality*, Newbury Park: Sage Publications.
- Mirchandani, D. A. & Motwani, J. (2001) Understanding small business electronic commerce adoption: an empirical analysis, *Journal of Computer Information Systems*, Vol.41 (3): 70-74.
- Mole, K. (2002) Business advisors impact on SMEs: an agency theory approach, *International Small Business Journal*, Vol.20 (2): 139-162.
- Molla, A. (2004) The impact of e-readiness in e-commerce success in developing countries: firm level evidence, *Development Informatics Working Paper No 18*, IDPM, The University of Manchester. Available from <http://idpm.man.ac.uk/publications/wp/di/index.shtml>
- Montealegre, R. (1999) A temporal model of institutional interventions for information technology adoption in less-developed countries, *Journal of Management Information Systems*, Vol.16 (1): 207-232.
- Moodley, S., Morris, M. & Velia, M. (2003) e-commerce for exporting garments from South Africa: 'digital dividend' or leap of faith?, *IDS Working Paper 182*, Institute for Development Studies, Brighton, England.
- Poon, S. & Swatman, P. (1999) Small business use of the Internet: Findings from Australian case studies, *International Marketing Review*, Vol.14 (5): 385-402.
- Purcell, F., Toland, J. & Huff, S.L. (2004) The potential for e-commerce for remotely located SMEs: case studies from Samoa: in Nabeel A.Y. Al-Qirim, *Electronic Commerce in Small to Medium-sized Enterprises: Frameworks, Issues and Implications*, Idea Group Publishing, London.
- Rogers, E.M. (1995) *Diffusion of Innovations*, 4<sup>th</sup> Edition, London, Free Press.
- Schulpen, L. & Gibbon, P. (2001) Private sector development: policies, practices and problems, *World Development*, Vol.30 (1): 1-15.
- Shiels, H., McIvor, R. & O'Reilly, D. (2003) Understanding the implications of ICT adoption: insights from SMEs, *Logistics Information Management*, Vol.16 (5): 312-326.
- Slater, S. F. & Narver, J. C. (1995) Market orientation and the learning organization, *Journal of Marketing*, Vol.59 (July): 63-74.
- UNCTAD (2004) e-Commerce and Development Report, United Nations, New York.

Van Slyke, C. (1998) Technology cluster innovations: impacts of adding a technology to an existing cluster, Ph.D. Dissertation, University of Central Florida, USA.

Wresch, W. (2003) Initial e-commerce efforts of in nine least developed countries: A review of national infrastructure, business approaches and product selection, *Journal of Global Information Management*, Vol.11 (2): 67-89.

Yap, C.S., Soh, C.P.P. & Raman, K.S. (1992) Information systems success factors in small business, *Omega – International Journal of Management Science*, Vol.20 (5/6): 597-609.

Yin, R.K. (1994) *Case Study Research: Design and Methods*, 2<sup>nd</sup> Edition, London, Sage.

## Appendix 1. Uganda Case Studies

Case Study 1: <b>Mukono</b>	External change agents		
	Name	Roles performed	Offering
Established in 1997, Mukono is located in the village of Mukono with 60 women employees. The SME has a number of money generating activities that include horticulture, tree planting and manufacturing energy saving local stoves. The SME serves the home market only, and the main products are tree seedlings, vegetables and metallic stoves. Customers are located in Mukono, and surplus produce is sold to wholesalers in Kampala. The vegetables are perishable so the women only harvest when they can be sure of the market.	Mukono Women's Taskforce	-Business incubation -Business promotion	Activities include home visits, outreach, counselling, training of women in various money generating activities and the pooling of resources to benefit members.
	Mukono Town Council	-Business promotion	Office/admin support
	Local church-based NGO	-Business promotion	Land and premises
	Local Telecentre	-E-commerce facilitation -Knowledge dissemination	Has provided access to telecommunication networks, phone and email services, and information search via the Internet. Provision of market information from Kampala. Administrative support.

Case Study 2: <b>Sedu</b>	External change agents		
	Name	Roles performed	Offering
A micro-enterprise run by a 27-year-old male entrepreneur that produces metal and fabricated products for the home market only. The SME sells to local markets and serves many sectors. For example, the construction sector where he supplies windows and doorframes, and rural schools and hospitals where he supplies beds. The SME faces competition from fellow fabricators who are many, and from larger companies like Tumpeco that produces in large quantities. Sedu competes by producing products that are affordable and durable.	UTL	-E-commerce facilitation	Network connection for voice and data transmission.

Case Study 3: <b>Nabiganza Estates</b>	External change agents		
	Name	Roles performed	Offering
<p>The SME is located in Entebbe with five employees. It produces crafts: woodcarvings, basketry, ceramics and textiles, and supplies 75% of its output to the home market. The remainder is supplied to the export market. The SME plans to expand further into the higher value added tourism market in the future. The SME mainly sells to individual customers, but they also sell in larger quantities to traders and agents specialising in African crafts. The business hopes to survive in a competitive market and increase revenue and earnings from the business.</p>	Uganda Women's Enterprise Association (UWEA)	-Business promotion -Knowledge dissemination	UWEA have provided entrepreneurship skills and training in the use of computers. Most importantly they have provided financial support for overseas visits that have extended significantly the knowledge base of the entrepreneur and the reach of the SME network.
	Uganda Small-scale Industries Association (USSIA)	-Business promotion -Knowledge dissemination	USSIA has provided training in product development and financial support for overseas visits to trade shows. They have also provided a link to sources of funding from major donors such as the Austrian Government.
	Exposure Africa	-E-commerce Intermediation	Enabled attendance at e-commerce training courses in the USA and the Netherlands. Provision of access to a Web-based marketing portal for African crafts where products are displayed and marketed overseas, and where contact can be made with prospective clients.

Case Study 4: <b>Sesse Island Beach Hotel</b>	External change agents		
	Name	Role performed	Offering
<p>A tourist facility located on Buggala Island on Lake Victoria, employing 20. The SME mainly targets the tourism market with overseas and local customers split 50/50.</p>	MTN network provider	-E-commerce facilitation	Extension of the MTN telecommunications network to the Kalangala District and the remote islands of Lake Victoria has improved network access and facilitated more efficient booking systems via the Internet and email
	Travel Planner – overseas specialist travel planning company based in Switzerland.	-E-commerce intermediation -Solution provision	Web-site development and hosting providing value-added and brokering services to promote the island as a destination spot for tourists from Europe. By using this agent costs were cut and the level of interactivity provided by the website was much improved.
	Local web design company	-Business incubation	The local provider of services was able to offer web-site design services and training in the early phase of e-commerce adoption. The SME subsequently switched to the overseas partner for web design and hosting.



Case Study 5: <b>Mycorex</b>	External change agents		
	Name	Roles performed	Offering
<p>Established in 1992, Mycorex employs six, and deals in breeding, farming, selling and training about mushroom production. The business is a partnership owned by a Ugandan and his elder brother residing in the UK.</p> <p>The SME uses email extensively and has a Web-based marketing facility hosted in the UK.</p>	German customer	-Business promotion	This customer provided a substantial donation of computer hardware excluding the shipment costs.
	UK-based business partner	-E-commerce catalyst -Solution provision	This partner enables the SME Website to be hosted and managed in the UK. The UK link also provides access to markets – such as restaurant chains based in London.
	Uganda Export Promotion Board (UEPB)	-Business promotion -Solution provision	UEPB were able to provide financial assistance through an export guarantee fund. They also provided some practical assistance with Web-site development.
	Kampala-based Internet café	-Solution provision	In the early phase of e-commerce development, network access was facilitated through local Internet cafes where orders were taken and processed.
	BUDS-SSE (Private Sector Foundation)	-Knowledge dissemination -Business promotion	BUDS-SSE provided computer training for staff offering a 50% refund of costs upon completion.
	German Development Bank	-Knowledge dissemination	They were able to offer support for training and provision of training materials specifically for product development and marketing.

Case Study 6: <b>Cayman Consults</b>	External change agents		
	Name	Roles performed	Offering
<p>Overview: Established in 2001, Cayman Consults has 25 employees. They offer data entry services and accountancy services to North American firms. Cayman Consults is expanding in local and export markets – to provide both on-line and physical data entry and bookkeeping services for SMEs and public departments. Cayman Consults key partner is Wall Associates (Canada) who developed the system software for outsourcing. Cayman Consults interacts with Wall Associates on a daily basis taking advantage of the time difference between North America and Uganda.</p>	ML2000: Local consultants based in Uganda	-Knowledge dissemination	Organising initial workshops and acting on behalf of Perwit International – a consulting partner.
	Perwit International: International consultants based in Canada	-Knowledge dissemination -Solution provision	Project management and coordination. Conducting market research and identification of clients.
	Wall Associates: Major client based in Canada	-E-commerce catalyst -E-commerce intermediation	Key partner enabling access to market/clients. They also provided marketing assistance, tailored training, financial incentives and the e-commerce technology platform.
	Uganda Investment Authority (UIA)	-Business promotion	In the early phase they provided financial grants for purchase of hardware.
	IT Outsourcing Association based in Uganda.	-Business incubation	They provided a local coordinating role and facilitated access to sources of finance.
	BUDS-SSE (Private Sector Foundation) based in Uganda	-Business promotion	They provided part financing for a training programme conducted by Wall Associates, Canada.
	Enterprise Uganda (UNDP)	-Knowledge dissemination	Coordination and provision of training manuals and for the development of local human resources for data entry.