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Sheryl Thompson

*Lancaster University*, [sherphia@yahoo.com](mailto:sherphia@yahoo.com)

David Brown

*Lancaster University Management School*, [d.brown@lancaster.ac.uk](mailto:d.brown@lancaster.ac.uk)

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# Change Agents Intervention in E-Business Adoption by SMEs: Evidence from a Developing Country

Sheryl Thompson and David Brown

Department of Management Science, Lancaster University Management School, Lancaster, LA1 4YX, UK  
[sherphia@yahoo.com](mailto:sherphia@yahoo.com), [d.brown@lancaster.ac.uk](mailto:d.brown@lancaster.ac.uk)

## ABSTRACT

Two contemporary economic phenomena, namely information and communication technologies (ICTs) and small and medium-sized enterprises (SMEs), **have featured in the the discourse on economic development within developing economies. A significant part of these discussions relates to the engagement in e-business activities by SMEs. This paper explores this phenomenon by examining the role of external change agents in the e-business adoption process of SMEs.** The conclusion is that change agents intervention via funded initiatives are important to SMEs since it provides otherwise scarce resources, and may also mitigate risks associated with the adoption of new technologies. As such the paper makes a valuable contribution to the discourse on the uptake of e-business by SMEs, and is relevant to policy-makers.

## Keywords

ICT, developing country, Internet, policy, change agents, SMEs, Jamaica, AID

## INTRODUCTION

Information and communication technologies (ICTs) have inculcated new optimism into the fray of economic growth and poverty alleviation. Technology has long been advocated as one of the stalwarts for development, and based on the premise of the unprecedented economic contributions to advanced economies; ICTs are seen as catalytic to the cause of developing economies. In much the same way as ICTs have been elevated to the forefront of the development discourse, so too have small and medium-sized enterprises (SMEs). The recognition of the SME sector and its importance to the economies of all countries has fuelled the formulation of pro sector policies by national, regional and international policy-makers to encourage the sector to adopt new technologies. In 2003 approximately US\$2.8 billion was spent by the World Bank Group to fund projects, mostly in developing countries, for SMEs (Ayyagari, Beck and Demiguc-Kunt, 2003). SMEs are considered to be one of the main forces in economic growth and job creation, not only in the developed economies, but also in emerging economies or economies in transition (OECD, 2004:5).

For many countries SMEs constitute the majority of enterprises and employment. SMEs employ 58.7 percent of the labour force and account for 51.1 percent of total turnover in the United Kingdom in 2005 (DTI 2005). Further statistics by the DTI show that SMEs contribution to output is similar to that of large firms and in some sectors their productivity performance is better than larger companies. In China, SMEs account for 71 percent of turnover, 84 percent of employment and 99.9 percent of businesses (Fan, 2003). The significant contribution of the SME sector raises its importance to economic growth especially in the case of developing countries. SMEs' ability to react quickly to changes in their environment enables them to be innovative and flexible (Fan, 2003). This feature coupled with the sector's contribution to the employment and GDP have elevated SMEs to be seen as a tool for development and poverty reduction in developing economies. Thus, the sustainability of the SME sector is considered essential for countries to remain competitive, and this has seen a flurry of activities over the last few years as international aid and development agencies provide targeted assistance to SMEs in these countries (Beck, Demirguc-Kent, Levine, 2003).

Furthermore, regional and national governments have been encouraged to create an enabling environment and trade and investment capacity building to foster survival of SMEs. Coupled with the efforts to foster the competitiveness of the SME sector there have also been increased efforts through national and regional policies and initiative to facilitate the adoption of ICT, especially e-business engagement, by SMEs (OECD 2002; EU 2005). As such, governments and other implementing institutions are well-placed to act as change agents in the diffusion of Internet technologies to small firms. This paper will relate the experiences of seven SMEs from Jamaica with regards to their adoption of Internet technologies as it was facilitated by their participation in an AID funded initiative. Through these experiences the paper will highlight particularly **the roles played by external change agents in the process.** The next section will provide a review of relevant literature, after which a perspective on the Jamaican SME sector will be given, followed by an overview of the research methodology, then a discussion and finally a conclusion.

## REVIEW OF RELEVANT LITERATURE

The diffusion of innovations theory is one of the most prolific used in the innovations literature. With specificity to organizations, it is germane to the adoption of information and communications technology, and has been used as the underlying theory in many of the studies, at the macro level and firm level, enquiring into the diffusion and adoption of technological innovations. Rogers (1995) defines diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. Carter et al. (2001) separates the process into three stages namely initiation, adoption and implementation. Initiation is the information gathering and decision making stage when the organization learns about the innovation and decides whether or not to adopt. The next stage, adoption, refers to the process of acquiring the innovation as well as developing organizational capabilities to use the innovation, and the final stage termed implementation is the use of the innovation to create products or services.

A key element of the diffusion of innovations theory that has significance to the dissemination of technological innovations, especially in regard to SMEs and developing countries, is the concept of the change agent. The change agent is the individual or organization that influences the diffusion of a particular innovation in a direction determined by the system (Rogers 2003). Therefore the change agent can be influential in the increasing or decreasing the rate of adoption. The roles of change agents include developing a need for change, establishing relationships, diagnosing problems, creating an intention in potential adopters to consider the innovation and influencing behaviour so that the intention becomes a reality, stabilizing the adoption process and finally to ensure that adopters grow to be self-reliant (Rogers 2003). The argument of institutions as effective change agents is echoed by King et al. (1994), and de Berranger, Tucker and Jones (2001) highlights the importance of change agents in the diffusion of the Internet among SMEs in the creative industry in the United Kingdom. The latter examined a government initiative aimed at encouraging Internet adoption among SMEs and concluded that change agents characteristics were critical success factors in the technology diffusion process.

According to Duncombe and Molla (2006:5) change agents can either be internal or external; internal change agents are identified as “owners/managers and other intra-preneurial forces that act as champions, advocates and leaders of change”, while external change agents are “institutions or individuals that seek to influence the enterprise change process from the outside”. Consequently while internal change agents function at the micro level, external change agents may function at the macro or meso level (Schulpen and Gibbon 2002; UNCTAD 2006). Thus external change agents include government institutions, trade associations, industry intermediaries, implementing agencies for AID initiatives and other stakeholders. King et al. (1994) in their seminal article cited knowledge building, knowledge deployment, subsidiaries, mobilization, standard setting and innovation directives as six actions that can be undertaken by institutional change agents to affect innovation diffusion. Some of the key characteristics identified by de Berranger, Tucker and Jones (2001) in the adoption process include the provision of technical knowledge by the change agent, as well as information provision and collaboration and dialogue between the organization and the external change agent.

Additionally, Duncombe and Molla (2006) highlighted knowledge dissemination, solution provision, e-commerce facilitation, e-commerce intermediation and e-commerce catalyst as some of the key roles performed by external change agents to SMEs as they embark on the adoption of Internet technologies. Brown and Lockett (2001) found that intermediaries play a crucial role in the adoption of complex applications by SMEs, and the facilitatory role of these intermediaries as trusted third parties indicates to potential adopters that there is likely to be sufficient support for maintaining the adoption, thereby eliminating issues regarding the lack of in-house competence or additional financial costs. Further the intermediaries can act as change agents realizing a critical mass within the clusters, and this can positively affect the rate of adoption among SMEs (Brown and Lockett 2004). Essentially, change agent intervention can be valuable to the adoption process of SMEs who are often faced with financial and technical constraints. This becomes even more relevant to SMEs operating in a developing country since the constraints faced by these organizations may be more extensive, therefore the effectiveness of change agent intervention via policies and initiatives becomes more necessary. The next section will give an overview of the Jamaican SME sector.

## THE JAMAICAN SME SECTOR

In Jamaica the SME sector accounted for 34 percent of employment and contributed 33.1 percent to GDP in 2005, these figures are low when compared to those mentioned earlier for the UK and China. However, they do not account for the relatively large informal sector, which is mostly populated by small firms. The National Industrial Policy of Jamaica recognizes the importance of the SME sector and stresses its strengthening to support economic growth. In 2001 the Ministry of Commerce, Industry and Technology in Jamaica launched the ‘Production Train’, a promotion programme targeting micro

and small enterprises. According to the government “the ‘Production Train’ is intended to stimulate and motivate persons to pursue entrepreneurial activities in micro enterprises as a means of generating jobs and income distribution through self-employment” (GOJ 2001:1). This shows that the Government of Jamaica (GOJ) is committed to providing continued support for micro and small enterprises. This has been done through programmes that facilitate entrepreneurial development by the provision of financial and non-financial services including policy interventions and business development services. The year 2000 saw US\$17 million disbursed to the sector, 70 percent of which came from government related sources (GOJ, 2001). In 2003 under the MicroFIN project disbursements were made by wholesale financial institutions to SMEs in 2003 to the tune of US\$15.6 million compared with US\$13 million in 2002. The Government seeks to diversify the range of financing options available to the sector. The strategy is to secure financial resources through multi-lateral and bi-lateral agencies with the aim of facilitating capacity building and improve entrepreneurial skills in an effort to improve efficiency and productivity throughout the sector.

Jamaica currently has the only technology business incubator in the Caribbean region in the form of the Technology Innovation Centre (TIC). TIC houses start-up technology firms and provides office space, equipment, advisory services and business management skills development. Business incubators can be catalytic to the SME sector in countries like Jamaica, where innovators and entrepreneurs have difficulties getting credit from main stream banks and venture capital funding is minimal or limited. Other institutional support for SMEs comes via collaborations between government agencies and large private sector companies. In 2005 the Jamaica Promotions Corporation (JAMPRO), which is the government agency responsible for selling Jamaica as a lucrative business location, collaborated with Cable and Wireless Jamaica to launch a web-based business facilitation portal. The purpose of the online service, Caribbean Business Opportunity Service (CBOS) is to match buyers and suppliers within the region in an effort to maximize on opportunities arising from major projects or events (Jamaica Gleaner, 2005). Also, in 2006 JAMPRO opened a new unit, Corporate Finance Broker, to offer financial assistance to SMEs (Jamaica Observer, 2006). A compilation of projects representing initiatives funded by GOJ and other government or agencies is presented in table 1. These projects were initiated to provide a wide-cross section of services to the micro, small and medium enterprises sector ranging from developing business plans to financing business activities. Despite this influx of activities, there is still much to be done to provide a business environment that is conducive to growth in the SME sector, and that facilitates the engagement of e-business among SMEs.

PROGRAMME	PARTICULAR	FUNDING
New Economy Project (NEP)	Demand led technical assistance support project aimed at improving internal and external business environment for SMEs	USAID
Trade Development Project (TDP)	Technical and financial assistance provided to SMEs to increase competitiveness and access international markets	GOJ/EU
Development Bank of Jamaica	Provides loans to small and micro enterprises operating mainly in manufacturing, services and tourism	GOJ
Micro Investment Development Agency	Loan provision to rural micro enterprises in agriculture and vending. Also supports community development enterprises	GOJ/EU
MicroFIN	Credit financing to start-ups and community based enterprises. Also provides training to start-ups in business management	GOJ/GON
Biz Tech Project	Provision of technical support to members of Jamaica Exporters Association by assisting companies to become compliant with industry standards and also with IT training	World Bank
Micro Business Support	Successor to the MicroFIN project established to provide demand led training to micro firms by independent service providers	Reflows from MicroFIN
Private Sector Development Project	Started in 2005 as the successor to TDP, providing business development support via cost-sharing	EU/GOJ
Jamaica Cluster Competitiveness Project (JCCP)	Geared towards SME sector to help companies build collaborative partnerships and increase competitiveness, both locally and internationally	DFID, USAID and GOJ

**Table 1: Support Programmes for SMEs in Jamaica**

## RESEARCH METHODOLOGY

The research arose against the background of the National Strategic Plan for ICT unveiled by the Jamaican government in 2000. A detailed examination of this plan and subsequent implementation via policies and initiatives was undertaken by Thompson and Brown (2007). The case study research strategy was used to undertake the task of exploring the adoption of Internet technologies by Jamaican SMEs. The empirical work was carried out in Jamaica during January – September 2005. An individual company defines a case for this research. Case companies were selected on the criteria that they had participated in a collaborative project funded by GOJ and an international agency. The two projects involved in this research were the New Economy Project (NEP) and the Trade Development Project (TDP). These initiatives were targeted at improving the SME sector in Jamaica and creating a more enabling business environment for SMEs. Although the initiatives were not ICT focused, a number of beneficiaries undertook ICT related activities. Both the NEP and TDP were conceived as demand-led initiatives, eschewing the conventional supply-led model, and instead provided assistance only to companies and government agencies that express a specific demand for services and were able to contribute cash or equivalent as partial payment for technical assistance or training. On average organizations participating in the NEP received funding between US\$100,000 and US\$200,000. During the life of the NEP 52 projects were carried out with a number of public and private sector companies, as well as professional and industry associations. The broad categories of activities included business facilitation for e-government services, implementation of work flow management systems, development of business skills and productivity enhancements as well as increase financial services to the SME sector. Overall persons from over 1,530 SMEs received ICT related training ranging from business productivity software to the use of the Internet (NEP, 2005). In the case of the TDP, over a four-year period US\$6.8 million were disbursed by the project with 4.8 million going to private firms for business development and technical assistance and the other 2 million to service providers such as regulators or industry associations. The period of implementation for NEP was 2000 – 2004 and for the TDP it was 2000 – 2005. Data was collected through in-depth interviews conducted with persons inclusive of case company personnel, government personnel, persons from executing agencies for the specific government/AID initiative and ICT service providers. Triangulation of data was achieved by conducting document analysis of the case company where possible, and using secondary sources of data including websites of the case companies, reports from the project executing agencies and news items. Relevant characteristics about the seven (7) cases examined in the wider study are summarized in table 2 below.

<b>Particulars Company</b>	<b>Core Business Activity</b>	<b>Activities under Government/ AID Initiative</b>	<b>Project/ Funding</b>
Company A	Manufacture aromatherapy products	Redesign and update website, acquire computer software and facilitate participation in overseas trade shows	Trade Development Project /EU & GOJ
Company B	Provides data processing services	Website development and facilitated trade show attendance	Trade Development Project /EU & GOJ
Company C	Manufacture leather products	Improve production efficiency by introducing new technology, establish branding and establishing e-commerce website	Trade Development Project /EU & GOJ
Company D	Provision of loans to micro and small businesses	Acquire and install computer systems	New Economy Project /USAID & GOJ
Company E	Manages companies under the jurisdiction of the Company's Act	Redesign website and add e-commerce capabilities	New Economy Project /USAID & GOJ
Company F	Researches technology that can be used by various industries	Website development, marketing and development	Trade Development Project /EU & GOJ
Company G	Manufacturers of sauces and seasoning	Updating of website and promotion of products	Trade Development Project /EU & GOJ

**Table 2: Summary of Cases used in the research**

## FINDINGS AND DISCUSSION

The experiences of the seven case organizations as they embarked on the adoption of Internet technologies differ but one commonality was the role of change agents in the process. Prior to becoming beneficiaries on the AID project, the individual organizations were at different stages in the diffusion process, two were non-adopters and the other five were at the earliest stage of Internet adoption, in that, all five had Internet access and three had websites. Within the organizations, there were varying degrees of awareness about the Internet and its ability to support the business in terms of growth and brand development. However, for all the adopters it was clear that there was at least one individual at the centre of the push for Internet technology adoption. In the case of the smaller companies where the owners were also the Chief Executive Officers, they were also the person who championed the adoption while for the other organizations; the push came from a senior manager or small group of managers.

The role of the internal change agent was important in all the organizations but the case of Company G exemplifies this the most. In the words of senior manager who pushed for the adoption: *“when we first started to push the concept of the website there were some partners who were against it, maybe because of lack of exposure. I can still remember saying that on our labels which were being redesigned, in about 1997 I can remember saying leave space on the labels for our website address and people were saying to me what the hell do we need that for”*. Although it was an uphill battle internally, Company G became one of the first SMEs in Jamaica to offer e-commerce. It emerged from the cases that at different phases in the adoption process, the role of the internal change agent evolved; where initially it was one of bringing awareness through information sharing, as the process continued, the role became one in which the change agent was more a facilitator in terms of capacity and competency building within the organization.

Change agent intervention becomes more catalytic when the role of external change agents in the Internet technology adoption process of these cases is examined. Prior to their participation in the initiative, two of the companies were non-adopters while five of the companies had Internet access, mostly through dial-up modems. However, things changed after they became a project beneficiary, and the use of Internet technologies within the organizations became more advanced and streamlined as a consequence of their involvement with the AID project. In the first instance, all the companies adopted broadband technology whereas their previous connection was via a low speed dial-up modem. This demonstrates a 100 percent penetration of broadband among the case companies with the latest estimation of broadband penetration in Jamaica being 6 percent. The impact of the AID initiative is quite obvious here. Another outcome relates to the implementation of Internet technology within the companies in terms of its widespread access and use. Among the cases the adoption of broadband led to the rollout of Internet access within the company.

In terms of the complexity of e-business engagement activities, the companies have increased their use in terms of sophistication. Using the e-business classification of Brown and Lockett (2001), where activities such as email and Internet access are characterized as low complexity, and e-commerce (buying and selling online) is classified as medium complexity, nature of e-business engagement within all the organizations changed. From an internal perspective, that is, use of the Internet from within the companies, they are now engaging in other activities such as electronic banking, remote access and setting up Intranets, whereas previously email was the most predominant activity. Ultimately, the indications are that involvement in the AID initiatives resulted in increased e-business activities by the case companies, and the significant changes of their internal ICT environment and infrastructures post the initiative is important. Although there were various reasons, such as business growth, that motivated the engagement in e-business by the case companies, the further and continued adoption of Internet technologies were catalyzed by the external change agents. These include project implementing agencies, technical consultants and solution providers whose roles were financial providers through subsidies, technical assistance, knowledge disseminators, collaborators, e-commerce facilitators and e-commerce solution providers proved pivotal in the perceptions of the organizations regarding how the use of Internet technologies could support their businesses.

Constraints on financial resources and lack of in-house technical skills have been articulated as two of the barriers to SMEs with regards to ICT adoption (Thong 1999; Chwelos, Benbasat and Dexter 2002), therefore the fact that all seven case companies cited the financial assistance received under the AID project as one of the main benefits and support for their e-business engagement is not surprising. All the organizations benefited tremendously from the financial assistance received from the AID projects. It is more apt to say that instead of subsidies, the SMEs needed direct funding of activities involved in the adoption process. It is obvious that for companies to engage in more complex e-business activities financial support through these initiatives are needed. According to the Owner/Manager of Company A *“the benefit was mainly financial...the completion of TDP means we have to bear financial burdens of further activities and this has implications for the length of time it will take to get there”*. The following quote from a Manager at Company F cemented the importance of financial assistance to SMEs for the adoption of ICT *“if TDP had not provided the funding..we would not have gotten a website”*. The other activities performed by the external change agents that the organizations found beneficial were the provision of

technical assistance and e-commerce facilitation through knowledge dissemination. The most significant impact was the fact that through the consultants provided, the case companies were able to identify how Internet technology adoption could support the achievement of their various goals. Also, the knowledge from the experts helped implementation and further engagement in more complex e-business activities. In the words of the IT Manager for Company E “*NEP gave technical assistance..legal and e-commerce specialists to identify those documents that could be accepted without signatures....allowed for the filing of certain documents online*”. In fact the perceptions of the business value of Internet technologies changed, an examination of Internet adoption patterns among the cases revealed that the SMEs associated more strategic value to their adoption and use of the Internet post participation in the AID project.

## CONCLUSION

This paper has discussed the value of change agent intervention in the adoption of Internet technologies process of SMEs in Jamaica. The experiences of the seven case companies discussed have shown that their participation in one of the two the AID projects examined had significant and positive effects on their engagement in e-business activities. Not only does the external change agent in this case provide valuable resources, their presence also mitigates some of the risks associated with ICT adoption that would otherwise be faced by these SMEs. Prior to becoming a beneficiary under the AID initiative, four of the cases had undertaken unplanned Internet adoption with little or no business value attached to its use. This changed for all but one after the completion of their relationship with the AID project, thereafter further implementation of Internet technologies were planned and there were higher levels of perception about the business value of the Internet. In particular, evidences from their adoption and implementation of Internet technologies elevate the impact of their involvement in the AID initiative. The indications are that for these SMEs the initial adoption of the Internet meant engaging in low complexity activities such as using email but further engagement in more complex activities was a consequence of participation in the AID project. This is highly significant when set against the history of low engagement by SMEs in complex e-business activities.

When looking at ICT adoption by SMEs in developing countries, which functions within the ambit of AID projects, it is clearly obvious that these projects are well placed to perform the role of change agents. The seven cases in this paper are examples. In fact it becomes even more applicable when assessed against the fact that in 2007 a survey by the Central Information Technology Office in Jamaica found that of 150 SMEs, 27 had websites but only 4 offered e-commerce. From this perspective it may be easier to appreciate the value of the external change agent roles in the diffusion of Internet technology to the cases. On a cautionary note, it is important that external change agents, such as implementing agencies and consultants on AID projects are not prescriptive. Rather, the organizations should be encouraged to own the adoption process and ICT adoption should be embedded in activities aimed at achieving the business goals. In other words, the traditional approach of supply-led initiatives does not always have positive outcomes because often the organization may not be able sustain the adoption. It is more fruitful to have demand driven initiatives where the organizations take full ownership of any activity undertaken. **As with any research, there are obvious limitations to this study however these do not detract from the valuable and practical insights gained from the cases. Future research could involve undertaking a multiple developing country survey of SMEs utilizing constructs from the current study with a view to creating a generalized model.**

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