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Bridging knowledge divides: internet-based academic research in Saudi Arabia

M. Ali
London School of Economic, m.m.ali@lse.ac.uk

BRIDGING KNOWLEDGE DIVIDES: INTERNET-BASED ACADEMIC RESEARCH IN SAUDI ARABIA

Ali, Maryam, London School of Economics, Houghton Street, London WC2A 2AE, United Kingdom, m.m.ali@lse.ac.uk.

Abstract

Information Technology is commonly referred to as a powerful tool which can provide many opportunities for developing countries. It is seen in particular as a prime enabler for many societies to become 'knowledge societies', and to integrate into the 'global economy .In Saudi Arabia, government authorities as well as academics and their institutions have very positive attitudes towards the importance of technology for development. These attitudes, alongside economic prosperity, have helped make these technologies widely available. This paper looks at the extent to which access to electronic journals has empowered the Saudi academic community in their research. This question is explored through the use of qualitative research methods. Data was collected through interviews and further interpreted using the theory of institutionalism. The findings suggest that the majority of academics in Saudi Arabia resist using electronic journals for their research because they are sceptical of this new method of research. Further, they believe that it cannot replace traditional means of research, and they call for the localization of knowledge and resources. Furthermore, their limited engagement with ICTs for academic research has been shaped by various contextual constraints of Saudi Arabian educational institutions, including the perceived role of such institutions – as places of instruction rather than research.

Key Words: Information Communication Technologies (ICTs), Electronic Resources, Academic Research, Digital Divide, Developing Countries, and Institutionalism

1. INTRODUCTION

The ongoing debate about the digital divide argues for the Internet's ability to bridge the 'knowledge divide' between developed and less developed countries by enabling wider access to otherwise scarce educational and informational resources (UN 2000). However, limited empirical evidence has indicated that the Internet alone is capable of bridging such developmental gaps (Mansell 2002).

The ability to access and use Information Communication Technologies (ICTs) effectively for desirable socio-economic effects depends on political, economic, institutional, and linguistic conditions (Avgerou 2005). Some have even pointed to a strong relationship between the importance of ICTs and resources that allow people to make use of it (Warschauer 2003). Further, recent research in the field of Information Systems argues for the significance of the social embedding of ICT innovation (Madon 2000), where social influences like a priori beliefs and attitudes act as obstacles for users to realize the potential benefits rising from the application of the technology.

This paper intends to make an empirical contribution to address this area based on primary research. It poses the question: To what extent does the Internet empower academic research in Saudi Arabia?

This question is explored as follows: first, important literature is reviewed on issues of ICT implementation in developing countries and the underlying views on its ability to bridge knowledge divides for improved academic research. This is followed by a description of the methodology used for the empirical study, and the conceptual framework as well as theory used to interpret the research findings. The paper then describes the main findings, followed by the analysis of the empirical research data, and a summary of the key contributions of this research. Finally, recommendations are suggested for future research in this complex field of the social and political contexts of ICT use and development.

2. LITERATURE REVIEW AND METHODOLOGY

The interest in this research topic has evolved due to an earlier concern with limited academic research contributions from developing countries. The following is a summary of important literature on IT and development, academic research in Developing Countries (DCs), and issues related to the surrounding evaluation of electronic resources. The methodology used for the empirical research is described after that, and then an overview of the conceptual framework used to interpret the case study findings is given.

2.1 Literature Review

Scholars and policy makers have expressed their concern about the growing gap in Information Technology diffusion between rich and poor countries, and in particular Internet access. Since the mid-1990s, the term 'digital divide' reached popularity as a method of describing this growing gap (Wallsten 2004). It also refers to similar inequalities within a country.

The essence of the concern about the digital divide is that while low incomes cause low IT penetration, low penetration may also perpetuate low incomes (Wallsten 2004). Egglestone et al. (2002) argue for IT's importance in creating efficient markets, Carmel (2003) discusses the prospects of software outsourcing to DCs, Mansell and Wehn (1998) refer to IT as 'strategic national infrastructure', and Madon (2000) advocates IT as a promoter of positive socio-economic development in DCs. Further, Castells (1999) and Jacobson (1998) believe that education, and academic research in particular are at the heart of development initiatives for DCs. The Internet is acknowledged as a vital tool for overcoming the knowledge divide between Industrialised Countries (ICs) and DCs.

However, the literature on ICTs for development also reveals many sceptical views about ICTs. Wade (2002) is pessimistic about the way ICTs are being oversold to DCs as if they can help them 'leapfrog' over common developmental problems. Many argue that ICTs can actually be a cause of divergence away from developmental goals because they do not necessarily suit the context of DCs (Davison et al. 2000, Heeks and Kenny 2002, Avgerou 1998).

The view that IT can bridge developmental gaps is commonly referred to in the IS literature as 'technology determinism', where technology acts as a 'cause', and a better world condition is thought to be a definite 'effect'. This is also cited as the 'tool-and-effect' association (Avgerou 2003). In rejecting 'technology determinism', the IS literature emphasizes the importance of social factors, shaped by distinctive social, economic, and political domains inherent in every culture, which play a major role in determining the success or failure of IT initiatives (Madon 1993, Avgerou and Walsham 2000, Sahay 2000).

The IS Management literature is also critical of IT failures (see, for example, Angell and Smithson 1991). One area of concern has been the Productivity Paradox, an issue that emerged because of the sharp drop in productivity that coincided with the rapid increase in the use of IT. A number of frameworks have been proposed to understand these failures, of which two relate IS failure to the social and organizational context: Lyytinen and Hirschheim's 'Expectation Failure' model, and Sauer's 'Termination Failure' model (Beynon-Davis 1995).

We now turn to literature relevant to the issue of the gap between ICs and DCs in academic research, which has many important implications.

The relationship between academic research and a country's economic, social, environmental, and cultural performance is an important one (Bergman 1990, Jaffe 2000). Unlike academic research in ICs, which is held in high regard and is given priority and attention by governments, economists, and policy makers, the participation of many DCs in academic research remains limited (Davison *et al.* 2000).

The widening gap between research from ICs and DCs (Gibbs 1995, Goldemberg 1998) is attributed to many perceived incompatibilities between cultures and technologies, as well as the problematic issues of ownership, sustainability, and development of national research capacity, which are rarely addressed and need more serious consideration in DCs. Scholars have matched the shortcomings of research outcomes in DCs with low levels of literacy, resources shortages, limited expertise, poor socio-economic conditions, and insufficient infrastructure, policies, funding and regulations (Dunn 1982, Eisemon and Davis 1991, Bada *et al.* 2003, Okunoye *et al.* 2005).

Another important topic addressed in the literature is that of indexing. Much of the research output from DCs that is published locally is not indexed into international indexes, creating a certain level of isolation for all researchers (Mbarica *et al.* 2005).

Low levels of indexing may also be attributed to the difference in the lines of research interests between DCs and ICs. Because scholars in DCs try to explore issues that relate to their local context, this causes their publications to be classified by ICs as non-mainstream and may also rank low in terms of quality. As a consequence, DCs research is not publicised, and no demand is made for it, which lowers the profile of research in DCs and halts the flow of information both from and into DCs. With less awareness, opportunities for funding decrease and the vitality of research and development diminishes (Nwagwu 2005).

Some of these issues have made many optimistic of the Internet's ability to empower DC academics in their research, by allowing access to research from both DCs and ICs, unlimited by time, or place. However, others point at some problems associated with such resources, which we evaluate next.

Williams and Nicholas (2001), for example, found that in many countries, well known Internet features like seamlessness, currency, global reach, egalitarianism, comprehensiveness, and interactivity were questionable, either for reasons of limited technical skills, or restricted connectivity due to poor infrastructure. They also pointed to the problems of information overload as a result of access to infinite quantities of information, limiting people's ability to process it efficiently and effectively.

Bolt and Crawford (2000) have shown that Internet use, and educational technologies in general, are only as good as the teachers who use them. While the Internet makes it possible to access vast amounts of information, there is a danger of neglecting the traditional values inherent in the academic model like sound grounding in a field's theoretical and philosophical position.

The Internet has generated a need for critical analysis of content to discern the nuances of excellent research (Fielden 2000). In addition, Beller (1997) suggests that the Internet itself is not enough. Instead, it is how it is used to exploit information in support of a university's mission that counts.

2.2 Conceptual Framework

This research adapts an interpretive research methodology that allows for the understanding of inherent cultural as well as social processes that shape the underlying attitudes and beliefs of a community towards a technology in its local context and social setting without imposing a priori constructs (Avgerou 1989, Madon 1993, Orlikowski and Baroudi 1991, Pattigrew 1985, Walsham 1993). Taking this interpretive stance also prevents loss of valuable information within the case study setting.

The epistemological foundation of this paper was built on the current view in the IS field that critiques the notion of importing so-called 'best practices' from one context and fitting them into another (Mansell 1999). It follows the cautious IS literature in avoiding technology deterministic ideas and discourages technology-led IS practice. It acknowledges the importance of human behaviour in the adaptation and implementation of any practice (Avgerou 1998, Ciborra 1996), including the adoption of modern technology and the development of approaches to using it within institutions.

This research also realizes the need to consider social as well as institutional aspects of both the global as well as the local context of organizations in order to understand cases of IS innovation (Knights *et al.* 1997) and further adapts the theory of Institutionalism. Institutionalism allows us to examine how broad social and historical influences, and both explicit laws and implicit cultural understandings, shape and are shaped by the actions of organizations. People in an organization are bounded by the web of values, norms, rules, and beliefs they create. Institutionalism is counter to organizational theory, which treats organizational actors as 'rational' (Avgerou 2002, Powell and DiMaggio 1991). It advocates the importance of simultaneously understanding "…the social dynamics of human agency as embedded in institutional contexts as well as the constraints and affordances of technologies as material systems" (Orlikowski and Barley 2001).

The initial research questions explored is: to what extent has the Internet empowered academic research in Saudi Arabia, and what underlying attitudes and beliefs exist towards Internet-based academic research. In the light of the issues presented in the reviewed literature, this research also aims at unfolding the reasons that helped shape and institutionalize these views.

2.3 Research Methodology

The methodology chosen for this research was semi-structured interviews. This method was chosen to allow for a slight altering and tailoring of questions and to permit interviewees to reflect on their personal experience with technology and to explain their interpretations of events. The interviews were based on a

broad list of relevant issues as well as topics that could extract underlying attitudes and beliefs shared by participants.

Academics actively involved in research in the fields of Business Studies, Management of Information Systems and/or Technology, and Education were first sought in Saudi Arabia's main universities and institutions. A list of twenty-seven possible study participants was created, and each was contacted by email or telephone. Nine of these responded positively, which formed the sample for the empirical research. Respondents came from two private institutions (Dar AlHekma College, and Effat College) and four public universities (King Abdulaziz University, King Fahd University, King Saud University, and Taybah University), dispersed in the country's three main regions (Najd, AlHijaz, and AlShargiyah). The academics came from the following disciplines: three from management of IS/IT, two from Education, and four from Business studies.

Empirical research was conducted between the months of July and August, 2005. Many of the interpretations were formulated and further shaped by personal observations while I visited the various institutions, in addition to background information collected from various supplementary documents and institution websites, and from the many informal conversations with other university members, which ultimately affected the research interpretations. Both recordings as well as handwritten notes were kept for interviews, which were used for the subsequent analysis.

3. FINDINGS

The following findings deal in particular with motivational constraints for conducting research, resistance to using technology, and the various institutional influences that had shaped the views of Saudi academics towards using electronic journals via the Internet for their academic research.

3.1 Limited Motivation for Research

The majority of respondents believed that academic research was essential and very important for the country's well being and future economic prosperity, as well as its world position. One respondent remarked that it allowed Saudi Arabia to become self-sufficient and stop relying on 'Western' importation of knowledge, and it was essential for the country to overcome its developmental status as a DC and to progress to IC status.

But a surprising and rather interesting finding was that although the majority of the academic community seemed to agree that academic research engagement was important, a majority of respondent's engagement in both regular academic research and especially accessing electronic journals via the Internet was limited. Some respondents were very much engaged in regular research (i.e. from printed journals and books) but completely avoided using electronic resources, even though a wider variety of resources were available electronically then those that were paper-base. The reasons for low engagement were two fold.

First, respondents from private institutions argued that since research activity was not directly linked to faculty evaluation and promotion criteria, they were not motivated to constantly conduct research. On the contrary, participants from public institutions which have promotion systems directly linked with research activity found the system of applying for research grants as well as promotion unclear and too difficult to pursue. A professor described it as 'bureaucratic'. She explained that to get research papers accepted, one had to deal with a lot of regulations, there were too many hierarchical levels, the process took a very long time, and outcomes were often based on unclear criteria. A final remark was that sometimes academic

papers would get published in international journals and yet the researcher's institution would not accept it for one of the university's journals. Without this acceptance, the research would not be counted as a submission towards the attainment of a promotion. It was noted that organizational politics often played an important role in the acceptance of a research paper.

The second reason that the majority of respondents believed to be a reason for their low motivation for research was their overload with teaching responsibilities. They argued that their institutions valued 'teaching' much more than they appreciated 'research'. They were usually given twelve to fifteen teaching hours per week, which gave them limited time for extra research. This had diverted them from their interests in being involved in extra research in their specialized fields. One academic pointed out that higher education institutions in Saudi Arabia were more teaching oriented, than research-oriented. He said this may be because they are relatively 'young' institutions, which may ultimately become more research-oriented as they mature over time.

3.2 Resistance to Using Technology

The tendency to avoid using electronic journals via the Internet for academic research was highlighted by three issues: a generation gap; limited technical skills; and language barriers.

Older faculty, specifically those who had completed their doctorates before the provision of the Internet in the country, felt that the demands made by their institutions to use the Internet to access and use electronic resources for research were overwhelming. A few academics were sceptic about the quality of the degrees that many new graduates obtain, using the Internet heavily for their research. They questioned the legitimacy of research carried out on the Internet, and de-valued it when compared to the hardship they encountered as students using printed books. They preferred their traditional methods of research, which was from printed books and journals, relying on the use of the library, rather than electronic resources, like e-books and electronic versions of journals. Some insisted that they trusted a source when it was printed as a hard-copy publication more than they did when they printed it themselves from the Internet.

A second issue was technical skills. A number of faculty members resisted using electronic resources partly because of their poor technical skills on using basic computer applications. Also, they had limited experience and training in using the Internet, limited knowledge on how to use electronic resources, and an overall avoidance to use computers for anything more than basic e-mail applications. A few respondents argued that in their institutions very few, and mostly unsuitable, training sessions were held.

In addition, a number of respondents, especially older ones, complained that language was a major barrier for them in using the Internet. One mentioned the 'danger' of using English sources, because it will cause the Arabic language to become abandoned.

3.3 Institutional Influences

A number of shared beliefs and attitudes were present among many of the academics interviewed, which are important for an accurate interpretation of the findings.

There was a common negative attitude towards using this 'new' technology for research, as well as conducting research using 'Western' journals. Respondents did not think this 'new' technology could replace older proven methods of research.

A second view was that 'good' academic research is not only determined by access to 'good' resources, and rather a more complex web of knowledge was needed for quality research engagement. This view was supported by an interviewee who observed that users need training, not only on how to use the Internet to access electronic journals efficiently, but also on how to use these journal articles effectively. They concluded that there was a need to realize where current knowledge in a particular field is, what is considered a 'good' research contribution, and which authors are most cited as pioneers in a given field, in addition to the importance of the basic tenets of academia like research ability, comprehension, writing style, and the ability to make strong, well-rooted arguments.

A gender-related problem was prevalent as well. A few female academics believed that there was a 'glass ceiling' for female promotions, which was enforced by wider government regulation in both job positions and academic fields available for females. An example is that there are no schools of engineering for females students, and there the dean of an entire university cannot be a female These factors were also closely related to Saudi Arabia's national culture, which an interviewee described as encouraging females to consider their jobs as a secondary priority to their 'primary' duties as mothers and wives.

Another contextual constitute was national politics. It was believed that in many instances, academics were not promoted to critical positions, due to wider political inspirations, like avoiding the allocation of power to particular social groups, and certain religious sects. This was the case with one academic who was recognized as a main founder of the MIS department in his institution, and had published internationally, and yet he was never promoted to higher positions, while others with lower academic credentials were.

Further, it is also important to point out that many private institutions indicated that they were obliged by the Saudi Ministry of Higher Education to make such technologies, like the Internet and electronic journals available. Otherwise, their institutions would not become accredited by such powerful bodies. In addition, they seemed to agree with policies that promoted the use of technology, often referring to the fact that this is the method used in the US and the UK, so it is the 'best' method.

The findings can be summarized in the following points:

1. There is a 'technology deterministic' view of IT and ICT. This was first imposed by the Ministry of Higher Education, and by the management of the various institutions. They promoted expenditure on these facilities, made them prerequisites for accreditation, and imputed much value to them.

2. The technology was abandoned and resisted due to many organizational as well as national cultural constraints, in addition to a number of shared views about the duties and roles of these academics as mainly 'teachers' rather than 'researchers'.

3. The technology failed to empower academics, it did not make their research more efficient or more effective, and was largely neglected.

The following presents an interpretation of these findings in light of the reviewed literature and in terms of the theory of institutionalism.

4. ANALYSIS

The empirical case study has led to a number of interesting and unexpected results, which are analysed next, reflecting on relative debates from the reviewed literature, and conceptualizing the results in the light of the proposed framework.

The findings of this research suggest that the social order and organizational as well as national politics have shaped the way Saudi academics view technology. Saudi authorities, as well as managers of universities have a 'technology deterministic' view, they believe that having access to 'good' resources will promote higher educational quality. They have imbued the academics at large that work for them with similar views, so that they have not thought how the technology may best be used in the country's distinctive context.

The research sadly uncovered the problem of limited effects of the various electronic resources on research output, amid the very high relative costs that they incur. For various cultural as well as institutional factors, these academics appeared to resist the use of this technology.

The apparent reason for this resistance is the limited engagement of the majority of Saudi academics in academic research, which continues to below today for various reasons: they share certain social norms and attitudes about their institution's appreciation of their academic work, the process of promotion being inherently complex, and the strong influence of politics on work processes.

Taking into account the institutional characteristics of the context of these higher education institutions recalls Avgerou's case study on a social security service in Greece, where she emphasised the occurring problem of user resistance (Avgerou 2002a). Similar patterns of behaviour were observed here: the various public sector university academics felt inferior and uninspired in their work due to existing dysfunctional bureaucratic procedures, making their work processes too complex. Others identified obstacles such as minimal technical know-how, time constraints, and language barriers are clearly minor factors that have also contributed to the process that has prevented the efficient use of these technologies. It also coincides with the research of Madon (1993), who found that social factors had hindered the realization of the benefits of a computer based information system in India.

This research also encountered events of unfolding obstacles and IT failures (Avgerou 2002a, Angell and Smithson 1991). The forms of resistance that occurred fit well with the model of IS failure outlined by Lyytinen and Hierchheim in 1978. We can clearly consider the education management's initiatives to have failed to meet their objectives of enhancing research quality and output. The costs of ICTs incurred continue to be very high (estimated in one institute to be 20 to 25 per cent of their annual budget). The new system also constitutes an interaction failure, since the majority of academics hardly use the facilities.

There is a highly rational view of technology and a belief that it is a 'neutral technical artefact' (Klein and Hirschheim 1983), which was instilled by management, and followed by academics. Further, many social constraints that had existed far before the technology was implemented had affected the way the academics viewed this technology, and therefore their interaction with it.

Finally, it is worth observing the strong relationship between the attitudes and beliefs that have been institutionalised in Saudi Arabia's academics with the effect of various social factors that surround them, like gender constraints, government regulation, and a drive for nationalism. These beliefs and experiences may have made most of the respondents argue in favour of the technology, even though in practice, they remained sceptical of the benefits they could obtain form its use.

The research also reflects on Madon's study on the importance of the Internet in bridging knowledge divides (Madon 2000). She outlined three areas where government policies need to intervene to allow for greater benefit of technology, namely, creating knowledge, disseminating knowledge, and human resource

development. Developing knowledge locally, or 'indigenous knowledge', is fundamental for Saudi Arabia to overcome many language obstacles, as well as for the future transformation of its society. The wide spread beliefs in 'best practices', and importation of knowledge, made it difficult to develop indigenous knowledge systems, which resulted in much resistance from certain groups of academics.

Saudi Arabia was able to create support for dissemination of externally generated knowledge, although Internally generated knowledge is scarce and only occasionally indexed. A third area for government policy intervention is needed here, which is training. Training users appeared to be crucially needed in order for Saudis to make conceptual shifts to the Internet. National priorities for education must rise above simplistic importation of facilities, and they must build on existing capabilities and structures (Mansell 1999). The current strategies have given too little consideration to the plight of problems that already exist in the academic community, and they failed to build upon existing strengths in the local environment (Madon 1993, Avgerou and Walsham 2000, Sahay and Walsham 1997).

5. CONCLUSIONS

5.1 Key Contributions

> "*As the global economy is gradually transforming to a knowledge economy and with the reality of globalization, the role of ICTs continues to gain more significance". "... education, information, science, and technology become the critical source of value creation in the Internet-based economy"* (Castells 1996, 2001).

With the recent hype about ICTs, many instances of quick and unplanned decisions are being made, which have critical consequences. Poor countries are in a rush to bridge their digital divides. Richer countries, like Saudi Arabia, are fast in importing new technologies, but the degree to which any divide has been bridged, is arguable.

This research aimed at examining, through empirical research, the extent to which the Internet and other electronic resources have empowered academic research in Saudi Arabia. The results that were encountered were unexpected, and surprising.

Academics were not benefiting from the efforts made by their organizations to bridge knowledge gaps, and access to international resources did not increase the efficiency, effectiveness, nor the quality of their research, as was speculated by Cornford and Pollock (2002), Jacobson (1998), and many more. Instead, their reaction to the technology provided was rejection and resistance.

Academics had a number of common beliefs and attitudes towards the technology that were shaped by their social context. Various governmental regulations, political powers, and organizational values and norms had instilled a 'technology deterministic' view in the academics, making them argue for its importance. However, other underlying cultural norms, widely formulated through country-wide regulations and politics had made these academics also drift away from using the technology. Saudi academics were trained to think of their intuitions as 'teaching' rather than 'research' institutions. A number of additional problems occurred during the use of these technologies, of which the most important was resource evaluation.

By encouraging effective research through electronic journals accessed via the Internet, and focusing on the needs of their users, Saudi universities and researchers can take a more active role in shaping the future of the Internet, thereby making it more suited for the local needs of these researchers. This will help foster a greater appreciation and understanding of the research capabilities of the Internet, it will improve search

results, increase the demand for quality material online and through an understanding of user behavior, it may reduce the risk of investing in a technology which is not context friendly (Foster 2000).

5.2 Recommendations for Future Research

As the quest to bridge the digital divide in developing countries continues, it becomes increasingly necessary for academics to understand, through empirical research, the reasons that are hindering the efficient and effective use of IT.

This research aimed to examine the extent to which access to electronic journals via the Internet has empowered academics in Saudi Arabia. After having reached these observations, it would be interesting to see how these attitudes change over time (perhaps with a new generation of students and academics), what new attitudes evolve if some of the recommendations are implemented and if educational institutions change their approaches to IT/IS-use with regard to research. A further longitudinal research of this case study or another one would demonstrate many interesting aspects of the sociology of human and technological interaction. Further, a study on Internet-based research behaviour of students at undergraduate level, or a study specifically focusing on gender would be interesting to explore. A final and important suggestion is to study the politics that surround higher education research in the world, and in particular, in developing countries.

While the IS industry is generally good at suggesting 'appropriate' frameworks to prevent failure, it is poor in supplying empirical evidence that can support these proposals. This research hopes to encourage more empirical research on the link between ICT implementation and education prosperity in developing countries.

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