

# DEBUNKING THE OPTIMISTS: AN EVALUATION OF CONVENTIONAL WISDOM ABOUT THE DIGITAL DIVIDE AND E-GOVERNMENT IN THE BRITISH ISLES

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## **Abstract**

*The 'digital divide', which is defined as the gap that exists between those with and those without access to the Internet, (i.e. the digital 'haves' and 'have nots') has been widely debated. The main protagonists are split broadly into two groups, the technology 'optimists' and the technology 'pessimists'. Conventional wisdom is represented by the optimists' view that the divide is caused by barriers to Internet connectivity such as low levels of education, income and technology proliferation. The pessimists disagree and hold that the significant government funds being used to address these barriers are misdirected. This paper reports on a study in the Isle of Man (IOM) to evaluate the validity of the optimistic position. As a microcosm of the UK, the IOM was found to be generally reflective of it with similar e-Government programmes and income levels, but having better levels of education and social stability. Based on these key factors, the IOM should be characterized by a higher or similar level of Internet connectivity to the UK: if the 'optimists' are right! There was a diametrically opposite finding however, represented by the IOM trailing the UK connectivity level by a significant 12% to 14%. This unexpected outcome could constitute a dilemma for many Governments in wondering if the significant monies being spent on e-Government and the challenge of the digital divide qualifies as wise investment or optimistic folly.*

*Keywords: Digital divide, e-Government, Internet connectivity, IOM, UK*

## **2. INTRODUCTION**

The advent of universal access to the Internet, especially over the last decade, has generated widespread prosperity and growth, as well as giving rise to a number of accompanying issues. One issue in particular, that of the 'digital divide', has been the subject of controversy and debate from varying perspectives, geographies and contexts by some of the world's leading academics. The debate about this 'divide', which is generally described as the gap that exists between those with and without Internet access, (the information 'haves' and 'have nots'), is dominated by two opposing groups, known collectively as the 'optimists' and the 'pessimists'. The naming of the protagonists in the debate is credited to Lentz, (2000, pp 359 and 366), when he quoted Katz and Aspen, who said that 'in addition to technology optimists, there are also technology pessimists, who believe that at best cyberspace can only create a useless pseudo-community'. A typical technology pessimist is Powell (2002), who maintained that the position of the 'optimists' applied in the mid-nineties, when the Internet was only a few years old as a popular medium and personal computers cost thousands of dollars. He concludes that today however, 'with dirt-cheap Internet access and computers approaching the cost of television sets, assertions of a digital divide or racial ravine are as correct as identifying Joe Namath as football's current MVP, or pinning last week's Dow at 1000. Misled by stereotypes, misinformed about survey techniques and misdirected by interest groups, the media have treated the digital divide as a crisis requiring Government intervention. As a result, *billions of dollars* might be spent to address needs that no longer exist'.

A more conventional wisdom is professed by the 'optimists' who maintain that the digital divide is a real and addressable societal problem, especially for Government, because it results from barriers to Internet connectivity such as low levels of education, income and access to technology. Other

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examples of the optimistic side of the debate include James (2000, p 385) who said that: 'the single most pervasive theme of the twenty-first century has already been decided. It is the digital divide and whether it can be bridged'. In a similar vein, Techeschlok (2001), quotes the Gartner Group CEO, Michael Fleischer's statement that 'the Internet is so pervasive that not having access to the technology or not knowing how to use it will be the equivalent of not knowing how to read or write'.

The divide is a high priority for many Governments, given the importance of making the Internet accessible to allow communities full participation in communication systems, education, employment and other economic opportunities, regardless of their physical capacity. (Cullen, 2001, p314). Judging by their statements and actions, policy makers, i.e. Governments and their leadership, possibly responding to these and similar optimistic opinions held by leading academics and experts in the field, mostly reflect the view that the digital divide is indeed a fundamental problem in society which can and must be addressed.

The importance which resolving this issue has for national leadership is highlighted, again by Lentz, (p 368), who described how in 1999 President Clinton issued an executive memorandum making closing the digital divide a primary goal of Federal Government. He also announced the 'Digital Opportunity' programme with accompanying budget requests of \$2 billion in tax incentives to encourage the private sector to make computer donations and \$380 million for public private partnerships.

European leadership has been no less committed to resolving the problem as evidenced by the EU initiative *e-Europe*, the implementation of which would represent an information society for all, including a social vision where there is place for users and Government online. (Cullen, 2001). This initiative formally set the scene for Europe in common with the US for the enactment of enabling legislation and the allocation of funds by Government in order to fulfil a common vision. One of the most evident results of these initiatives, which constitutes a central theme for contemporary governmental activities in most post-industrial societies such as the UK, is the role of the existent and ongoing implementation of e-Government programmes and policies.

The role of e-Government generally refers to the delivery and administration of Government products and services over an IT infrastructure, such as the provision of information electronically using Internet portals, online tax assessment and electronic voting. The use of e-Government as part of the approach to governance incorporates many benefits, especially:

- Citizen empowerment through the provision of convenient and direct communication channels which facilitate greater public participation and interaction with the Government
- The delivery of more effective and efficient Government information and services such as increased speed of transaction, greater convenience and better organization and access to information (Detlor and Finn, 2002, p 101)

The considerable effort and resource invested generally by governments and in particular their e-Government programmes, is either fully justified or a potential waste, depending on which side of the debate about the digital divide proves to be closer to the truth. Evaluating which side of the debate applies, with a particular focus on the pivotal role of e-Government, is the subject of this paper.

In order to avoid the significant time and cost implications of an evaluation based on a large population such as the UK, the approach taken was akin to that of a laboratory experiment. This typically involves looking at a problem in microcosm, under ideal conditions and drawing conclusions which may then be applied to the wider world.

The choice of the Isle of Man (IOM) therefore suited this type of evaluation particularly given the healthy characteristics of its society and economy and the fact that it facilitated the assessment of information at the level of a population while retaining the dimensions of a large representative sample. Its cultural and historical similarities render it almost a perfect microcosm of the UK as evidenced by the number of research and pilot projects undertaken there by UK organisations (Ratner, 2002). In his article in the Economist about Singapore, the 'Internet island site', Symonds (2000), could have been describing the IOM when he said, 'small and rich, with a well rewarded, George Ryder

entrepreneurial civil service and a political leadership with a liking for big strategies, it is an e-Government natural'

A 'pessimist' result from this research could have serious or potentially damning implications for some Governments, including their approach to and expenditure on e-Government. Because of this, in addition to choosing an ideal research location, care has been taken not only to survey a broad spectrum of representative data about the IOM

e-Government programme but also to determine its quality and international pedigree, through comparing it with a recognised benchmark.

### 3. PAPER STRUCTURE

The remainder of this paper is structured as follows:

A description of the IOM economy, demographics and e-Government programme establishes a general context for the subject under investigation.

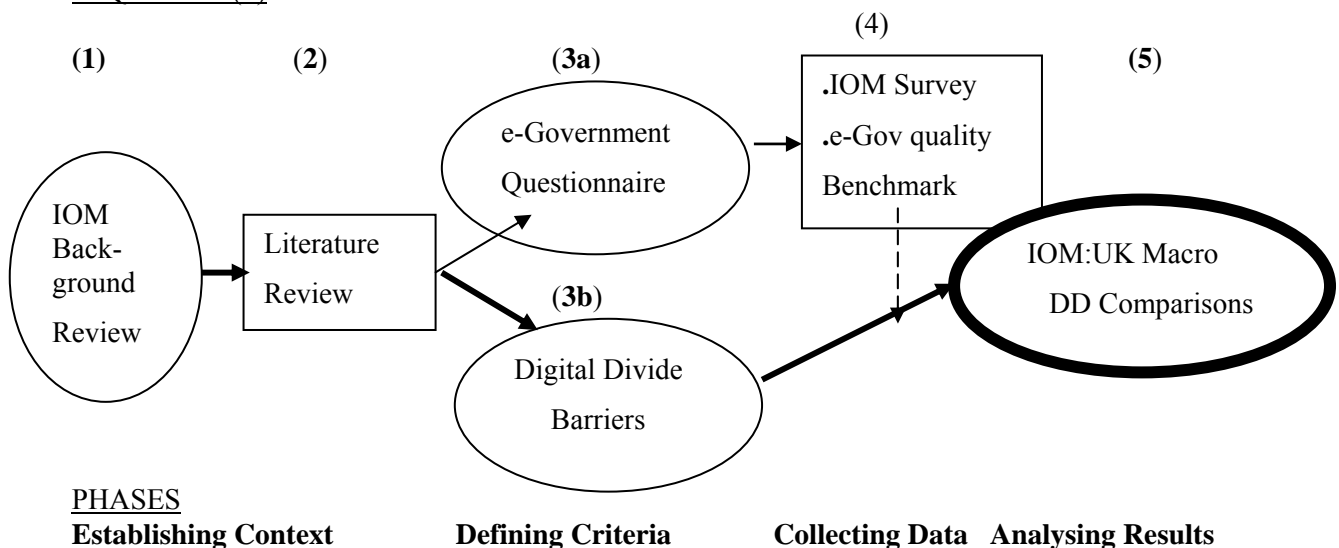
The approach used for collecting data commences with a review of literature, which is split into two sections: e-Government and digital divide related. It is followed by a chapter on 'Methodology' defining the research paradigm and the IOM survey characteristics.

A 'Results' section describes the outcome from the survey of e-Government on the IOM and its quality testing through comparing its characteristics, though clearly not its size and scope, with a similar one carried out in the US Federal Government. A comparison of national level macro data, including Internet connectivity levels, for the IOM and UK reveals the paper's key results.

An 'Analysis and Discussion', section is followed by a concluding chapter which discusses the overall result and its implications.

Diagrammatically, the sequence and phasing of the principal activities upon which this paper is based: are as follows:

SEQUENCE (#)



PHASES

**Establishing Context**

**Defining Criteria**

**Collecting Data**

**Analysing Results**

Figure 1. Paper Structure.

### 3. THE ISLE OF MAN: AN OVERVIEW

#### Background

The IOM, situated in the centre of the British Isles, is an internally self-governing dependent territory of the Crown, with a population of just over 76,000 residents, which is not part of the United Kingdom

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Tynwald, the Island's Parliament, which has claims to be the longest continuous parliamentary assembly in the World, makes its own laws and oversees all internal administration, fiscal and social policies. The Island has a special economic relationship with the European Union which facilitates free trade, but is neither a member or associate member.

### The IOM Economy

The IOM is a politically democratic and socially stable environment, with a prosperous economy. GDP which for 2001 totalled £973 million, breaks down as follows:

#### IOM Analysis of GDP

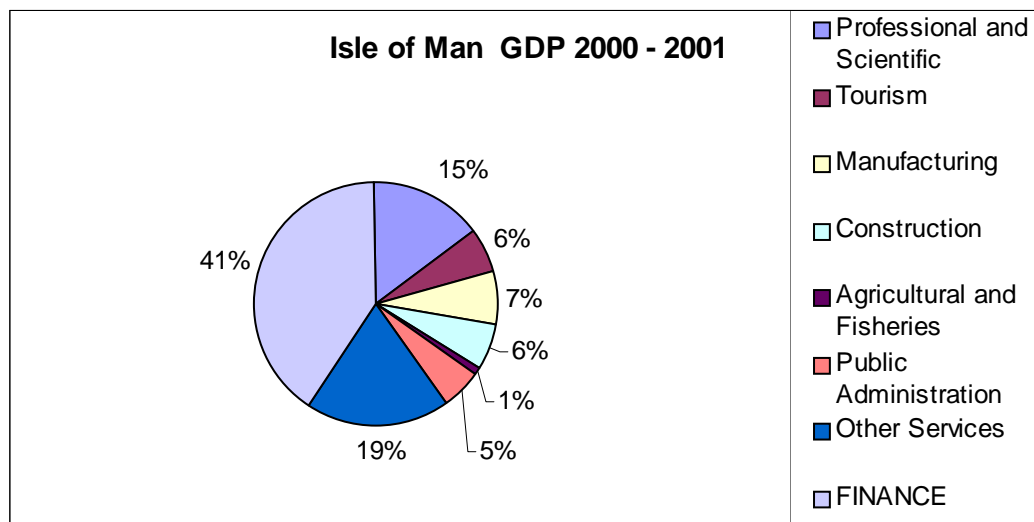


Figure 2 Source: IOM Treasury ([www.treasury.gov.im](http://www.treasury.gov.im)), Ratner (2002)

As an externally focussed, services based economy, the IOM depends on both the business environment in its immediate vicinity and the wider world. This dependency is reflected in the Government's shaping of policies and programmes including e-Government.

#### e-Government on the IOM

The importance to the IOM of facilitating the growth of additional businesses sectors to finance, is reflected in a dynamic e-Government strategy.

The Island's Legislature enacted the Electronic Transactions Act (2000), which put electronic and paper based transactions on the same footing, as well as removing any legal impediments to the use of electronic communications with public authorities. This Act provides the legal endorsement which is essential to help electronic commerce and governance to flourish. A modern telecommunications infrastructure has facilitated the implementation of Europe's first mobile telephony 3G pilot. (Ratner, 2002).

## 4. E-GOVERNMENT AND THE DIGITAL DIVIDE: LITERATURE REVIEW

### Introduction

Literature on e-Government covers a wide range of related topics such as funding, drivers and the role of Government portals. In contrast, a much greater body of literature on the subject of the digital divide has a more singular focus on the causes of it and suggested remedies for them.

#### e-Government – Background

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From the mid-90s onwards, literature records an increased emphasis on the need for a more strategic approach to e-Government and also on the external, constituent serving, aspects and associated benefits, of it. Providing ever increasing online services to the general public is considered to be a 'holy grail' by many governments.

In addition to highlighting the scarcity of research about e-Government, Gronlund, (2002, p 1-2) describes it as being about changes in two related but distinct fields: 'First, it is about changes in the *internal* Government operations that come about as IT is used for automation, co-operation, integration among Government agencies and as tools assisting in decision processes. Second, while such IT use has been going on for a couple of decades, the current spark of interest in the field is most of all due to the fact that now also *external* operations are transformed, as information and services increasingly become available on the Internet'.

Gronlund further (p 24) identifies the pioneering role and recognition of the US programme as a model adopted by many governments: 'as so often when it concerns political initiatives concerning IT use, electronic government has its origins in the US dating back to the early 1990s. The ideas were rapidly copied by the European Union and have since been forming political agendas in Europe in parallel with the US development.

The EU initiative e-Europe entitled 'An information society for all' (European Commission 1999) establishes a new action plan for Europe including also a social vision where there is some place for users (who must be educated) and Government online. The benefits which e-Government and e-Governance can bring are mentioned by Norris (2000, pp112-113), who relates that the main potential for e-Governance lies in strengthening policy effectiveness, political accountability and to a lesser extent, public participation. This growing external bias and the benefits which can be derived from e-Government is causing Governments to take a more strategic approach to it

#### e-Government - Drivers

A recurrent theme in literature about e-Government is the importance of technology as a key driver to facilitating its proliferation in society.

Gronlund (2002, p 19), puts technology within a wider context in stating that it takes place within a changing governance context where technology itself may be only one driver and Government must redefine itself for a world of e-Governance, as this world is being shaped by a variety of forces. Norris (2000, pp123 – 126), puts a stronger emphasis on the role of technology as a driver for e-Governance, which has developed furthest in long established democratic states. She maintains that technology diffusion has proved the single most significant predictor of the distribution of functions of e-Governance and that much of the impact of socio-economic development comes not from patterns of literacy and education *per se* but with its close association with technological development.

A consensus regarding the main drivers for e-Government highlights a number of important factors, for example, the role of technology, services to the citizen, cost and efficiency, political/legislative requirements and constituent demand.

#### e-Government - Barriers

While there is an evident degree of agreement among academics about what the most important drivers are for e-Government, when it comes to the discussion about barriers the debate is somewhat more controversial. The views of Symonds (2000), writing about a survey on Government and the Internet, concerning the role of technology, would appear to contradict those of Norris. His comments also resonate the general debate between the 'optimists' and 'pessimists' about the causes of the digital divide.

Symonds, states that survey after survey have found that the main barriers to access are the fear that technology is too expensive, that computers are too complicated and that somehow the whole thing is not really relevant or useful. While the 'optimists' argue that one by one, each of those perfectly

legitimate anxieties is being overcome, he points out that on the contrary, PCs can be bought for as little as \$300, access charges are lowering and non-PC devices can now provide access to the Web.

Cullen (2001, p 312- 314), writes that in the 21<sup>st</sup> century access for the citizen should exist especially in the developed world. While this assumption is generally accepted, she points out that it is important to remember two key points:

- Technology does not in itself solve social and economic discrepancies within societies e.g. India
- New technologies do not necessarily replace the old. They may coexist.

There is wide discussion about many of the barriers to e-Government, but literature on the subject appears to have a broad consensus about the issues of cost, limited resources, funding, cultural issues and resistance to change. In addition, trust, security and privacy issues, which are related to trust, are emphasized.

#### e-Government - Products and services

Literature about the underpinning provided by technology and telecommunications related infrastructure to e-Government often refers to the importance of some technology products. Smart Cards, PINs (Personal Identification Numbers), and PKI (Public Key Infrastructure) and their usage in conjunction with the Internet in the provision of services to the public are seen as being very important.

Infrastructure for e-Government is closely related to the Internet and the emerging usage of technologies such as Smart Cards and PINs.

#### e-Government - Funding

The funding of e-Government is critical to its success and although it can sometimes occur as a function of savings, additional costs are often involved.

Funding for e-Government whether derived through savings and/or direct expenditure, is directed typically at specific programmes or through some form of cross-functionality as is the case in co-operation between the public and private sectors

#### **e-Government - The role of Government Portals**

The current most overt manifestation of G2C e-Government is the Government portal. Symonds (2000), lists the four stages involved in establishing an e-Government portal:

- The first stage, which is where most Governments have got to, involves departments posting one way information about themselves via a Government portal.
- The second stage allows two-way communication where the citizen can provide information about themselves, such as change of address.
- The third stage usually supports functions such as licence renewal or fine payment.
- The fourth stage is a portal that integrates a complete range of Government services based on need and function and not Government department, for example Singapore's e-Citizen Centre.

Some of the key issues stressed by literature concerning portals are content, which involves knowledge management, branding, availability and support services, including 'help-desks'.

#### e-Government - Projects and Implementations

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There is a very wide range of projects involved in the process of e-Government but the implementation of support infrastructure and effective Government portals are seen as priorities for most post-industrial modern administrations.

Harvey (2002), in discussing the UK e-Envoy's pledges, references the concern of many in Government leadership positions about the money being spent on e-Government and that most of these services consist of simple information presented on Web sites, commonly referred to as 'brochure-ware'. He also references the NOA report 'Better Public Services through Government' which noted that only 3% of the services available allow users to apply for grants or benefits online. The report also focussed on the poor uptake of online Government and *warned that public money would be wasted unless people were encouraged to use the online route.*

Ari-Veikko (2002, pp 272-273), relates the background to the type of projects envisaged by the British Government for their e-Government programme, based on a 10 point list of what they consider to be vital in terms of products and services for electronic Government..

Appropriate infrastructure and an effective portal for their e-Government programmes appears to be pre-eminent in the priorities of Governments like the UK.

### e-Government- Summary

An important difference between Government and business is that e-Government is not just e-business on a larger scale. Representing the public, they have reason to be concerned about the digital divide because unlike businesses, who can, by and large, choose their customers, Governments cannot.

e-Government is central to the debate about the digital divide and is the subject of continuing controversy about its role in narrowing the gap. Many offer particular solutions to the problem such as Cane (2002), who argues that broadband access is the essential prerequisite to enabling Governments, through e-Government, to bridge the divide and that Britain is lagging behind its European neighbours in this regard. In addition the pivotal role played by the US Government in pioneering e-Government and the adoption of the approach and models involved by other governments, especially in Europe, is emphasized.

A wide spectrum of factors which characterise e-Government were identified in literature. The following list shows the more significant of them arranged into a series of clusters:

<b>CLUSTER</b>	<b>KEY COMPONENTS</b>
<b>Drivers</b>	Required by legislation Efficiency and Cost Technology Service to constituents Constituent demand
<b>Obstacles/barriers</b>	Limited resources/funding Trust Security and privacy Cultural resistance to change

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causes of the digital divide has given rise to debate and disagreement in terms of those causes which are important, or the order of their importance *or indeed if some of them are causes at all*'.

### The digital divide – Causes

Several authors attribute the digital divide to factors such as the degree of proliferation of technology, while others emphasize social causes such as ethnic background and education.

Bonfadelli (2002), for example, writing about Switzerland, stresses education, or the lack of it, as a leading factor in the way the Internet is accessed and used. In contrast, Compaine (2002), highlights communications for which perhaps over 25 years, new ways will become mainstream and prevalent. James, (2000, pp 387-388), points to the obsolescence of PCs as contributing factors in the digital divide debate. In particular, he says that the practice of software companies to issue constant new versions of proprietary software is causing an epidemic of functionally obsolete computers. Social causes of the divide such as race and income are in Kennard's (2001,pp 196-197) view key factors to be addressed .

The ongoing debate about the divide is also revealed by Lentz (2000,p 376–377), commenting about literacy and access to technology. He considers that the framing of the digital divide problem is a product of a research agenda that is aligned with a national e-Commerce initiative that promotes the future promise of a high technology economy, which supposedly requires a high skilled workforce with digital literacy. However, 'there is growing dispute about the real promise of the so-called high-tech economy for every day working Americans'.

Schement (2002, p 304) and Powell (2002, p 309), question the importance of cost and assumptions about ethnic minorities as factors to explain the divide and further suggest *that the basis of Government expenditure on it may be misplaced*. Schement continues by stating that 'many researchers and policy makers see these gaps more simply, most of the groups affected can be classified into a simple category – women and minorities – while the cause *appears to be quite simply income*. This picture, simple, familiar and comfortable is also *wrong*'.

A fundamental and intractable dilemma for Governments is that those who most need Government services are also those who are most likely to be classified as likely to be the least connected to the Internet, 'the have nots', (McConnaughey, 1999, p 4).

In order to determine a consensus among the authors reviewed as to the causes of the digital divide and the barriers to Internet connectivity they represent, thirteen of them were selected for analysis from a panel of thirty one. The basis for selection was the definitive nature of each author's arguments and their ordering of the relative importance of the barriers discussed.

The outcome of this analysis graphically is as follows:

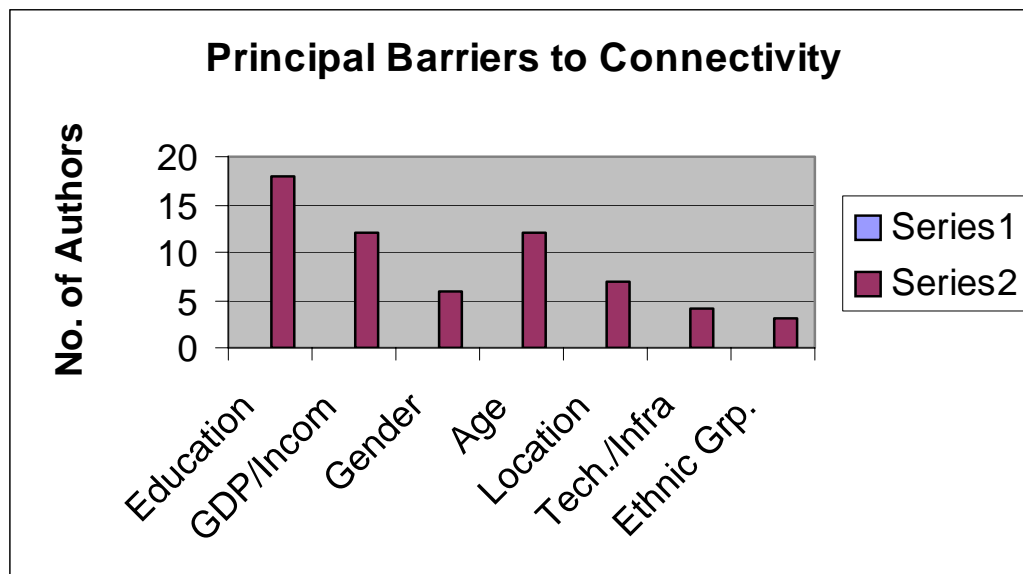


Figure 3. Principal Barriers to Internet Connectivity

This graph shows that based on an analysis of the work of some of the leading academics in the field, a consensus emerges indicating Education, followed by GDP per Capita/Income and Age as being the three principal causal factors which underlie the digital divide.

## 6. METHODOLOGY

The aim of this research is to evaluate if having a strong economic and stable social environment coupled with investing in a world-class e-Government programme narrows the digital divide in the Isle of Man and by inference other similar societies, to a measurable degree.

The hypothesis is that in the IOM, the connectivity level to the Internet which determines the extent of a society's digital divide are *not* increased by reduced barriers to it through having for example, relatively high levels of education and income in addition to a modern e-Government programme.

The methodology used is based on a positivist paradigm, with a quantitative analytical approach to the research undertaken. The IOM background, demographics and economy were reviewed in order to establish a general context for the evaluation of the hypothesis. A review of literature on e-Government and the digital divide provided a theoretical foundation for the data collection approach used.

The data used for the evaluation came from two sources

- A survey of e-Government carried out on the IOM
- Macro level government statistical and census data for the IOM to the UK

In order to measure the quality of the IOM e-Government programme, the characteristics and features identified through its survey data are compared to a similar US secondary data which exists in the form of a quantitative survey. The Meta (2000) research is based on the US Federal Government which is widely regarded as having a 'best of breed' programme. Although of relatively large scope, the US programme is generally deemed to represent a good model for successful e-Government implementation and it has therefore often been emulated by both small and large governments alike, especially in Europe.. (Gronlund, 2002, p 24). Given the scarcity of similar research instruments (Gronlund, 2002, p 2) the Meta survey was further indicated as the best available benchmark to test the characteristics and quality of the IOM programme.

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The second source of information was based on macro national level statistical Government and related survey data. The data used facilitated comparisons of the levels of Internet connectivity which obtain between the IOM and the UK as well factors such as population, age and income levels.

## **7. SAMPLING PROCEDURE AND RESEARCH INSTRUMENTS**

### **IOM e-Government Programme Data**

The source for data on the IOM e-Government programme is a highly representative sample made up of Government all the department heads who, collectively, have a direct interest and overall responsibility for e-Government and its implementation on the Island. The questionnaire used in face to face interviews with them is derived from the review of literature on e-Government. As over 75% of the questions arising from the literature review used for the IOM survey corresponded with the bulk of those in the US benchmark, comparison with it to adequately test the conformity and quality of the characteristics of the IOM programme is greatly facilitated. This correspondence also served to validate the selection of literature reviewed and analyzed on the subject of e-Government.

### **Macro Level Statistical Data used for IOM and UK Comparison.**

The benchmarking of the survey data on e-Government tested the quality of the IOM e-Government programme and indirectly validated its standing in terms of other programmes. It also indirectly provided underpinning and context for the comparison of their national level statistics, with similar data in the UK.

The national level IOM data reflects the total population and is also available electronically from Government sources. The principal source used was the IOM 2001 Census, which includes demographic and Internet connectivity information.

Census data on the independent variables represented by the barriers of education, GDP per Capita/income and age was compared with similar Government data from the UK. The independent variable representing IOM Internet connectivity levels was compared to triangulated research instruments containing similar UK data, such as the Kitchen, (2000) survey and the NSO report (Cooper-Green, 2002) which incorporates the UK Expenditure and Food Survey (EFS) and the National Statistics Omnibus survey.

## **8. RESULTS**

Because of the close correspondence and identical structure of its survey questions with the bulk of those of the Meta (2000) survey, the quality of the IOM programme was assessed through simple quantitative comparisons with the US benchmark. Each question surveyed respondents about the characteristics of their e-Government programme in quantitative terms e.g. from '1' for not applicable to '6' signifying a very high rating.

The outcome of this assessment is signified by an '●' in one of three columns in the following table, depending on whether the IOM result rated for quality as better (I>M), equal (I=M) or less (I<M) than the Meta (2000) benchmark

<u>Cluster</u>	<u>Questions</u>	<u>Comparison IOM (I) to META (M)</u>		
		<i>I &gt; M</i>	<i>I = M</i>	<i>I &lt; M</i>
<b>Drivers</b>	Required by legislation		•	
	Efficiency and Cost		•	
	Technology		•	
	Service to constituents			
	Constituent demand		•	
<b>Obstacles/barriers</b>	Limited resources/funding	•		
	Trust			
	Security and privacy		•	
	Cultural resistance to change			
<b>Products and Services</b>	Telecommunications/Internet		•	
	Smart-cards			•
	PKI/PINS			
	Technical Infrastructure			•
	e-Government readiness			•
<b>Funding</b>	By specific program	•		
	By savings			
	Cross functionality Pub./Priv. Sector			
<b>Portal</b>	Content		•	
	Branding	•		
<b>Portal (cont)</b>	Functionality/availability		•	
	Knowledge Management			•
<b>Projects and Implementations</b>	Infrastructure			•
	Portal		•	
	Branding	•		
<b>IOM e-Gov. impact -digital divide</b>	Impact from e-Government	-	-	-
(No META Comparison)	Impact on traditional barriers	-	-	-
	Future expectations	-	-	-
TOTAL COMPARISONS (18 ) ,,,,,,,		<u>4</u>	<u>9</u>	<u>5</u>

Table 1. Comparison of the Key Factors affecting e-Government

The above table shows that out of a total of 24 questions in the above table, i.e. excluding the 'IOM e-Gov. impact- digital divide' cluster, 18 (see 'Total Comparisons') or 75%, representing the bulk of them, corresponded exactly with, and were thus measurable against, the Meta benchmark. This result represents therefore, a broad conformance and equivalence between the characteristics of the IOM e-Government programme and those surveyed in the US Federal Government. Weaknesses in the IOM programme were identified in the areas of technical infrastructure and general readiness for e-Government while they scored well in terms of the use of branding techniques for their portal and having sufficiency of funds for planned projects.

The overall result from the benchmark was that the IOM has an e-Government programme that is comparable with and in some respects, better positioned for e-Government e.g. the Electronic Transactions Act (2000), than the US and therefore by inference, the UK.

The final cluster of survey questions were specific to the IOM i.e. no comparison to the Meta survey. They focussed on the impact on Internet connectivity that the department heads expected their e-Government activities to achieve. Their expectations are illustrated in the following graphs. A rating of '5' signifies maximum impact.

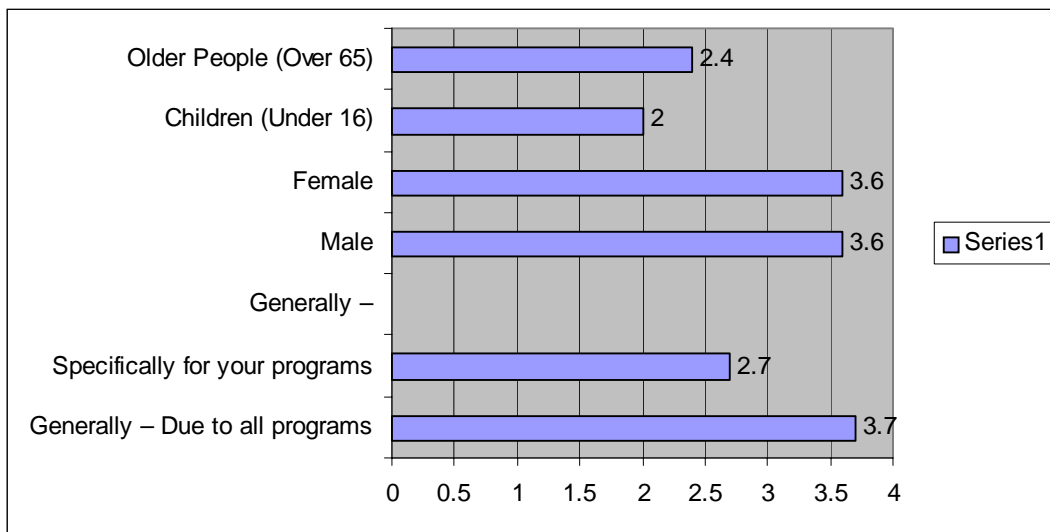
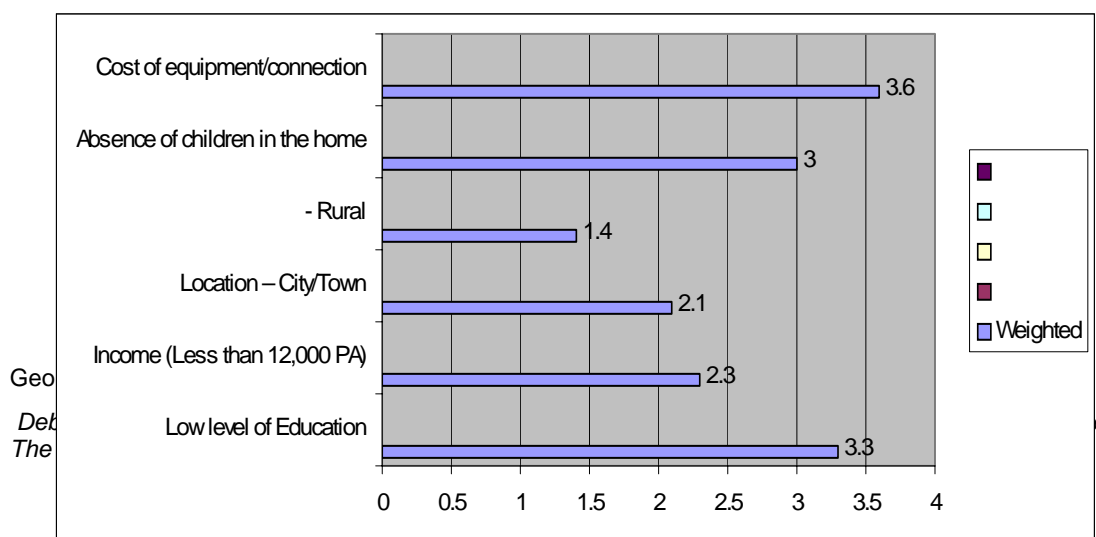


Figure 4. IOM e-Government impact on Internet Connectivity

This result confirms a marked *positive* overall expectation, in terms of the effectiveness of the IOM e-Government programmes in addressing Internet connectivity. This result also reflects the prevalence of an optimistic mindset within the IOM Government as to the nature of their 'digital divide'.

An additional series of questions concerning the specific barriers which are expected to impact Internet connectivity on the IOM gave results which are graphically as follows:



*Figure 5. Effect of Barriers to Internet Connectivity on the IOM*

The 'optimist' mindset continued to be evident in the result on barriers, with cost of equipment seen as the most important barrier, followed closely by low levels of education. Income levels in an environment with 0.6% unemployment is predictably seen as less of a barrier. Summarized, the main results of the interviews and the comparison with the Meta (2000) survey, used to benchmark them are:

- The IOM Government has a good standard of e-Government strategy and implementation
- The necessary structural and legislative e-Government enabling factors are in place.
- Comparison with the Meta (2000) survey benchmark revealed some weaknesses in the IOM e-Government programme in the areas of infrastructure, general readiness for e-Government and the approach to the usage of knowledge management tools
- The IOM Government expects its e-Government programme to achieve a material level of narrowing of the digital divide on the Island.

With a well established e-Government programme, a stable, educated society and strong economy, the IOM ought to compare well in terms of Internet connectivity levels with most post industrial modern societies including the UK, with which is has so much in common. In order to test if this was the case, the macro-level data which impacts these levels was reviewed in conjunction with that of the UK.

Macro level data for the IOM and UK

IOM macro level factors identified in literature were compared to corresponding data for the UK, in order to determine the relative degree of similarity or advantage in terms of barriers to Internet connectivity, which obtains between the two entities:

The AGE factor

The following table contrasts the age structures of the populations of the UK and the IOM for 2001:

AGE	<u>0-14</u>	<u>15-29</u>	<u>30-44</u>	<u>45-59</u>	<u>60-74</u>	<u>&gt; 74</u>	TOTAL
IOM Total %	18	17	23	20	14	8	100
UK Total %	19	19	23	19	13	7	100

Table 2. IOM and UK Population age distribution 2001 (percentages) Sources: IOM Census, (2001), Volume 2, Table 7. UK, Ramona (2002), Digest no. 676

The above table shows a close correspondence in age patterns between the IOM and the UK, including for those over 60 years of age, who represent 22% of the population in the IOM, compared to 20% in the case of the UK.

The GDP/income factor

GDP per capita in the IOM is reported at £13,022, or the equivalent of \$20,184, based on an average dollar rate for 2001 of \$1.55 to the £ (sterling).

The corresponding level of GDP per capita in the UK is \$21,316 (International Finance Centre, 2002), which is 5% higher than the IOM.

The current level of IOM unemployment, which at 0.6%, (Ratner, 2002), is a fraction of the corresponding level in the UK, should however dilute this small difference. This is because it signifies

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that a greater proportion of the IOM population are in employment and therefore have secure income, than in the UK.

#### The Education factor

The level of education of the general population is relatively high, with 63% having academic qualifications at the GCE/GCSE level or higher per the IOM 2001 Census.

The corresponding level in the UK at 55% represents an advantage in this regard for the IOM. ([www.dfes.gov.uk/statistics/db/vol/v0302/index.html](http://www.dfes.gov.uk/statistics/db/vol/v0302/index.html))

#### Internet Connectivity

The proportion of the total population which is connected to the Internet per the IOM Census (2001), Volume 2, Table 50, is **50%**, while connectivity of households (IOM Census, p 11) is 40.8 %.

The corresponding level of connectivity in the UK for the general population is **64%** (Kitchen, 2000) and **62%** per the NSO report (Cooper-Green, 2002) which incorporates the UK Expenditure and Food Survey (EFS) and the National Statistics Omnibus survey.

For households in the UK, the level is 46% (Cooper-Green, 2002) and 40.8% in the IOM. Average household occupancy rates may partially account for the 5.2% connectivity disparity which for the IOM is 2 occupants per household (IOM Census, Table 48) and 2.8 occupants per household in the case of the UK (e-Envoy 2002, Table 3, p11).

The following is a summary of the comparison between the IOM and the UK. A relative advantage of one entity over the other highlighted in **bold**:

Factor	<u>Favours the IOM</u>	Comparison outcome	Favours the UK
Age	No	<u>Similar</u>	No
GDP/income	No	<u>Similar</u>	No
Education	<b><u>Yes</u></b>	IOM higher level	No
Employment	<b><u>Yes</u></b>	IOM higher level	No
Social/political factors	<b><u>Yes</u></b>	IOM less challenges	No

This summary shows an overall *advantage* for the IOM in terms of the barriers underlying the digital divide, coupled with a significant *shortfall* of 12% to 14% for Internet connectivity on the Island, compared to the UK.

The implications of such a clear result that favours the viewpoint of the pessimistic body of literature on the digital divide may be a catalyst for analysis and discussion well beyond the scope of this paper.

#### Analysis and Discussion

The question researched in this study was: does a strong economic and stable social environment coupled with investing in a world-class e-Government programme, influence narrowing the digital divide in the Isle of Man and by inference other similar societies, to a measurable degree.

The IOM, as a small relatively affluent, modern society, has some particular advantages over societies like the UK, which favour the implementation of e-Government programmes and promoting the general proliferation of connectivity to the Internet.

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These advantages help to explain why their e-Government programme compared favourably with that of the Federal Government of the US. Speed of execution due to the operational proximity of central and local government should also enable progress.

A supportive environment, a 'best of breed' e-Government programme and high levels of education should, if the 'optimists' are correct, lead to similar or higher levels of Internet connectivity there than in the UK.

A gap of 12% to 14% less Internet connectivity than in the UK however confirms the 'pessimists' view about the digital divide as obtaining in the IOM. The significance of this connectivity disparity is not appreciably mitigated by factors such as sampling errors, which for surveys like Kitchen (2000), are typically between 1% and 2%.

This overall result does not auger well for the expectation of the IOM Government that their modern and proactive approach to e-Government should have an identifiable and material positive mitigating impact on this divide. If this was the case, and the optimistic argument was correct resulting in similar levels of connectivity for both entities, e-Government activity could have manifested itself as the expected identifiable, if marginal, increment in connectivity levels over the UK.

Although the impact of barrier levels and e-Government have not individually been assessed in this research, the significant overall connectivity gap between the IOM and the UK would indicate the hypothesis of this paper as being sustained.

One of the key implications of the 'pessimist' position in the digital divide debate, is that misjudgement of its causes can end up costing significant amounts of public funds. It may be significant also that this pessimistic implication is stressed by more contemporary contributors to the debate, such as Powell (2002), Harvey (2002) and Schement (2002), who have the benefit of being able to observe Government efforts in general and more specifically e-Government programmes, at a more mature stage in their development. The 'pessimists' maintain that one of the principal causes of the digital divide is that the inequalities and complexities that exist in society cannot be addressed by technology, as claimed by the 'optimists'. Their position would appear to be vindicated by recent examples in both the G2C and G2B areas in the UK. Notable among these is the disappointing public usage of on-line income tax and value added tax (VAT) returns, despite relatively high levels of government investment and promotion. (Harvey 2002).

The pessimistic argument has a possible shortcoming in that having dismissed the position of the 'optimists', they do not appear to propose alternative solutions. In addition, there does not yet appear to be academic research or empirical data in sufficient locations and volume to definitively vindicate their position. This may explain why Governments generally and the IOM in particular continue to reflect the optimistic position in their approach to the digital divide, since it implies that their programmes can be based on clear problems and solutions to them.

While this shortcoming does not invalidate this research, its 'pessimist' result may however be viewed as indicative, because it is based on the particular case of the IOM and at a particular moment in time. The microscopic reasons which contribute to the relatively low levels of Internet connectivity in a society like the IOM may be viable candidates for further investigation. This would be justified, not out of academic interest alone, but more importantly in order to determine if the significant sums of stakeholder money which the IOM Government in common with many others spend yearly on their e-Government programmes, is well directed and invested. That such research has not as yet been undertaken may be due to current expenditure being viewed as socially justifiable in terms of digitally enfranchising the 'have nots'. Less altruistic motives such as savings and efficiency are however not necessarily incompatible with such considerations for governments like the IOM who rely on scarce investment resources to achieve their goals.

Pending such investigation, this result can add to the limited body of research examining the factors underlying the phenomenon of e-Government and the digital divide and suggest a model for undertaking it. This model is akin to that of a laboratory where small island

environments like the IOM facilitate discovery through allowing research at the level of a total population while having the dimensions and characteristics of a large sample.

## 9. SUMMARY AND CONCLUSIONS

The principal objective of this study was to evaluate the IOM e-Government strategy and implementation and test a 'pessimist' hypothesis about the digital divide through comparison with the UK. A 'pessimist' result from the research undertaken could have serious or indeed potentially damning implications for some Governments.

In this case comparison was based on the main barriers to Internet connectivity of education, age and GDP/income, in line with the 'optimists' position on the causes of the digital divide. The outcome was that while the IOM population had a similar age structure and GPD/income to the UK, the IOM level of secondary education and general social conditions are better. This, together with the quality of the IOM e-Government programme, from the standpoint of the optimistic view of the digital divide, should have resulted in a similar or greater level of Internet connectivity there, than in the UK.

The test of Internet access however posed something of a dilemma in that the IOM trailed the UK connectivity level by between 12% to 14%; a diametrically opposite result to that expected based on the optimistic view point. This outcome points to some fundamental questions for the IOM Government and those with similar e-Government and Digital Divide challenges:

The similarities in terms of barriers with the UK points to e-Government as one identifiable variable which could and is expected to account for connectivity improvements in the IOM. This outcome of this research however would render that expectation as being in need of reassessment.

Current connectivity levels mean that legacy systems and processes may have to be perpetuated indefinitely. This will at best delay many of the benefits and savings associated with e-Government, leading to potentially increased stakeholder costs and inconvenience.

A societal saturation point may underlie this result, whereby once Internet connectivity has reached a certain level in particular environments or social structural mixes, diminishing returns on incremental investment to increase it may apply. This situation may point to the existence of another Internet averse segment of society who could perhaps, using the terminology of the debate, be aptly termed, the 'will nots'. Future research, perhaps based on a realist ontological paradigm, using, in the case of the IOM, selective qualitative interviews, will probe this and similar questions about the digital divide.

Governments may use the result of this evaluation to beneficially inform or predicate the way they direct their future investments in e-Government. Those who have taken a minimalist approach to providing for example 'brochure-ware' via their portals; stage one and two as identified by Symonds (2000), may choose to ignore it. Those however, with more ambitious plans for e-Government and narrowing the digital divide, involving potentially the investment of significant public funds, may be unwise to do so. Future research and experience should definitively confirm if such investment is indeed money well spent or continuing optimistic folly.

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