TITLE PAGE

Mobile Virtual Network Operators (MVNOs)

(Special Reference to Regulatory Environments)

A research paper submitted to the University of Manchester for the degree of LL.M. Masters (International Business Law) in the Faculty of Humanities: School of Law

STUDENT NO: 554116

ACADEMIC SESSION: 2005/6

DECLARATION PAGE

No portion of the work referred to in the research paper has been submitted in support of an application for another degree or qualification of this or any other university or other institution of learning.

AND

CONTENTS

Mobile Virtual Network Operators (MVNOs)

(Special Reference to Regulatory Environments)

Abstract:

Examines the emergence of Mobile Virtual Network Operators in to mobile communications business which has steadily been growing and it will almost certainly grow also in the future. Endow with definition explicate the idiosyncratic features of MVNO. Along with the regulatory background of MVNOs, gives both for and against views on regulatory intervention. Furthermore, enlightens the regulatory environments at EU, European and Asian level regarding MVNOs. As a case study analysis UK MVNO business environment. Concludes with suggesting future prospects and critical success factors for MVNOs.

Introduction:

As a mounting number of countries are assigning third generation mobile licences, there are plenty of firms working in this sector which have been left without license in the race towards mobile telecommunications, generally regarded as a business opportunity characterized by an extraordinary potential for profit. On the other hand, license fees are so high in some countries that they are considered as an *economic burden*[1] for the "winning" companies. This situation favours solutions for those building their business without a radio access network. A number of firms that are working or not in the mobile sector worldwide, have articulated their keen interest to enter this market through the networks operation or the service provision channels. Hence, for those, which have been left without license, a doable way to enter the Mobile communication market is through this new-fangled MVNO model.

This thesis aims at Mobile Virtual Network Operator (MVNO), as above mentioned a new actor that has recently entered the arena of mobile telecommunications and mesmerised almost every telecom authority in the world. Primarily MVNO is an organisation offering

[1] D. Varoutas, D. Katsianis, Th. Sphicopoulos, A. Cerboni, K.O. Kalhagen, K. Stordahl, J. Harno, I. Welling. 3G MVNOs financial perspectives.
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=717381

mobile subscriptions without owning a GSM/UMTS[2] license. Since MVNO is a somewhat new model in the Mobile communication market there is still bewilderment regarding its definition. Mostly the definitions provided by different authors are technically dominated but to comprehend the basic quintessence of the MVNO model this simple definition will be helpful: *"…an organisation that offers mobile subscriptions in its own brand name, controlling the billing relationship with the customer, but who does not hold its own frequency license in the market".*[3]

For expediency thesis has been divided into four sections. In the First section at the outset background of MVNO is expounded. Like how mobile industry evolved and what was the need for mobile virtual network operators. In addition MVNO model is explained in length while taking into contemplation all its significant aspects under pertinent titles. In the Second section Regulatory background of MVNO model is provided. Under this head views from both sides that who are in favour and the one who are against any regulatory intervention are presented as well. While keeping in view the different approaches regarding regulatory intervention what regulatory frameworks have been adopted at EU and European level are examined in the Third section. Fourth Section is concerning the Asian regulatory environment while focusing on Hong Kong, Malaysia and Pakistan. In the Fifth section conclusion is drawn considering the prospects for MVNOs in the near future whilst suggesting some critical success factors to potential MVNOs.

[2] S. Kristensson A. Gahnström. Mobile Virtual Network Operators Assessing MVNO Business Opportunities. *Thesis. University of Stockholm, Sweden.* p. i. Available at: http://web.hhs.se/cic/courses/underthebridge/thesis_MVNO.pdf
[3] ibid.

SECTION I:

Mobile Virtual Network Operators

1.1 Background of MVNO:

1.1.1 History:

Mobile phones began to proliferate in 1980's when 'analogue' transmission was in use in all systems. By that time Mobile sets were somewhat larger than what are used now, therefore, were designed in a way that they can be permanently installed in cars. Soon, some of these bulky units were converted for use as "transportable" phones equal to the size of a briefcase. Motorola introduced the first truly portable, hand held phone[4]. These systems (NMT, AMPS, TACS, RTMI, C-Netz, and Radiocom 2000) later became known as *first generation*[5] (1G).[6] Using analogue signals there was only enough spectrum for two networks to operate. For example, in UK Vodafone and Cellnet were granted the licence to run such analogue networks.

In 1990 new technologies were introduced such as GSM[7], known as second gereation (2G) mobile phone system. This system was digitilised and so first digital cellular phone call was made in the United States in 1990.[8] With the advent of GSM technology it became possible for two more networks to operate,[9] but still it was not enough for bringing the true spirit of competition. The only barrier to the entry of new willing entrants was the limited available spectrum.

[4] The Dyna TAC phone is launched as the world's first commercial handheld cellular phone in 1983. The 28-ounce (794g) handheld phone became available to consumer in 1984. The Dyna TAC system and phone are the result of Motorola's 15-year and $ 100-million investment into cellular technology. https://motofuture.motorola.com/flash_holder.html

[5] History of mobile phones http://en.wikipedia.org/wiki/History_of_mobile_phones

[6] ibid.

[7] GSM (Global System for Mobile communication) is a digital mobile telephone system. GSM uses a variation of Time Division Multiple Access (TDMA) and is the most widely used of the three digital wireless telephone technologies (TDMA, GSM, and CDMA). GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot. It operates at either the 900 MHz or 1,800 MHz frequency band. http://www.tech-faq.com/gsm.shtml

[8] History of mobile phones http://en.wikipedia.org/wiki/History_of_mobile_phones

[9] Ian Lloyd and David Mellor (2003) Telecommunications law. Published by *London: LexisNexis/Butterworths*. p. 300

Digital technology gave a real boost to the mobile industry. New players came up with their new innovative ideas which helped develping competition in the market. Prices got low but keeping higher quality of services to entice consumers. Therefore, the technology which was initially because of structure and high price was not available to general public became available and started penetrating lives of the people as a necessity. After the digitilsation, competition evolved and it became easier for people to buy mobile conections at cheaper rates, however, Mobile industry was still in the hands of few.

Not long after the introduction of 2G networks, projects began to develop *3G*[10] systems. At the beginning of the 21st century, 3G mobile phone systems such as UMTS and CDMA2000 1xEV-DO begun to be publicly available.[11] The first 3G network was deployed in Japan in 2001.[12] However, the final success of these systems is still to be determined. This UMTS (3G) technology enabled the building of fifth network e.g in UK '3'[13].

1.1.2 Scarcity of Spectrum:

Radio communications is critical to areas such as air travel, emergency services, cellular telephony, sound and television broadcasting, defence etc. Hence, Radio spectrum is considered to be a major asset for any country firstly because of its scarce nature and secondly it contributes a lot to the country's economy as well e.g. UK gets about £24bn a year from it.[14]**.** Therefore, if access to the spectrum is left completely unregulated there would likely be intolerable interference in many areas. For example, some broadcasters might set up transmitters on the same frequencies and engage in 'power races' where each would try to drown out its competitors, resulting for the most part in nobody being able to receive a signal. Indeed, this is exactly what happened in the US in the 1920s.[15] To stop this ciaos from

[10] Third generation (3G) systems promise faster communications services, including voice, fax and Internet, anytime and anywhere with seamless global roaming. International Telecommunication Union (ITU), http://www.itu.int/osg/spu/ni/3G/technology/index.html
[11] History of mobile phones http://en.wikipedia.org/wiki/History_of_mobile_phones
[12] http://www.out-law.com/page-2026
[13] http://www.three.co.uk/index.omp
[14] Ofcom, Spectrum Framework Review, Issued: 28 June 2005, p. 3 Available at: http://www.ofcom.org.uk/consult/condocs/sfr/sfr2/sfr.pdf
[15] ibid.

happening, the spectrum manager does not give out "spectrum" but instead provides the right to transmit on a particular frequency over a particular geographical area.[16] Such a transmission right is sometimes referred to as "access to the spectrum" and users will sometimes refer to having bought "spectrum at auction".[17]

1.1.3 Emergence of MVNO:

In response to these limitations, the Mobile Virtual Network Operators ("MVNO") emerged. And this solution was sought out not through any regulatory intervention but the interested players themselves introduced the idea of MVNO model. The advantage of which would be that the new operators will not require their own spectrum for their network. As a result further competition will emerge in the market. When more competitors will come into the market the prices will decrease which will directly benefit the end consumer. This new idea in Mobile sector attracted many telecommunication authorities across the world. Therefore, in some parts of the world there are Mobile networks that are working on this design and in some areas authorities are working on it to make it possible. Currently, there are approximately 200 planned or operational Mobile Virtual Network Operators (MVNOs) worldwide[18]. In North America, the MVNO market is currently close to $4 billion and projected to be $10.7 billion by 2010.[19]

1.2 What is an MVNO?

MVNO stands for mobile virtual network operator[20]. As mentioned above the MVNO is a new emerging model in telecommunication sector therefore there is not any one solid definition. Secondly, there is unanimous agreement about what an MVNO does not have but there is no consensus about what an MVNO must have. So there is a significant amount of disagreement over what exactly constitutes an MVNO.

[16] ibid.
[17] ibid.
[18] http://en.wikipedia.org/wiki/Mobile_Virtual_Network_Operator
[19] www.motricity.com/pdf/mvno/Motricity_MVNO_WhitePaper_Nov2005.pdf
[20] Mathias Tallberg, MARCH 17, 2005. 'Functional Extensions to Mobile Operator Business Game'. p. 46 Available at:http://www.netlab.tkk.fi/tutkimus/lead/leaddocs/ThesisTallberg.pdf

However, taking each word in turn perhaps provides a clearer understanding of the concept.

- "**Mobile**" refers to the fact that such operators offer services in the mobile market.[21]
- "**Virtua**l" means that such an operator does not have its own spectrum allocation or licence but instead acquires them from already established Mobile Network Operators (host operator).[22] [Spectrum is the mobile equivalent of the last mile of the local loop in fixed networks, and the leasing of mobile spectrum to MVNOs is analogous to the leasing of unbundled local loop copper wire to competitive broadband providers in the fixed line market.[23]] MVNOs do not have a governmental licence to use radio spectrum, but have access to one (or, in theory, perhaps more) of the radio elements of a mobile operator and are able to offer services to subscribers using such elements. At minimum, these radio elements are:

  (a) The radio transmission link, its control functions and the mobility management functions that keep track of exactly where mobile handsets are located so that calls can be delivered to them; and

  (b) Some transmission and switching facilities needed to link the radio facilities to the points of interconnection, either with the MVNO's system direct, or with transit network operators[24].
- "**Network**" means that there is some element provided by the MVNO itself rather than all services being undertaken by the host operator.[25]
- "**Operator**" means that the MVNO appears to the customer as an independent operator in its own right rather than an entity using somebody else's network.[26]

[21] Tom Crane (2002) Mobile Virtual network operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 1.
[22] Ibid. p. 2.
[23] Robin Duke-Woolley (June 2001) MVNO: Doing Business with the Enemy? Available at: http://www.e-principles.com/
[24] Mobile Virtual Network operators: OFTEL enquiry in to what MVNOs could offer consumers; June 1999, p. 7.
[25] Tom Crane (2002) Mobile Virtual network operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 2.
[26] Ibid.

According to Lillehagen et al. *"A MVNO must, from a customer perspective, appear to be a MNO, having the same interfaces towards the customers as a MNO. The question for a MVNO is how "deep" (with customer facing being the highest, and radio access provisioning being the lowest) into the value system it should go. The MVNO has to consider which facilities to own and run, which to outsource and which to lease from the MNO and what type of agreements it should seek with partners in order to appear as an attractive choice to the customers*".[27]

Hence putting all these together it appears that MVNO "is a mobile operator that does not own its own spectrum and usually does not have its own network infrastructure. Instead, MVNO's have business arrangements with traditional mobile operators to buy minutes of use (MOU) for sale to their own customers."[28] Adopting a broad definition such as this not only lowers the barriers to market entry but also provides flexibility to potential MVNOs to establish business models according to their financial capability. This in turn will increase the level of competition that will result in lower prices and innovative service offerings that will benefit end users.[29]

1.3 Economic side of MVNO Model:

The main *source of income* derives naturally from the customers. The customers pay for call connection and services. The second source of income can be the interconnection payments from other operators. But, in order to succeed an MVNO must be able to provide innovative services since this is a unique source of income that it controls totally.[30]

On the *cost side*, the MVNO has to pay to the MNO for both outgoing and incoming calls. In addition, it may need to pay interconnection payments to other operators for

[27] Lillehagen A. et al. (2001). An Analysis of the MVNO Business Model, Telektronikk vol. 4.2001.
[28] http://www.mobilein.com/what_is_a_mvno.htm
[29] Malaysian communications and multimedia commission, GUIDELINE ON REGULATORY FRAMEWORK FOR 3G MOBILE VIRTUAL NETWORK OPERATORS 16 February 2005. Available at: http://www.cmc.gov.my/facts_figures/codes_gl/guidelines/pdf/MVNO%20Guideline%20-Final.pdf
[30] Do Van Thanh (2001). The Mobile Virtual Network Operator Concept: Truth and Myths, Telektronikk vol. 4.2001. Available at: http://www.item.ntnu.no/fag/ttm4165/Artikler/MVNOConcept.pdf

completing outgoing calls. Last, but not least, it has also investment, marketing and operational costs.[31] An MVNO needs to reach commercial agreements with a MNO concerning the charging for access to the radio spectrum. Currently there are two possible schemes: cost plus charging and retail minus charging. In the cost plus charging, the payment is derived from the MNO's actual costs. In the retail minus charging, the payment is the MNO's retail price minus some discount. Usually, the retail minus charging is higher and less advantageous for the MVNO than cost plus charging.[32]

1.4 Distinctive features of an MVNO:

Although there are many approaches applied while defining MVNO's; but the key point that is common in all is that they use a *completely separate product*. Therefore, an MVNO requires a *distinct brand*, so that the customer feels as if he or she is using a completely separate network. It also means MVNOs can profit from a greater proportion of airtime charges incurred by subscribers, provide related value added services (insurance, accessories) as well as premium subscription services. It differs from the *classic reseller model* where resellers buy minutes in bulk and do not go much beyond delivering the same services as the one offered by the network operator at a more competitive price. According to Charles Gildehaus, president of Mercator Partners[33] "By contract, resellers are forced to sell exactly what the underlying carrier sells. They just slap a different label on it. In contrast, an MVNO has very few restrictions or limitations on how they use the capacity they bought. They can reformulate the offer from soup-to-nuts and add value-added services. What they are primarily buying is the transport capacity, not just the underlying carrier's plan and re-labeling it."[34]

[31] Audestad, J A, Gaivoronski, A. 2001. Option pricing of virtual network mobile operators. *Telektronikk*, 97 (4), 107–112. Available at: http://www.telenor.com/telektronikk/volumes/index.php?page=overview&id1=32&select=00-04

[32] Do Van Thanh (2001). The Mobile Virtual Network Operator Concept: Truth and Myths, Telektronikk vol. 4.2001. Available at: http://www.item.ntnu.no/fag/ttm4165/Artikler/MVNOConcept.pdf

[33] www.mercatorpartners.com

[34] Khali Henderson *(2001).* Mobile Virtual Network Operators. Available at: http://www.phoneplusmag.com/articles/181feat1.html

There is another characteristic that distinguishes MVNOs from *simple resellers*. It is indeed not that they issue a SIM card – the small slot-in card that defines the unique identity of a mobile handset. No, the factor that makes an operator truly virtual is the capability to control both outbound and inbound calls. [35] Essentially, this means at least owning its own switch. This means it then has control over the cost of calls coming in to and going out from its subscribers. It also means it controls its own service creation rather than relying on one operator to give it with services. Although this is not an unbending definition, there has been some bewilderment caused by service providers referring to themselves as virtual operators when in fact they are really just resellers.

It is also distinct from an *indirect provider* [36]as the customer does not dial a code to use the service. Instead the user has the perception that they are receiving service from a distinctive operator and the operator has a greater share of the profits made due to the activities of its subscribers.

1.5 Different Categories of MVNOs:

Category I: *Plump*[37]*/Full MVNO*: MVNO own its brand name, numbering series, billing system, SIMs, some network infrastructure like IN, HLR and even MSC. The MVNO does not own spectrum and therefore, uses radio network of MNO under business agreement for provision of services to its customers. In this category, the MVNO seems like a full fledged mobile operator and public can not differentiate in the MNO and MVNO. This category of MVNO operates under a license granted by the respective regulator and is bound by the license conditions similar to MNO[38].

[35] Robin Duke-Woolley (June 2001) MVNO: Doing Business with the Enemy? http://www.e-principles.com/
[36] ibid.
[37] James Edwards (2001) Mobile virtual network operators – More than just a big brand C.T.L.R. 2001p.3. Sweet and Maxwell Limited and Contributors
[38] Consultation paper on Mobile Virtual Network Operator (MVNO) Framework, Pakistan Telecommunication Authority January 26, 2006 p. 3 www.pta.gov.pk

This category of MVNO is usually operating in fully mature markets where there is sufficient competition and the growth is almost flat. The MNOs have sufficient spare capacity to sell in bulk to MVNO and thus earn some revenue, whereas the MVNO adds value to it and re-sell it in the market with its own brand name. In short this full MVNO Model has following distinctive features:

1. It has its own mobile network code
2. Issue its own SIM cards
3. Operate its own mobile switching centre (MSC)
4. Operate its own home location register (HLR)
5. Operate its own billing platform
6. Independent pricing
7. Independent billing
8. Independent Marketing [39]

Regulatory bodies are striving to increase competition in the sector by mandating opening up of systems and access to networks. However, critical success factors for MVNOs are their Brand strength and the available excess network capacity. Defining a *unique offering, operator experience in providing access to network, quality of offering-clear proposition, cost control and financial benefit*[40] are the other key factors for successful MVNO.

Category II: *Skinny*[41] */Service provider* [42] *MVNO*: Such MVNOs rely almost totally on the mobile operator's facilities. Normally such MVNO just *re-sells minutes*[43] acquired in bulk from the MNO and do not possess its own brand name. Calls to and from these MVNO subscribers would be treated as if they were calls to the mobile network operator's own

[39] Analysing the impact of MVNO by Carrie Pawsey/ **www.ovum.com**
[40] MVNO Partnering Strategies: Optimising the Success of the Partnerships between Network Operators and MVNOs Gita Sorensen Matthias Halfmann 1 December 2005/ **www.gos-consulting.com**
[41] James Edwards (2001) Mobile virtual network operators – More than just a big brand C.T.L.R. 2001p.3. Sweet and Maxwell Limited and Contributors
[42] Charles M Sarraf, Ericsson Lebanon. MVNOs – The "New" Concept for Mobile Operators p.5 http://www.ordre-ing-bey.org.lb/symposium/proceedings/11E_SARRAF.PDF
[43] Consultation paper on Mobile Virtual Network Operator (MVNO) Framework, Pakistan Telecommunication Authority January 26, 2006 p. 3 www.pta.gov.pk

customers. Similarly, the MVNO does not have its own codes/ numbers instead the numbers of MNOs are used. Further, the MVNO does not have its own SIM rather uses the SIMs of MNO. Therefore, SP-MVNO can't be differentiate on services and is very dependent on host network operator. This could be a starting point into MVNO world and in fact all existing MVNOs, *Virgin Mobile, Debitel, and Sense,*[44] have started in this form.

1.6 Types of Potential MVNOs:

There could possibly be two types of MVNOs who want to play in the Mobile market and they can be categorised as follows:

Telecom:

• *Fixed or Cable operators* may want to add mobile services, e.g. UPC Netherlands (cable operator), Tele2 Europe (outside Sweden)[45]

• *Mobile network operators* without radio coverage or licenses in regions/countries.[46] These companies include Sonera, Hutchison, France Telecom, and WorldCom. MVNOs of this class generally became interested in being MVNOs after either (i) failing to win a 3G license in a desired market, or (ii) making the economic decision to operate as an MVNO rather than a primary spectrum licensee.[47]

Fixed or Cable operators and Mobile network operators' critical success factors for becoming MVNOs include:

• They have an existing customer base to which to sell the mobile services to, reducing the cost of sales.

[44] Charles M Sarraf, Ericsson Lebanon. MVNOs – The "New" Concept for Mobile Operators p.5 http://www.ordre-ing-bey.org.lb/symposium/proceedings/11E_SARRAF.PDF
[45] The Growing Reality of Mobile Virtual Network Operators http://www.alcatel.com/lead/mvno.htm
[46] MVNO Partnering Strategies: Optimising the Success of the Partnerships between Network Operators and MVNOs Gita Sorensen Matthias Halfmann 1 December 2005/ www.gos-consulting.com
[47] Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe May 10, 2001. p. 17. http://itc.mit.edu/itel/students/papers/linsenmayer_thesis.pdf

• In the mind of the customers they have a clear affinity to the provision of mobile services as they are telecommunications companies. A further benefit is that they have the ability to bundle the services.

• They have brand awareness among their customers as well as with many potential customers.

• They have existing distribution channels; they could in the first instance just sell to existing customers so as to reduce retail costs.[48]

Non-telecom:

Following are the non-telecom potential MVNOs[49]:

• Media and entertainment companies e.g. Disney Mobile.

• Financial institutions e.g. Banks and Credit Card Companies.

• Retailers having strong brand, customer loyalty e.g. Tesco in UK.

- Automotive.
- Airlines.
- Technology and computer companies.

1.7 List of leading MVNOs in Europe:

In Europe the growth rate of MVNOs is more than 100 and following are the most leading MVNOs:

Belgium: Primus Telecom, Scarlet Telecom, Telenet, Transatel.

Denmark: CBB Mobil, Telmore, Debitel, Tele2.

Norway: Song Networks, Tele2, Chess, Sense, Zalto, You.

Netherlands: Scarlet, Tele2, Lebara, Yellow Telecom Call4Care, PEP Talk, Hema, TMF, Easy Mobile.

[48] MVNOs - their origins, strategies and opportunities Author: Edward Nugent, 2nd November 2001/ http://www.mobile-metrix.com/pdf/MVNO

[49] The Growing Reality of Mobile Virtual Network Operators/ http://www.alcatel.com/lead/mvno.htm

United Kingdom: Virgin, BT Mobile, Fresh, Mobile World, Tesco, Easy Mobile, Timico, Primus, Buytel TravelFone (Ryan Air), Toucan.[50]

1.8 Successful Model of MVNO 'Virgin Mobile UK':

One of the best examples of successful MVNOs is of **Virgin Mobile UK**, not only because it was one of the first, but also because it is one of the leanest and successful. Virgin Mobile launched its operations as a mobile virtual network operator (MVNO) in November 1999.[51] As an MVNO Virgin operate a virtual network providing a broad range of mobile communications services to their customers in UK over T-Mobile's network under non-exclusive, minimum ten year term, telecommunications supply agreement with T-Mobile signed in January 2004. [52] Within a year of launch they had over 500,000 customers, and by June 2001, they had over one million customers. On 29th April 2004 Virgin Mobile had reached more than four million customers.[53] And new agreement is signed by Virgin Mobile UK and BT Movio, a subsidiary of the BT Group to use Movio's broadcast network to offer Mobile TV services, it would put Virgin in a position to become one of the first service providers to offer digital TV in Europe - in late 2006[54].

Virgin took a pre-pay service, that the mobile network operators were trying to move away from as a supposedly low-revenue product, and returned better revenue per user than most of the operators' subscribers on supposedly higher revenue contract services. Virgin Mobile UK also did this with a very lean service, with the only real difference between the host operator and the Virgin SIM, being the brand, and a different customer care number. However, with just innovative pricing, some value-add services and a different customer care provision, Virgin managed to be voted twice "best network operator" whilst its host operator "worst mobile operator" despite the former not actually having a network, and the product, in

[50] http://www.takashimobile.com/mvno.html MVNO/SP list.
[51] http://about.virginmobile.com/about/us/background/
[52] ibid.
[53] ibid.
[54] www.pyramidresearch.com

terms of a network, were identical.[55] . Today, Virgin Mobile operates in five countries i.e. UK, USA, Canada, Australia[56]and has recently launched in France.[57]

1.9 MNOs Perspective of the MVNO Model:

From the MNO's perspective making an agreement with an MVNO is a big strategic issue. MNO's own future depends on what terms or conditions they agree on with the MVNO. Beneath are the advantages and concerns that MNOs observe in the MVNO model.

Advantages: Advantages that MNO could have by giving access to MVNO's are as follows:

1. By selling the network capacity to one or several MVNO's can bring new subscribers and traffic into the network hereby broadening the customer base of incumbent operators at zero cost of acquisition.
2. Selling of the capacity is also an efficient way to share the network costs. MNO's rather than resisting the whole sale market if they embrace the whole sale market by leasing out their IT service. This certainly supports retailers (MVNO's) but retailers brand can take them to where MNO's themselves can't go.[58] It is also not uncommon for the operator to take a stake in the MVNO – examples include Virgin Mobile's original deal with Mercury One2One and Tesco's 50:50 joint venture with O2 in the UK.
3. Further, MVNOs may bring ready-made retail distribution networks (e.g. Virgin mega stores) and online channels and the ability to leverage experience and customers from other businesses. If the MVNO is providing a mobile service integrated with a mobile content portal, the partner may bring valuable content, such as music[59].

[55] http://www.mobilevirtualnetwork.co.uk
[56] Consultation Paper On Mobile Virtual Network Operator (MVNO) Framework Pakistan Telecommunication Authority January 26, 2006 p.5 www.pta.gov.pk
[57] MEN Lite (news paper) April 4, 2006. Virgin en France. P. 11.
[58] Why does Asia lag US in MVNO? Robert Clark America's Network; Mar 2006; p.47
[59] MOBILE VIRTUAL NETWORK OPERATORS - MORE THAN JUST A BIG BRAND by James Edwards. C.T.L.R. 2001, 7(3), 66-70 Computer and Telecommunications Law Review2001

Concerns:

On the other hand, MNOs have concerns as well, because by creating a new player in the shape of MVNO their position is threatened. As this will give birth to competition due to which they will lose control over the market. Therefore many existing network operators still view the entire MVNO concept as a considerable threat. Omnitel Pronto Italia, for one, takes the position that: "MVNOs' presence in the market would generate enormous disincentives for infrastructure investments by mobile operators. Such mobile operators normally take on substantial upfront risk when choosing to invest massively in technologically advanced infrastructure and, consequently, have a reasonable expectation of having a return on capital commensurate with risk."[60]

It can be said, that the situation is kind of paradoxical: MNO's securing their own interests by not letting MVNO's in, unless they are certain that the MVNO in question will not enjoy significant success. MNO's thus find the '*Comfort Zone*'[61] the most beneficial and profitable amount of network capacity contracts. However, while searching for this *comfort zone* MNO's should keep in view the pricing, customer structure, services and the business strategy of the MVNO as well.[62]

Nevertheless an issue that arises is that would it be possible that the MNO's will take into consideration MVNOs interests while having negotiation for setting up a commercial agreement. An alternative mechanism to set the balance between both the parties (MVNOs & MNOs) could be through regulatory intervention. This has been discussed in depth below while taking into consideration examples of different jurisdictions as to how they managed to tackle and resolve these issues.

[60] Ovum: "Don't Forget Virtual Mobile Networks" (May 2, 2000, p. 1).
[61] Torras, D. 2002. MVNO's by the number. Executive Summary. Pyramid Mobile. URL: http://www.pyramidresearch.com Referenced 5 July 2004
[62] MOBILE VIRTUAL NETWORK OPERATORS: CASE FINLAND Annukka Kiiski, Heikki Hämmäinen Networking Laboratory Helsinki University of Technology.

SECTION II

MVNOs Regulation

2.1 Regulatory Background of MVNOs:

Regulatory bodies are striving to increase competition in the telecommunication sector by mandating opening up of systems and access to networks. However, unlike so many other areas of telecommunications, MVNOs have come about without encouragement or interaction from regulators.[63] It was in Scandinavia, however, that the first real steps towards launching an MVNO were taken in 1997[64], by the Sense Communication[65] called Net system International.[66] Sense planned to offer integrated fixed and mobile telephony products, under its own brand, using third parties' networks. Sense established an MVNO agreement with Sonera in Finland, but its initial attempts to make similar arrangements in Sweden, Denmark and Norway failed. Neither company was successful in establishing their setup. The reason why they failed was *lack of any regulatory provision*[67]that could have helped establishing an agreement with MNOs.

Sense then tried to exploit EU regulatory provisions that require networks with significant market power (SMP) to grant new networks direct interconnection. In Sweden, the regulator supported Sense's position, but did not have power to force Telia to enter into an MVNO arrangement. In Denmark, the regulator determined that Sense was not itself a network and hence had no rights to interconnect. Sense was in the process of appealing against this decision when it ran out of funds. Later backed with funds Sense launched its business as a service provider instead of MVNO.

---

[63] Tom Crane 2002 Mobile Virtual Network Operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 3

[64] Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe May 10, 2001. p. 13. http://itc.mit.edu/itel/students/papers/linsenmayer_thesis.pdf

[65] Tom Crane 2002 Mobile Virtual Network Operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 4

[66] Do Van Thanh. The Mobile Virtual Network Operator Concept: Truth and Myths p.1. http://www.item.ntnu.no/fag/ttm4165/Artikler/MVNOConcept.pdf

[67] Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe May 10, 2001. p. 13.

After the failure of Sense communications discussion started as to what should be the approach. Whether there should be any regulatory intervention to help develop MVNO's or the other way around. Some argued in favour and some against. Both views are discussed below:

2.2 Proponents of regulatory intervention:

Those in favour of regulation argue that mandatory access through regulatory intervention is necessary because MNOs do not allow access on commercial terms and merely try to sustain supernormal oligopoly profits, reduce consumer choice to keep their customers, and hinder consumers to access competing mobile portals.[68]They argue that the mobile network operators control the available radio spectrum, which is a *bottleneck facility* and an entry barrier for new mobile network operators. Also, mobile network operators are less likely to provide MVNO access unless it is a regulatory requirement. They maintain that regulation of the mobile market is failing, which is another reason why MVNO regulation maybe a good idea. Mobile operators have very high profit margins of 25 per cent, in some cases significantly over costs. Current regulation, as interpreted by some national regulatory authorities, already gives them the power to enforce an access obligation on existing operators.[69] Proponents of regulatory intervention stress that an increase in competition between networks will lead to improvements in service quality.[70]

2.3 Opponents of regulatory intervention:

Those against regulatory intervention base their arguments on the fact that the benefits of MVNOs are as yet unproven, and that there is inadequate evidence that market failure has occurred. The mobile market is competitive by nature and therefore does not require regulation. There is no industry consensus that MVNO access is necessary, and the bleak

[68] Jonathan Landgrebe. The mobile telecommunications market in Germany and Europe: Analysis of the regulatory environment Mobile Termination Charges and access for Mobile Virtual Network Operators (Ludwig-Maximilians-University of Munich) p. 56

[69] http://www.itu.int/itunews/issue/2001/08/mvno.html

[70] Sophie Miller and Heather Rowe. 'TELECOMMUNICATIONS' IT LAW TODAY January 2000 ITLT 8.1(5). p. 4. Available at: LexisNexis.

possibility that MVNO's could even discourage investment in mobile networks (both 2G and 3G).[71] They argue that given that MVNOs have emerged without regulation, any change may adversely affect this market.[72]

Keeping in view above mentioned different approaches towards regulatory intervention steps have been taken differently at different levels. Though there are no direct regulations however the most relevant regulations at EU level are set forth.

SECTION III

MVNOs Regulation at EU and European Level

3.1 Regulations at EU level:

Telecommunications industry was monopolised, and was completely State owned till 80's through out Europe. In the structure of the European telecommunications industry there was no room for private companies to enter. However, the real vision towards the competitive environment evolved with the introduction of '*EC Treaty'*. The most important as far as for MVNOs are concerned is Article 82 of EC Treaty. According to which: "Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States. Such abuse may, in particular, consist in:

(a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;

(b) limiting production, markets or technical development to the prejudice of consumers;

(c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;

[71] http://www.itu.int/itunews/issue/2001/08/mvno.html
[72] Telecommunications IT Law Today January 2000 ITLT 8.1(5) p. 4

(d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts".[73]

In the telecommunications sector there are at least two types of relevant product markets: that of services to be provided to end users, and that of *access to those facilities* that are needed to provide the services in question to the customers.[74] To provide services in the communications market, an undertaking may need to obtain access to various *Essential facilities*. And devoid of the access to those facilities it is not achievable for especially new and keen players to enter the market. To make it feasible for the potential entrants into the communications market to get access to such Essential facilities from the incumbents EC treaty plus EU regulations provided such provisions that prohibited any anti-competition actions.

Such regulations made at EU level to help facilitate communication industry to flourish, brought many incentives to new entrants in the market. The main idea under which these regulations were based upon is to *evolve competition* in the market. All the regulations spin around this theme. For the reason that competition has many advantages e.g. when new players enter the market they utilize all there efforts to make their position in the hearts of the consumer. This can only be possible by decreasing prices in addition providing value added services as much as they could. As a result the incumbents automatically cut down their prices and try to come up with new innovations to keep their place in the market. Through this rivalry of both new and incumbents competition develops and via which market environment prospers.

Recent communication directives issued by European Union have especially enabled the business opportunities for MVNO's. The most significant directives are presented as follows:

[73] Consolidated Version of the treaty establishing the European 24.12.2002 http://europa.eu.int/eur-lex/lex/en/treaties/dat/12002E/pdf/12002E_EN.pdf

[74] Klaus W. Grewlich. (1990) "Cyberspace": sector specific regulation and competition rules in European telecommunications Common Market Law Review 36: p. 959.

- **Access Directive**: The division of telecommunications operators to network operators and service operators is based on the EU legislation. The main focus of telecommunications regulation (including fixed and Mobile telecommunications networks[75]) is to obligate *network operators* to give access to facilities and/or services from their networks to another undertaking at a fair price. Under Article 2 of EU "*Access Directive"* Access includes : "*access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to facilities and services necessary to provide services over the local loop), access to physical infrastructure including buildings, ducts and masts; access to relevant software systems including operational support systems, access to number translation or systems offering equivalent functionality, access to fixed and mobile networks, in particular for roaming, access to conditional access systems for digital television services; access to virtual network services*"[76].

There are clear implications for MVNOs here, if MNO's core network assets are deemed to be 'essential' and the presence of MVNOs is considered a requirement of a competitive market. To know what this term essential facility stands for and how the facilities that MVNOs require could possibly are 'essential' is discussed in length below.

3.2 What essential facilities stand for under Access Directive?

Originally the term "facilities" or more commonly known as essential facilities was used in the commentary on United States antitrust case law (United States v. Terminal Railroad Association), however now it has multiple meanings and has been applied to justify imposing an obligation on a dominant firm to share its assets with its competitors[77].

[75] Access Directive 7 March 2002, http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00070020.pdf
[76] Access Directive 7 March 2002, Article 2 definition, http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00070020.pdf
[77] Essential Facilities and the Obligation to Supply Competitors under the UK and EC Competition Law by Derek Ridyard.

Now an essential facility is recognised as a doctrine and applied quite often in numerous sectors. An "essential facilities doctrine" (EFD) stipulates where the owner(s) of an "essential" or "bottleneck" facility is obligated to provide access to that facility at a "reasonable" price. This can be illustrated by an example; a railroad made available on "reasonable" terms to a rival rail company or an electricity transmission grid to a rival electricity generator. In MCI, The plaintiff providing long distance telephone service alleged that AT&T obstructed its connection to local exchanges; the Seventh Circuit held that a monopolist must, when feasible, make its essential facility available to a competitor who is unable to duplicate it.[78]

In the concept of "essential facilities" two markets are necessary and they are often expressed as upstream market and a downstream market such as manufacture and distribution. Normally, one firm is active in both markets i.e. upstream and downstream and other firms are active or wish to become active in the downstream market. A downstream competitor wishes to get access to an input from the integrated firm, but is refused. An EFD defines those conditions under which the integrated firm will be obligated to give access to such essential facilities.

A refusal to grant access may have the effect of hindering the maintenance of the degree of competition still existing in the market or the growth of that competition. The unfair competitive advantage that the control over an essential facility may give to a competitor is the rational for the limitation of the principle of freedom of contract i.e. it is an exception to the broad general rule that allows firms to deal with whom they choose. The rational for this heavy interference with the basic freedom to contract is that, in the case of an essential facility the dominant firm is able to maintain its dominance not because of higher efficiency, but

[78] Essential facilities: an epithet in need of limiting principles by Phillip Areeda (708 F.2d 1081 (7th Cir), cert. denied, 464 U.S. 891 (1983)

rather because of externalities which make the duplication of that facility economically impossible for the firm's rivals[79].

If we look at MVNO model closely it appears quite clear that all these aforementioned requisites are present in it. Spectrum is a scarce utility and can not be owned by more than exceptionally five operators. This demonstrates that it is a situation if left untouched give rise to oligopoly. And access directive spirit is to end the monopoly of few from the market by mandating access to undertakings by the incumbents. Furthermore it is not a new concept applied in telecommunication sector. It is well settled that access to potential essential facilities in telecom sector include: access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to the facilities and services necessary to provide services over the local loop), access to physical infrastructure including building, ducts and masts, access to relevant software systems including operational support systems, access to number translation or systems offering equivalent functionality. [80]

If access to all these facilities is obligated on the basis that it will evolve competition in the market than why not access to spectrum and related facilities to MVNOs. Because no doubt they will bring competition in the mobile market which is otherwise not possible.

- **Framework Directive**: The regulatory term 'significant market power'[81] (SMP) is used to describe an operator having a remarkable market share of a certain type of a service. Network operators having SMP must provide fair access to their networks.[82]

[79] Cyberspace: Sector Specific Regulation and Competition Rules in European Telecommunications. Klaus W. Grewlich. CML Rev. 1999. p.958.
[80] Telecommunications law by Lloyd and Mellor, pp.103, 102
[81] Framework Directive Article 14, http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00330050.pdf
[82] Framework Directive Article 14 (2): "An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers".

Furthermore, they are obliged to provide the financial information of transmission services to the regulator so that the fairness of their network tariffs can be estimated.[83]

- **Universal Service Directive (Mobile Number Portability)**: There is another EU directive which is worth mentioning 'Universal Service Directive'[84]. Though there are many positive dominos of USD but as regards MVNOs concern Article 30 is crucial. Under this article all subscribers of publicly available telephone services, including *mobile services*, who so request can retain their number(s) independently of the undertaking providing the service.

In 2003, the *European Commission* issued a recommendation to national telecom regulators (NRAs) to examine the competitiveness of the market for wholesale access and call origination on public mobile telephone networks. The study resulted in new legislation from NRAs in countries like Ireland and France that forces operators to open up their network to MVNOs.[85]

The purpose of these regulatory actions has been to increase competition in the mobile communications business field and thus accelerate the development of new services and technical innovations. MVNOs are favored by regulators because they promote this goal. To make the mobile communications market easier to access, national regulators can impose incumbent operators to lower the barriers to enter the market. Examples of these acts are mobile number portability (MNP) and price regulation of interconnection and termination fees. Especially for the small MVNOs, the regulation of these fees is essential to enter into mobile communication markets.

Despite of the new directives and rules, not all EU members have incorporated the European Union Directives into national law. Besides that, most regulators have found that

[83] Access Directive 7 March 2002, Article 8 to 13, http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00070020.pdf
[84] Universal Service Directive http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00510077.pdf
[85] http://www.answers.com/topic/mobile-virtual-network-operator

their existing regulations cannot be applied to MVNOs without amendment. Especially the amount of regulation needed in the relationships between MVNOs and MNOs is still under consideration in many countries: should regulators e.g. force the MNOs to reserve a certain limit for MVNOs?[86] Such reluctance shown by the regulators to intervene is because of incumbent operators. It appears that in most cases, regulators have bowed to the strong wishes of existing network operators by declining to codify regulations either mandating or allowing MVNOs.[87] For example in Hong Kong, incumbent operators expressed their concerns and tried to halt when the regulatory authorities were thinking of decision of mandating access to 3G spectrum for MVNOs. They viewed it as if access to 3G spectrum for MVNOs was mandated by the regulator, they might be forced to roll out and maintain networks larger than their actual requirements, leading to technical inefficiencies which could jeopardise their own business viability.[88]

3.3 MVNOs and the European regulatory environment:

In various European countries, MVNOs' fortunes have been greatly affected by the decisions and actions of national regulators and the European Union. In a handful of countries, most notably the **UNITED KINGDOM**, operators opened their networks to MVNOs entirely voluntarily, with no regulatory intervention sought or required. However, in other countries, the national regulator has taken steps to force the MNOs to sell capacity to MVNOs, citing competition issues. This has been the case in countries such as **DENMARK** where the legislation passed in mid-2000 obliged SMP providers to conclude MVNO agreements**.**[89] That is how regulator made the ground breaking move of putting mobile operators on the same basis as fixed operators, giving new entrants rights to national roaming across all networks

[86] Mobile Virtual Network Operators: Case Finland Annukka Kiiski, Heikki Hämmäinen Networking Laboratory Helsinki University of Technology
[87] Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe May 10, 2001. p. 54.
[88] Licensing Framework for Third Generation Mobile Services: Analysis of Comments received, preliminary conclusions and further industry consultation; October 3, 2000 at www.ofta.gov.hk pp. 10-11
[89] COMPETITION POLICY IN TELECOMMUNICATIONS: THE CASE OF DENMARK November 2002 INTERNATIONAL TELECOMMUNICATION UNION http://www.itu.int/osg/spu/ni/competition/casestudies/denmark/Denmark%20Case%20Study%201101.pdf p. 41.

and the right to interconnect.[90] Likewise in **SWEDEN** PTS[91], the Swedish regulator also requires that 3G networks host MVNOs but it is not very prescriptive in its definitions. However, overall its strategy is amongst the most pro-MVNO.[92]

However, even these limited steps have provoked anger from many existing host operators. They regard any decision to force access as a way of undermining the huge amounts of investment which they have devoted to creating a network. In addition, 3G licence holders are keen to ensure that they are not required to provide access to MVNOs, feeling that having paid billions in licence fees and on the understanding that they would reap massive rewards; they should not now be forced to provide access to their networks. Successfully resolving this issue will be key to ensuring that MVNOs can grow as part of the mobile market.[93]

ITALY stands out in Europe as the only significant country where the regulator has determined that network operators do not have to open their networks to MVNOs on request. The Italian regulator Agcom has decreed that the network operators should be afforded a level of protection to develop their 3G businesses, in a decision that was upheld by the EU in December 2005.[94] Although initially Italian regulators attempted to legitimize MVNO but the four Italian incumbent operators strongly opposed regulators' attempts to regulate and legitimize MVNOs. Because of this pressure, the Italian government decided to delay MVNO legislation until at least 2010, so to give the incumbents' time to (i) recover UMTS costs, and (ii) establish themselves in the mobile data market.[95]

[90] Tom Crane 2002 Mobile Virtual Network Operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 4
[91] http://www.pts.se/Default.asp?Sectionid=&Itemid=&Languageid=EN
[92] The future of MVNOs Analysys paper. Available at: http://www.analysys.com/pdfs/mvno_paper.pdf#search='ireland%20mvno%20regulations
[93] Tom Crane 2002 Mobile Virtual Network Operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 4
[94] Ofcom, The Communications Market Interim report, February 2006. 11.5
[95] Mobile Virtual Network Operators: Can They Succeed in a Competitive Carrier Market? The Yankee Group. 2000. p. 6

The place where the MVNO model was lucratively commenced and that turned out to be landmark for potential entrants is The United Kingdom. Therefore, United Kingdom is preferred for case study.

3.4 Case study United Kingdom:

3.41 Liberalisation of the Telecommunication Market

Liberalisation in Britain started in 1981 when the British Telecommunications Act came into effect. The act established British Telecom (BT) as a public corporation and called fore the liberalisation of the telephone equipment market (e.g. phones, modems, answering machines). In 1984, BT was privatised[96] and the Office of Telecommunication (Oftel) was established in order to watch over BT and to advise the government on the future development of the telecommunications market place. In the same year a license was granted to a corporation called Mercury to provide telephone services in competition with BT. Another year later ,1985, Mercury was granted the right to fully interconnect with BT's network.[97] The same year BT Cellnet and Vodafone were open for business within mobile telecommunications after being granted to provide national cellular radio networks in the UK (One2One, 2001).

Further liberalisation of the UK market came through the 1991 'White Paper' issued by the UK government. In this paper almost complete liberalisation of the networks and services market was foreseen in the near future.[98] By 1996 the entire UK telecommunications market was opened to entry. By 1998, there were some thirty licensed public telecommunications operators, with five offering national services across the UK, six providing services mostly in London and other four offering regional services. Competition had developed in all segments of the market. Mobile telephony was also growing rapidly,

[96] http://www.btplc.com/Thegroup/BTsHistory/History.htm
[97] Duysters, G. (1996) *The dynamics of technical innovation – The evolution and development of information technology*, Edward Elgar Publishing Ltd, UK, p. 82-83
[98] Duysters, G. (1996) *The dynamics of technical innovation – The evolution and development of information technology*, Edward Elgar Publishing Ltd, UK, p. 82-83

with 5.7 million cellular telephone subscribers by the end of 1996. BTs market share was falling steadily.[99]

3.42 Status & Development on MVNO Regulation

In June 1999, the British Office on Telecommunications, Oftel, published a consultation document on what MVNOs could offer consumers.[100] It was in response to demand from commercial organisations that were to establish MVNOs. Oftels aim was to investigate what benefits MVNOs might bring to consumers and invite comments on legal and technical issues surrounding MVNOs. Oftel accepts that MVNOs may lead to a wider range of products and services than currently available in the mobile market. In particular, they may help to overcome some practical technical and commercial constraints hindering the development of a fully integrated fixed-mobile service, however it is not clear that this innovation and development is dependent on regulatory action.[101] In addition to the above mentioned arguments, as the auction on 3G spectrum has provided the opportunity for a fifth mobile operator to enter the UK market, which is believed to increase significantly to the development of effective competition and is seen to be another way in which some of the main benefits of MVNOs might be achieved.[102]

Mainly Oftel was interested in the net benefits that MVNOs might bring to consumers that could not be provided by any other means.[103] And at the end conclusion that was led by the consultations conducted was that '*regulatory action is not justified at present*'[104].

[99] Thatcher, M.(1999) 'Liberalisation in Britain' in *European telecommunications liberalisation* Eds Eliasson K.A and Sjovang, M. Routledge London, p.105
[100] OFTEL (1999b) Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer consumers, June 1999.
[101] OFTEL (1999b) *Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer consumers*, June 1999. *p. 6*
[102] OFTEL (1999b) *Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer consumers*, June 1999. p. 10
[103] S. Kristensson A. Gahnström (2001)'Mobile Virtual Network Operators Assessing MVNO Business Opportunities' p. 29
[104] OFTEL (1999) *Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer consumers*, June 1999.

However, under the present UK laws a mobile virtual network operator (MVNO) can, if the mobile network operator is not specifically obliged to supply airtime to the MVNO at wholesale prices, achieve the same commercial outcome:

i. By establishing breach by the mobile network (if designated as having SMP) of its obligation to offer interconnection on cost oriented terms; or

ii. Generally, by seeking airtime as a form of interconnection or access which the mobile network must offer on reasonable terms to any network operator.[105]

The UK's – and worlds – first MVNO was Virgin Mobile, which launched in 1999. According to Ofcom, in its Communications Market Interim report (2006) by mid-2005, there were seven major MVNOs in the UK market, out of an estimated 53 MVNOs across Europe as a whole. In addition to Virgin Mobile, which continues to be the largest UK MVNO, other operators have been established by existing telecoms companies such as BT, Car phone Warehouse and One Tel, as well as by supermarkets such as Tesco and Sainsbury's, and by other companies with high-profile brands, such as Easy Group**.**[106]

SECTION IV

MVNOs and the Asian regulatory environment:

4.1 Hong Kong:

Regulators in some jurisdictions of Asia have made their decision in favour of solid regulatory intervention e.g. in Hong Kong. Under the policy framework of Open Network Access (ONA), the 3G licensees are required to open up at least 30 per cent of network capacity for use by two category of non-affiliated (<15% control of voting shares) service providers (NSP), namely non-affiliated mobile virtual network operators (MVNO), and non-

[105] Ian Walden and John Angel. (2005) Telecommunications Law and Regulations (Second edition) p.301. *Oxford University Press*
[106] Ofcom, The Communications Market Interim report, February 2006 p.82

affiliated content or service providers (CSP).[107] 2G network operators are not obliged by this Open Network Access policy. OFTA[108] (Office of the Telecommunications Authority) has also said that it will intervene if operators and MVNOs cannot reach satisfactory agreement on wholesale prices. OFTA has clearly defined MVNOs requiring them to have their own mobile switching centres and gateways, interconnect and roaming agreement s, billing and customer care systems and to issue their own SIM cards.[109]

Through 3G licensing and applying the Open Network Access regime in the telecom market, the OFTA has created open competition that has already brought the enhancement of choice of mobile services and better consumer package. The mandatory capacity provision and interconnection under the Open Network Access regime encouraged MVNOs to enter into the Hong Kong Mobile communications market. Due to MVNOs friendly policies currently seven operators are holding Mobile Virtual Network licenses they are: Trident Telecom Ventures Ltd., China Motion Telecom (HK) Ltd., China Unicom International Limited, China-Hong Kong Telecom Ltd., CITIC Telecom 1616 Limited, Telecom Digital Mobile Ltd. and IMC Networks Limited.[110] On the other hand, MVNOs still have to provide more new innovative services or use strong brands to lure customers away from the MNOs.

There are still some concerns on the policy that OFTA has adopted like OFTA's decision to force reservation of 30% capacity on 3G network for MVNOs is greatly undermined by leaving the definition of capacity in the hands of the networks. Likewise, its requirement that MVNOs be 'heavy' increases the costs of market entry and will doubtless deter the entry of some MVNOs.[111]

[107] Mobile Virtual Network Operators (MVNOs) in Hong Kong Prepared by: Margaret LEUNG margaret.leung@swedishtrade.se 10 April 2002, p. 5
[108] http://www.ofta.gov.hk/en/index.html
[109] www.analysys.com/pdfs/**mvno_paper**.pdf p.6
[110] http://www.ofta.gov.hk/en/tele-lic/operator-licensees/mvno-lic.html
[111] www.analysys.com/pdfs/**mvno_paper**.pdf p.9

4.2 Malaysia:

Malaysian communications and multimedia commission[112] (MCMC) has defined MVNOs in very broad terms i.e. "an organisation that does not have assignment of 3G spectrum but is capable of providing public cellular services to end users by accessing radio networks of one or more 3G spectrum holders".[113] The reason for this broad definition according to Malaysian communications and multimedia commission will not only lowers the barriers to market entry for the potential entrants but also provides them flexibility to establish business models according to their financial capability. As a result of it level of competition will increase and consequently prices will decrease and procreate innovative service offerings that will benefit end users.

In a recent guideline on regulatory framework for 3G mobile virtual network operators Malaysian communications and multimedia commission has emphasised that appropriate regulatory framework is essential regarding MVNOs because they will further improve the level of competitiveness in the mobile sector. However, MCMC due to the lack of evidence that there is any market failure decided not to regulate terms and conditions of access to the radio network as well as other incidental facilities and services required to provide services to end users. And MCMC has decided that unless it realizes that such intervention is necessary to ensure long term benefits to end users and growth in the industry will not intervene.[114]

4.3 Pakistan:

The Pakistan Telecommunication Authority (PTA) [115] allows Mobile Virtual Network Operator (MVNO) services in Pakistan in the light of clause 6.12 of Cellular Mobile Policy 2004.[116] Mobile operators are also permitted to support MVNO services. Under this clause

[112] http://www.cmc.gov.my/
[113] Malaysian communications and multimedia commission, GUIDELINE ON REGULATORY FRAMEWORK FOR 3G MOBILE VIRTUAL NETWORK OPERATORS 16 February 2005
[114] Ibid.
[115] http://www.pta.gov.pk/index.php?cur_t=vnormal
[116] Mobile Cellular Policy January 28, 2004 IT and Telecommunication Division Ministry of Information Technology Government of Pakistan http://www.pta.gov.pk/media/Mobile_Cellular_Policy_Jan_28_2004.pdf

6.12 of Cellular Mobile Policy 2004, MVNO model is considered to be a concept that supports and encourages an open and competitive market in telecommunications.

Pakistan Telecommunication Authority has recently published a 'Draft Framework for MVNO Services in Pakistan'.[117] Under this 'Draft Framework for MVNO' following are its main and important features that need to be mentioned:

- MVNO shall not be allowed to use its own brand name for provision of services in Pakistan. Instead, the MVNO shall use brand name of MNO with whom a commercial agreement would have been made.[118]
- MVNO shall not be allowed to install any kind of network elements/infrastructure.[119]
- MVNO shall not be allowed to apply for allocation of separate block of numbers.[120]
- MVNO shall not be allowed to make roaming agreement with other local/ national/ international mobile networks. The MVNO shall provide roaming facilities to its customers as per roaming agreements made by its parent MNO.[121]
- MVNO shall not claim ownership of customers.[122]

These salient provisions in this 'Draft Framework for MVNOs' show that it is not a very MVNO friendly policy framework. The scope that has been drawn in this Draft for MVNOs is very narrow. Under these terms and conditions MVNOs can only work as *Resellers* and not as full MVNO which is the true essence of MVNO model. And in the dearth of competition there is no real meaning for MVNOs. If the MVNOs cannot come up with their own brand name neither they can claim ownership of customers than what is the point giving them a status of MVNO.

[117] CONSULTATION PAPER ON Mobile Virtual Network Operator (MVNO) Framework Pakistan Telecommunication Authority January26,2006 Annex- A: Draft Framework for MVNO Services in Pakistan http://www.pta.gov.pk/media/Consultation%20Paper%20on%20Framework%20for%20MVNO%20v1.pdf
[118] Ibid. Annex-A: Clause 2.3
[119] Ibid. Annex-A: Clause 2.4
[120] Ibid. Annex-A: Clause 2.5
[121] Ibid. Annex-A: Clause 2.7
[122] Ibid. Annex-A: Clause 2.8

The regulators around the globe are keen on promoting competition in the telecom sector by enabling operators who do not have resources to obtain radio spectrum right to participate in the Mobile business market. This innovative MVNO regime also encourages capable small and medium enterprises to design and provide creative mobile applications over existing operators' networks at a fair price. Therefore, MVNOs are given right to appear before the customer as an independent operator although they use incumbent operators' spectrum. And this is what spurs existing established brands to enter in Mobile communications market and compete with existing operators.

Hence, it is suggested to Pakistan Telecom Authority to reconsider their policies about MVNOs. Give more freedom to potential and keen players to enter and create a competitive environment. Instead of protecting incumbents provide chance to new entrants.

CONCLUSION:

The MVNO model brings a number of new opportunities for all players involved, including Mobile Network Operators, who can expand abroad by becoming an MVNO either in countries where they have 3G licenses but they don't have 2G networks or in countries where they don't have even 2G licenses. They can also take the role as *MVNE* (Mobile Virtual Network Enabler)[123] and generate revenues via, offering infrastructure and related services ranging from network element provisioning, administration and operations to OSS/BSS support to MVNOs.

MVNOs have also changed the rules and the structure of the mobile marketplace, and brought new ways to provide mobile services. With New Market Dynamic, Internet, Commerce and Mobile are getting together with new players. While all these positive dominos of MVNO, it is becoming increasingly apparent that being an MVNO is neither a guarantee of successful market entry nor a panacea for the broader strategic issues facing a new entrant.

[123] What is a MVNE? http://www.mobilein.com/what_is_a_mvne.htm

To succeed the MVNOs must consider and adopt such strategies that can help them to establish their position in the market. As critical success factors for MVNOs are their brand strength and the available excess network capacity. For example, MVNOs must have a brand or identity that draw a loyal following and which is synergized with the innovative service offering that the MVNO creates. Defining a *unique offering, operator experience in providing access to network, quality of offering-clear proposition, cost control and financial benefit* are other key factors for the successful MVNO.

And as far as upcoming MVNOs are concerned it is better for them to choose to acquire most of their value added platforms from the host operator until their subscriber volumes build to a level where they can take advantage of economies of scale and independently acquire non-Core Infrastructure. In addition, one of the things that can lead new MVNOs to success is that they should be targeting market segments about which they have in depth knowledge. In addition if they *add value to capacity*[124] that the original licensee would have been unable to utilize in an absence of this information can assist in success.

Therefore it is not enough for a MVNO to get access to spectrum and related facilities of Host Network Operator; the difference that they are expected to bring is by content aggregation and service offering using the technology. In this sense, MVNOs can play an important role to boost *Mobile Internet*[125] by introducing new players, not necessary coming from telecommunication background, to the market, who can provide new businesses and services through content aggregation.

As far as regulatory environment is concerned there has been still no solid regulation for MVNOs. Therefore, the industry waits; for specific regulation which will have great influence upon the speed of MVNOs emergence. For example, in the EU, where regulation

[124] Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe May 10, 2001. p. 34.
[125] Charles M Sarraf, Ericsson Lebanon. "MVNOs – The "New" Concept for Mobile Operators" pp.10-11.
http://www.ordre-ing-bey.org.lb/symposium/proceedings/11E_SARRAF.PDF

tends to be interventionist, there is no EU-wide requirement regarding MVNOs; one may yet emerge, guaranteeing access rights or even specifying how pricing should be set. Same is the case at countries level. Nevertheless had there been any regulation at EU level we would have seen regulation across the Europe. Though, unfortunately as there are no direct regulations at EU level. EU should consider issuing a directive concerning MVNOs. However, while regulating regulators must leave MNOs and MVNOs to negotiate supply conditions. And only intervene if there is clear evidence of market failure. Because regulating price of supply to MVNOs will produce worse deal for MVNOs than negotiation if the regulated price is too high. And if the regulated price is too low it will decrease infrastructure investment incentives and reduce chance of MVNOs success.

On the other hand regulatory environment in Asia is also paradoxical. Such as in Hong Kong the regulations are very much pro-MVNO. In Malaysia regulators have followed the steps of United Kingdom. However Pakistan although has allowed the entry of Mobile Virtual Network Operators but restricted it to work as Resellers and not as complete or full MVNO.

Confirmation by the regulatory authorities of regulatory intervention could provide a boost to this MVNO concept. However, MVNOs must also recognise that without the support of the host operator no deal is likely to be possible. As the European experience of *unbundling the local loop* demonstrates, even if forced to act by regulatory order, incumbents can be extremely creative in their resistance to change when they are not convinced of the commercial value of the course they have been ordered to follow.

BIBLIOGRAHPY

Books & Thesis:

- Ian Lloyd and David Mellor (2003) Telecommunications law. Published by *London: LexisNexis/Butterworths*.
- Ian Walden and John Angel. (2005) Telecommunications Law and Regulations (Second edition). *Oxford University Press*
- Duysters, G. (1996). The dynamics of technical innovation: The evolution and development of information technology. Cheltenham: Edward Elgar *Publishing Ltd*, UK.
- Thatcher, Mark. 'Liberalisation in Britain: From Monopoly to Regulation of Competition.' In *Liberalising European Telecommunications*. Routledge, 1999.
- S. Kristensson A. Gahnström. Mobile Virtual Network Operators Assessing MVNO Business Opportunities. *Thesis. University of Stockholm, Sweden.* Available at: http://web.hhs.se/cic/courses/underthebridge/thesis_MVNO.pdf
- Raymond A. Linsenmayer. Secondary Spectrum Markets in Europe (May 10, 2001) p. 17. *Thesis. The Fletcher School of Law and Diplomacy MALD.* http://itc.mit.edu/itel/students/papers/linsenmayer_thesis.pdf
- Jonathan Landgrebe. The mobile telecommunications market in Germany and Europe: Analysis of the regulatory environment Mobile Termination Charges and access for Mobile Virtual Network Operators (Ludwig-Maximilians-University of Munich) available at: http://groups.haas.berkeley.edu/fcsuit/Pdf-papers/Regulation-Landgrebe.pdf
- Annukka Kiiski, Heikki Hämmäinen. MOBILE VIRTUAL NETWORK OPERATORS: CASE FINLAND Networking Laboratory Helsinki University of Technology. Available at: http://www.netlab.tkk.fi/tutkimus/lead/leaddocs/Kiiski_ITS_MVNO.pdf
- Mathias Tallberg, MARCH 17, 2005. 'Functional Extensions to Mobile Operator Business Game'. Available at: http://www.netlab.tkk.fi/tutkimus/lead/leaddocs/ThesisTallberg.pdf

Legislations:

- Consolidated Version of the treaty establishing the European Community 24.12.2002. Available at: http://europa.eu.int/eurlex/lex/en/treaties/dat/12002E/pdf/12002E_EN.pdf
- Access Directive (7 March 2002). Available at: http://europa.eu.int/eurex/pri/en/oj/dat/2002/l_108/l_10820020424en00070020.pdf
- Framework Directive (7 March 2002). Available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00330050.pdf
- Universal Service Directive (7 March 2002). Available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_108/l_10820020424en00510077.pdf

Articles:

- D. Varoutas, D. Katsianis, Th. Sphicopoulos, A. Cerboni, K.O. Kalhagen, K. Stordahl, J. Harno, I. Welling. 3G MVNOs financial perspectives. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=717381
- Tom Crane (2002) Mobile Virtual network operators: An easy way to exploit the riches of the mobile phone market. C.T.L.R. 2002 p. 1.
- Robin Duke-Woolley (June 2001) MVNO: Doing Business with the Enemy? Available at: http://www.e-principles.com/
- Lillehagen A. et al. (2001). An Analysis of the MVNO Business Model, Telektronikk vol. 4.2001.
- Do Van Thanh (2001). The Mobile Virtual Network Operator Concept: Truth and Myths, Telektronikk vol. 4.2001. Available at: http://www.item.ntnu.no/fag/ttm4165/Artikler/MVNOConcept.pdf
- Audestad, J A, Gaivoronski, A. 2001. Option pricing of virtual network mobile operators. *Telektronikk*, 97 (4), 107–112. Available at: http://www.telenor.com/telektronikk/volumes/index.php?page=overview&id1=32&select=00-04
- Khali Henderson *(2001).* Mobile Virtual Network Operators. Available at: http://www.phoneplusmag.com/articles/181feat1.html
- James Edwards (2001) Mobile virtual network operators – More than just a big brand C.T.L.R. 2001p.3. *Sweet and Maxwell Limited and Contributors.*
- Carrie Pawsey. Analysing the impact of MVNO. Available at: www.ovum.com
- Gita Sorensen Matthias Halfmann (1 December 2005).MVNO Partnering Strategies: Optimising the Success of the Partnerships between Network Operators and MVNOs. Available at: www.gos-consulting.com
- Charles M Sarraf, Ericsson Lebanon. MVNOs – The "New" Concept for Mobile Operators. Available at: http://www.ordre-ing-bey.org.lb/symposium/proceedings/11E_SARRAF.PDF
- The Growing Reality of Mobile Virtual Network Operators. Available at: http://www.alcatel.com/lead/mvno.htm
- Edward Nugent (2nd November 2001). MVNOs - their origins, strategies and opportunities. Available at: http://www.mobile-metrix.com/pdf/MVNO
- Robert Clark America's Network. (March 2006). Why does Asia lag US in MVNO? Available at: http://www.americasnetwork.com/americasnetwork/article/articleDetail.jsp?id=313996
- Torras, D. 2002. MVNO's by the number. Executive Summary. Available at Pyramid Mobile. URL: http://www.pyramidresearch.com Referenced 5 July 2004
- Klaus W. Grewlich. (1990) "Cyberspace": sector specific regulation and competition rules in European telecommunications. Common Market Law Review 36: p. 959.
- Derek Ridyard. Essential Facilities and the Obligation to Supply Competitors under the UK and EC Competition Law. 17 EUR. Competition L. REV. 438, 446 (1996).
- Phillip Areeda. Essential facilities: an epithet in need of limiting principles (708 F.2d 1081 (7th Cir), cert. denied, 464 U.S. 891 (1983).
- Mobile Virtual Network Operators: Can They Succeed in a Competitive Carrier Market? The Yankee Group. 2000. p. 6
- Margaret LEUNG 10 April 2002 Mobile Virtual Network Operators (MVNOs) in Hong Kong. Available at:

http://www.swedishtrade.se/ittelekom/static/MVNO.pdf

- Sophie Miller and Heather Rowe. 'TELECOMMUNICATIONS' IT LAW TODAY January 2000 ITLT 8.1(5). Available at: LexisNexis.

POLICIES, RECOMMENDATIONS AND REPORTS:

- Ofcom, Spectrum Framework Review, Issued: 28 June 2005. Available at: http://www.ofcom.org.uk/consult/condocs/sfr/sfr2/sfr.pdf
- Malaysian communications and multimedia commission, GUIDELINE ON REGULATORY FRAMEWORK FOR 3G MOBILE VIRTUAL NETWORK OPERATORS 16 February 2005. Available at: http://www.cmc.gov.my/facts_figures/codes_gl/guidelines/pdf/MVNO%20Guideline%20-Final.pdf
- Consultation paper on Mobile Virtual Network Operator (MVNO) Framework, Pakistan Telecommunication Authority January 26, 2006.Available at: www.pta.gov.pk
- Licensing Framework for Third Generation Mobile Services: Analysis of Comments received, preliminary conclusions and further industry consultation; October 3, 2000. Available at: www.ofta.gov.hk
- COMPETITION POLICY IN TELECOMMUNICATIONS: THE CASE OF DENMARK November 2002 INTERNATIONAL TELECOMMUNICATION UNION. Available at: http://www.itu.int/osg/spu/ni/competition/casestudies/denmark/Denmark%20Case%20Study%201101.pdf
- Ofcom, The Communications Market Interim report, February 2006. Available at: http://www.ofcom.org.uk/research/cm/feb06_report/comms_mkt.pdf
- OFTEL (1999) Mobile Virtual Network Operators: OFTEL inquiry into what MVNOs could offer consumers, June 1999. Available at: http://www.ofcom.org.uk/static/archive/Oftel/publications/1999/consumer/mvno0699.htm
- Mobile Cellular Policy January 28, 2004 IT and Telecommunication Division Ministry of Information Technology Government of Pakistan. Available at: http://www.pta.gov.pk/media/Mobile_Cellular_Policy_Jan_28_2004.pdf

Web Resources:

- http://en.wikipedia.org/wiki/History_of_mobile_phones
- http://www.out-law.com/page-2026
- http://www.three.co.uk/index.omp
- http://en.wikipedia.org/wiki/Mobile_Virtual_Network_Operator
- www.motricity.com/pdf/mvno/Motricity_MVNO_WhitePaper_Nov2005.pdf
- http://www.mobilein.com/what_is_a_mvno.htm
- http://about.virginmobile.com/about/us/background/
- http://www.takashimobile.com/mvno.html

- www.pyramidresearch.com
- http://www.mobilevirtualnetwork.co.uk
- http://www.itu.int/itunews/issue/2001/08/mvno.html
- http://www.answers.com/topic/mobile-virtual-network-operator
- http://www.btplc.com/Thegroup/BTsHistory/History.htm
- www.analysys.com/pdfs/mvno_paper.pdf
- http://www.ofta.gov.hk/en/tele-lic/operator-licensees/mvno-lic.html
- http://www.itu.int/osg/spu/ni/3G/workshop/presentations/lewin_1.pdf
- https://motofuture.motorola.com/flash_holder.html
- http://www.tech-faq.com/gsm.shtml
- http://www.itu.int/osg/spu/ni/3G/technology/index.html
- www.mercatorpartners.com
- http://www.mobilein.com/what_is_a_mvne.htm
- http://www.pts.se/Default.asp?Sectionid=&Itemid=&Languageid=EN
- http://www.ofta.gov.hk/en/index.html
- http://www.cmc.gov.my/
- http://www.pta.gov.pk/index.php?cur_t=vnormal