# Regulatory Remedies and Safeguards

Final Report

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Prepared for:

## Version History

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## Table of Contents

# 1. Introduction

1.1. This report has been prepared by Cartesian for the Uganda Communications Commission (UCC) within the context of a wider engagement concerning market definition and market power assessment.

1.2. The purpose of this document is to identify a range of regulatory remedies to address competition issues and provide examples of how these have been employed by National Regulatory Authorities (NRAs) in selected countries.

1.3. In this document we identify at high level, remedies for consideration to deal with the issues identified in the Ugandan communications sector. These issues are those identified in the Significant Market Power (SMP) Assessments conducted by Cartesian between October and December 2014.

1.4. This document does not seek to assess the potential impact of specific regulatory remedies. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

1.5. Regulatory measures for purposes other than addressing competition issues (e.g. for consumer protection, privacy, property rights, etc.) are beyond the scope of this report.

# 2. Regulatory Objectives

## Policy Objectives

2.1. The UCC was established to implement the provisions of the Uganda Communications Act 2013 (the "Act")[1] with a principal goal of developing a modern communications sub-sector and Infrastructure in Uganda, in conformity with the operationalization of the Telecommunications Policy (the "Policy").[2]

2.2. Recognising the critical nature of the communications sector to Ugandan society, government and the wider economy, the objectives of the Policy include the following:

a. To continue promotion of rollout of telecommunications infrastructure while ensuring efficient management of telecommunications resources for sustainable human development;
b. To further strengthen a legal and regulatory environment that supports development of Uganda's Telecommunications sub-sector;
c. To create a conducive environment for the establishment of a fully liberalised, technology neutral and competitive telecommunications sector;
d. To promote human resource capacity development in the telecommunication sector;
e. To promote value added services, access to information and service needs to all sectors of society especially the marginalised sections of society (rural or low income communities and people with disabilities); and

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[1] THE UGANDA COMMUNICATIONS ACT 2013, 18 January 2013
[2] Ministry of Information and Communications Technology (Republic of Uganda), *Draft Telecommunications Policy 2012*, August 2012

f. To promote innovation in the sector through research and development, product development, capacity building, reward and recognition.

2.3. In support of the Policy, the UCC is mandated to undertake a range of functions in the following areas:

- Licensing and standards;
- Spectrum management;
- Tariff regulation;
- Research and development;
- Consumer empowerment;
- Policy advice & implementation;
- Rural communications development; and
- Capacity building.

2.4. Competition is an important mechanism for driving economic progress. In a market with effective competition, competitive pressures force firms to innovate and become more efficient. This in turn can lead to lower prices for consumers, new services and higher quality. It is for these reasons that effective competition is a highly desirable and preferred outcome for society.

2.5. In some cases, however, competitive forces on their own are insufficient to ensure that firms efficiently allocate resources and maximise social welfare. In this situation ("market failure"), regulation can be used to address the gap.

## Addressing Market Failure

2.6. Regulation is often applied to address market failures. There are several causes for market failure, of which the most pertinent in the context of this report are:

- Monopolist supply;
- Inefficient exclusion;
- Information asymmetry;
- Externalities; and
- Limited common property resource.

2.7. These issues are discussed below.

*Monopolist Supply*

2.8. A monopolist supplier has the power to set prices that are significantly higher than cost and/or reduce output below the competitive level. It does not face the constraints present in competitive markets that result in innovation and downward pressure on prices and upward pressure on quality, as suppliers compete for buyers. This often leads to higher prices, poor product and service quality and stymied innovation.

2.9. Monopolies may come about through concentration of market power, or may be present 'naturally' due to the structure of the market. A natural monopoly exists where it is uneconomic to duplicate assets, and hence there is no economic case for facilities-based market entry.

2.10. Issues related to monopolist supply can arise in markets where there is no absolute monopoly. An individual firm with significant market power (SMP) can also have the potential to either increase price above and/or reduce output below the competitive level. The same is true for a group of firms that collectively have SMP.

*Inefficient Exclusion*

2.11. Inefficient exclusion occurs when firms with excess capacity apply prices above marginal costs. In this situation, consumers may be deterred from using services although their utility (the benefits gained from the service) would exceed the marginal costs.

2.12. In telecommunications, excess capacity is common during off-peak periods and the marginal cost of using this capacity is very low. As an illustration, many a CSPs offers lower off-peak tariffs in response.

*Information Asymmetry*

2.13. Information asymmetry occurs when a party involved in a transaction is considerably better informed than the other about key characteristics and features, including prices, of products and services offered in the market for exchange. For example, if a supplier can conceal information from buyers, or if access to this information is difficult to obtain or reasonably understand, then the buyer may not be able to effectively value what they are buying, allowing suppliers to overcharge or supply an inferior product. And in the case of productive equipment or units, this might lead to a situation of overcapitalisation.

*Externalities*

2.14. Externalities refer to costs and benefits that accrue to third parties, i.e. those that are not party to a transaction. Because these costs and benefits do not directly accrue to the consumer or supplier in a transaction, they will not be factored into the private value placed on the goods or service.

2.15. Externalities may by positive (in which case benefits accrue to third parties) or negative (in which case it is costs that are borne by the third parties). A common example of a positive externality within the communications sector stems from network effects, i.e. that a network becomes more valuable for the network’s users as additional users are added.

*Limited Common Property Resource*

2.16. Common resources may be over-exploited by firms leading to a value-destructive level of consumption. This is commonly referred to as the “tragedy of the commons.” This occurs when the cost to an individual firm of exploiting a resource is less than its negative externality – the total cost imposed by that usage on the rest of that market. Spectrum and numbering are examples of scarce common resources that require limits and coordination of usage.

## 3. Anti-Competitive Practices

3.1. Monopolist supply is one of the most common forms of market failure in the communications sector. As described above, a firm singly or group of firms collectively, with significant market power (SMP) may cause this type of market failure.

3.2. Market power can be abused in a number of ways. Common anti-competitive practices include but are not limited to:

- Predatory pricing;
- Effecting a margin squeeze;
- Discriminatory pricing and terms;
- Denial of access;
- Product or service tying;
- Cross-subsidisation; and
- Control of essential information.

3.3. The issues are described below.

*Predatory Pricing*

3.4. Predatory pricing occurs when a firm deliberately sells a product or service below cost in order to exclude or prevent market entry or drive existing competitors out of the market. It can subsequently return prices to their original levels once its position has been re-established.

3.5. The objective of this practice is to exert significant pressure on competitors (existing and potential) to either match the price (for as long as the predatory firm lowers it) or to exit that market. A firm with sufficient financial resources can sustain losses longer than a smaller competitor or new entrant.

*Margin Squeeze*

3.6. Margin squeeze is possible when a firm competes in both the upstream wholesale and downstream retail markets for a product or service, particularly where the firm is supplying an essential upstream input.

3.7. In this case, the firm has the ability to set both its wholesale and retail prices. It can therefore set its wholesale prices at a level which constrains the ability of other firms to profitably compete in the retail market.

*Discriminatory Pricing and Terms*

3.8. A firm may be able to sell the same product at different prices in different markets or to different customers. And where there is no economic justification for the price differentials, this practice is considered unfairly discriminatory.

3.9. Similarly, a firm may seek to discriminate on the non-price terms that it offers. Examples would include service levels, contract term, exit penalties, etc.

*Denial of Access*

3.10. A firm that controls access to essential inputs may seek to leverage this control to gain advantage in a downstream market. Mechanisms include selectively restricting access, or imposing terms that are not fair and reasonable

3.11. In the telecoms sector, for example, an operator may attempt to refuse or delay interconnection to new entrants where such interconnection is essential to the ability of new entrant to compete in the downstream retail market.

*Product and Service Tying*

3.12. In some cases, bundling is used by firms to offer adjacent products and services that are frequently bought together by customers (e.g. mobile voice plus mobile broadband) for less than what the customer would normally pay for the products separately. Furthermore, some products can be considered naturally related (e.g. access and voice calls).

3.13. Product tying takes place when an unrelated product or service is included as a mandatory part of the purchase of another product and/or service. This reduces consumer choices and may force them to pay for a product or service that they do not need (e.g. fixed access bundled with international voice call minutes).

*Cross-subsidisation*

3.14. A firm with a large portfolio of products and services may be profitable as a whole while still having some unprofitable or loss-making products. An efficient firm would cease to offer these in time.

3.15. However, firms may use overall profits to offset losses incurred by the sale of other product and services where the continued sale of these unprofitable products offer benefits to the portfolio as a whole. This behaviour is anti-competitive if the continued offering of these unprofitable products prevents and or dissuades competitors from providing the same products in the market, usually because they are priced below cost.

3.16. For example, the price of local calls, which typically drive subscriber take-up, may be subsidised below cost by CSPs using revenues from more profitable services. Competitors with smaller portfolios may be unable to cross-subsidise and compete with prices at loss-making levels.

*Control of Essential Information*

3.17. The failure to share essential information can lead to potential opportunities for anti-competitive practice. One relevant example is the amount of information a CSP needs to make available in order to allow other CSPs to interconnect to its network.

3.18. A lack of transparency regarding essential information can characterize a competitive issue. For example, CSPs need to share technical information in order to allow other CSPs to interconnect, wholesale prices and practices needs to clear and transparent, and pricing information, discounts and promotions need to be clear to end users.

# 4. Instruments of Competition Policy

4.1. Regulatory agencies can address market failure through ex ante regulation or ex post competition law. In addition, the authorisation regime and spectrum licensing are relevant as these may present barriers to competitive entry and, in the case of spectrum allocation, can be a determinant of the relevant strength of competing CSPs.

## Ex Ante Regulation

4.2. Ex ante remedies may be applied in cases where ex post competition law is unable to adequately address the issues in a market. The advantages of ex ante regulation is that it is generally quicker and less costly than ex post action.

4.3. Remedies imposed through ex ante regulation are, by nature, specific to the circumstances of the market failure. In designing ex ante regulations, regulators can take account of the scale of the perceived problem and the cost of prospective regulation to industry. In some cases it may be appropriate to apply specific regulation to some firms and not to others.

4.4. Ex ante regulation carries an inherent risk of market distortion. For this reason, regulators may impose a fairly high bar on themselves to prevent the introduction of unnecessary (and potentially detrimental) regulation on the market.

4.5. In Europe, NRAs apply a three criteria test to determine whether or not ex ante regulation should be employed. The three criteria which must be satisfied are:

1. The presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
2. A market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; and,
3. The insufficiency of competition law alone to adequately address the market failure(s) concerned.

## Ex Post Competition Law

4.6. In contrast with the focussed nature of ex ante regulation, ex post competition law provides more broadly for action against anti-competitive practices. It is therefore able to deal with situations which were not contemplated in the setting of ex ante remedies.

4.7. The main disadvantage of ex post competition law is the time and expense required to conduct an investigation of suspected anti-competitive practice and make a determination.

4.8. Should a firm be found to be in breach of competition law, remedies may include directing it to cease abusive behaviour, pay fines or pay compensation to its competitors. However, if the review is lengthy, lasting and non-rectifiable damage may have already been done to the competition.

## Spectrum Licencing

4.9. Spectrum is a finite resource which is essential for radio-communications including mobile telephony and broadcasting. As spectrum allocations are centrally controlled, spectrum licencing can be an important competition policy tool.

4.10. Spectrum for mobile communications is divided into designated bands. At the most basic level, the number of licensees in these bands will determine the maximum number of MNOs that can compete in the market. However, the quantity of spectrum held by CSPs in each of these bands is also important from a competition perspective. CSPs with a larger spectrum holding will have greater network capacity which may translate into lower costs to deploy and/or greater performance (particularly for mobile broadband).

4.11. Spectrum may be allocated through a number of methods, as described below.

4.12. **Administrative Process**: In this method, the criteria for allocation of spectrum is developed by the spectrum manager whose experts then evaluate various proposals on the basis of this criteria. This process provides significant flexibility to the spectrum manager in determining the winners but it is time-consuming and does not necessarily maximise revenues to the government.

4.13. **Lottery**: The lottery is a time-efficient method as winners are randomly picked from a pool of applicants. Without adequate safeguards, this encourages speculation by applicants not financially or technically competent enough to properly use the licences. Historically, this has resulted in onward sale of the spectrum which prevented governments from capturing the full value of the spectrum.

4.14. **First Come First Served**: This is also a time-efficient method as it enables the allocation of spectrum as it is demanded. However it is less efficient that an administrative process or auction, as it encourages speculation like the lottery method. Additionally, it does not generate much revenue as the valuation of the spectrum is not driven by competition.

4.15. **Spectrum Auction**: If a spectrum range is in high demand, licences for its use can be auctioned by the spectrum manager. The auction, if designed appropriately, can meet the broad goals of the government and spectrum manager while ensuring maximum value capture and revenues. Spectrum auctions are thus high efficient and while still being relatively time-efficient. Due to these factors, spectrum auctions are now the most popular way of allocating spectrum worldwide.

4.16. Spectrum managers must also consider the terms of these licences and what obligations they carry, if any. Aspects of each licence to be considered are:

- The length of validity of the licence and terms of renewal;
- The ongoing cost of holding the licence;
- Whether the licences can be resold or shared;
- Levels of and time frames for utilisation of the spectrum; and,
- Licensee obligations (e.g. coverage, service, access).

4.17. A carefully designed award process, coupled with appropriate license obligations, can both support effective, sustainable competition and achieve other policy goals such as coverage/inclusion.

# 5. Ex Ante Remedies

5.1. In cases where CSPs are found to have SMP in a designated market, it is common practice for NRAs to apply ex ante remedies to mitigate potential competition problems. Ex ante remedies include obligations for:

- Transparency;
- Non-discrimination;
- Access to network facilities;
- Price control and cost accounting obligations;
- Accounting separation; and,
- Functional and structural separation.

5.2. These remedies are discussed below with international examples of where they have been applied.

## Transparency

5.3. For competition to operate effectively, it is important that consumers are able to make informed purchasing and consumption decisions. Where consumers do not have the necessary information, this can seriously harm competition.

5.4. Consumers require access to both price and non-price information to make informed decisions. Non-price information could include service quality factors.

5.5. Transparency remedies may be used in relation to interconnection, access or retail services. CSPs may be required to publish specified information, such as technical specifications, network characteristics, term and conditions for supply and use, and prices.

5.6. The NRA may require that CSPs notify it of proposed changes to tariffs and other terms. These may be subject to approval by the NRA, or may be purely for record keeping.

5.7. CSPs may be obliged to publish advance notice of changes to customers. This is of particular importance where a CSP is supplying a wholesale service that other CSPs are reliant upon.

5.8. For interconnection, some NRAs require firms with SMP to publish a Reference Interconnection Offer (RIO). The RIO achieves transparency in the terms and conditions of interconnection and thus supports non-discrimination.

5.9. NRAs often combine the obligation for transparency with other remedies such as non-discriminatory access and accounting separation to more effectively address potential competitive issues.

5.10. Examples of remedies relating to transparency are presented in the following table.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Bahrain (2010, 2013) | Mobile Termination | Batelco, Zain and Viva (all assessed to hold SMP) are required to notify the NRA of changes to their Mobile Termination Rates (MTRs).[3] |
| Bermuda (2013) | Retail Mobile Services | The NRA found that on-net/off-net price discrimination was having a negative impact in the competitive dynamic of the mobile retail market. The NRA determined that BDC and Digicel shall file, on a quarterly basis, a report on total on-net and off-net traffic and numbers of subscriptions.[4] |
| EU (2009) | Mobile Termination | The EC requires CSPs with 20% market share or more to submit a Reference Interconnection Offer (RIO) to the local NRA for approval. |
| Mexico (2003, 2011) | Retail Mobile Services | Competitive issues with Telmex/America Mobile led the NRA to impose price registration regime to track the market development and evolution. All CSPs have to notify the NRA of their retail prices before they become effective.[5] |
| Norway (2010) | MVNO Network Access | All CSPs have to publish their access price for MVNOs and to send copy of contract to the NRA; the NRA must be notified in case of changes.[6] |
| Singapore (2012) | Retail Mobile Services | CSPs with SMP are required to file retail tariffs with the NRA and obtain written approval prior to launch the tariff in the market.[7] |
| South Africa (2013) | Mobile Termination | The NRA determined there was a lack of transparency in the market. MTN and Vodafone (both assessed to hold SMP) are required to publish a RIO.[8] |
| UAE (2012) | Retail Mobile Services | CSPs with SMP have to notify the NRA of their retail tariffs and related terms and conditions.[9] |
| UK (2014) | Mobile Termination | Evidence that smaller CSPs were charging more than MTR benchmarks. MNOs are required to publish their charges and give advance notice of amendments to their charges.[10] |

[3] http://www.tra.org.bh/media/document/FinalDominanceDesignationMTRsPublic.pdf
[4] http://www.bermudalaws.bm/Laws/Consolidated%20Laws/Regulatory%20Authority%20(Obligations%20for%20 Operators%20with%20Significant%20Market%20Power)%20General%20Determination%202013.pdf
[5] http://www.oecd.org/sti/broadband/50550219.pdf
[6] http://www.npt.no/marked/markedsregulering-smp/marked/marked-15/_attachment/2540?_ts=139c46cc4db
[7] http://www.ida.gov.sg/~/media/Files/PCDG/Practice%20Guidelines/TCC/TCC2012.pdf
[8] https://www.icasa.org.za/LegislationRegulations/FinalRegulations/TelecommunicationsRegulations/CallTermination/tabid/462/ctl/ItemDetails/mid/1457/ItemID/6068/Default.aspx
[9] www.tra.gov.ae/download.php?...consultation/Ex%20ante%20remedies...
[10] http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/summary/MCT_Consultation.pdf

## Non-Discrimination

5.11. The non-discrimination principle requires that CSPs with SMP treat all customers equally. That is, that the same products, services, information, pricing and other terms and conditions are available to all customers.

5.12. An NRA may also require a CSP to supply external wholesale customers on the same basis as their own downstream operations or subsidiaries. This ensures that vertical integration confers only fair competitive advantage to the CSP.

5.13. As noted above, non-discrimination is a remedy often used in conjunction with transparency as they are effective together.

5.14. Examples of remedies relating to non-discrimination are presented in the following table.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Brazil (2010) | MVNO Access | MNOs were found to be avoiding to negotiate with potential MVNOs. The NRA mandated that CSPs must respond to any request for proposal from an MVNO to buy wholesale network access.[11] |
| India (2007) | Cell Site Passive Infrastructure | NRA mandate non-discriminatory access provision of cell site passive infrastructure. |
| Malta (2006) | MVNO Access and National Roaming | The NRA found evidence of coordination between Vodafone and GO. This was supported by the two CSPs pricing behaviour. The NRA required CSPs with SMP to allow sufficient access to, and use of, specific network facilities to other CSPs making reasonable requests for mobile access and call origination services, these included access to the mobile network facilities for the purposes of deploying a full MVNO and national roaming.[12] |
| Nigeria (2006) | Cell Site Passive Infrastructure | NRA mandate non-discriminatory access provision of cell site passive infrastructure. |
| Norway (2005) | MVNO Access | The NRA did not find evidence of SMP, however it mandated that all CSPs are prohibited from time harassment, discrimination and non-transparency for network access to MVNOs.[13] |

[11] http://sistemas.anatel.gov.br/SACP/contribuicoes/TextoConsulta.asp?CodProcesso=C1348&Tipo=1&Opcao=
[12] http://www.mca.org.mt/sites/default/files/attachments/decisions/2012/mobile-wholesale-access-and-call-origination-final-decision.pdf
[13] http://www.npt.no/marked/markedsregulering-smp/marked/marked-15/_attachment/2540?_ts=139c46cc4db

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Tanzania (2011) | Infrastructure Access | Any licensee who owns, leases or manages infrastructure is obliged to negotiate and enter into a sharing agreement, upon request with respect to access, co-location and sharing of tangible or intangible communications facilities.[14] |
| UAE (2013) | Network Access | Etisalat and Du were found to have SMP in their own mobile termination markets. CSPs with SMP must meet all reasonable requests for access in a timely and efficient manner.[15] |
| UK (2014) | Mobile Termination | All CSPs must provide network access (termination) on reasonable request and fair and reasonable terms. In addition, the four largest CSPs are required to provide network access with no undue discrimination.[16] |

## Access to Network Facilities

5.15. Vertically integrated CSPs may deny their competitors access to network facilities to constrain competition in the retail market. It may be impossible for the competing CSPs to replicate the network facilities (e.g. mobile call termination) or it may be uneconomic to do so (e.g. in the case of a natural monopoly).

5.16. Therefore, NRAs need to ensure that CSPs that request access and interconnection should be able to conclude such commercial agreements, and that CSPs with SMP will act in good faith.

5.17. In addition to straightforward denial of access, CSPs may obstruct access through other mechanisms for example by delaying the provision of access. There are many opportunities for a CSP to cause a delay to access provision including, for example, failure to provide necessary technical documentation. Given the criticality nature of access and interconnection markets, this can have a crippling effect on a new entrant or smaller competitor.

5.18. A CSP may also obstruct access by supplying it at a poor level of quality. Quality of service obligations can be useful to protect against the offering of services to customers that have a different quality level from those used internally.

5.19. There is also the potential to discriminate in other ways. For example imposing unnecessary technical requirements on access seekers that increase their cost.

5.20. To avoid these competitive issues, NRAs may attach conditions requiring CSPs to act in a transparent, fair, reasonable and timely manner with specific deadlines.

5.21. Access to, and use of, specific network facility can be a stand-alone obligation or it can be applied together with other remedies such as transparency and non-discrimination. Moreover, it is often

[14] https://www.tcra.go.tz/images/documents/regulations/accessCo-locationInfrsSharing.pdf
[15] http://www.tra.gov.ae/processfile.php?file=Determination_remedies_Public_Version_FINAL.pdf
[16] http://stakeholders.ofcom.org.uk/consultations/mtr/statement

be the case that the rates applied over the provision of access and interconnection are set and controlled by the NRA.

5.22. Depending on the local circumstances, the local NRA may choose to apply access obligations in one or more markets. Markets where access obligations are frequently seen include:

- Voice call and SMS termination;
- Voice call origination;
- Wholesale network infrastructure access (Unbundled loop, line sharing and infrastructure sharing);
- Wholesale broadband access (bitstream); and
- Wholesale leased lines.

5.23. Examples of access remedies are presented in the following table.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Hong Kong (2012) | MVNO Access | CSPs are required to provide 30% of their network capacity to non-affiliated service providers (including MVNOs).[17] |
| India (2007) | Cell Site Passive Infrastructure | All CSPs are obliged to provide access on fair and reasonable terms & conditions (infrastructure sharing). |
| Malta (2006) | MVNO Access and National Roaming | The NRA found evidence of coordination between Vodafone and GO. CSPs with SMP have to provide sufficient access to specific network facilities to other CSPs making reasonable requests for mobile access and call origination services, these include access to the mobile network facilities for the purposes of deploying a full MVNO and national roaming.[18] |
| Norway (2005) | MVNO Access | The right of access for MVNOs and infrastructure sharing for colocation obligation.[19] |
| Tanzania (2011) | Cell Site Passive Infrastructure | Any licensee who owns, leases or manages infrastructure is obliged to negotiate and enter into a sharing agreement, upon request with respect to access, co-location and sharing of tangible or intangible communications facilities. |

[17] http://tel_archives.ofca.gov.hk/zh/speech-presentation/ddg_1001b.pdf
[18] http://www.mca.org.mt/sites/default/files/attachments/decisions/2012/mobile-wholesale-access-and-call-origination-final-decision.pdf
[19] http://www.npt.no/marked/markedsregulering-smp/marked/marked-15/_attachment/2540?_ts=139c46cc4db

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| UAE (2013) | Mobile Termination | CSPs with SMP are required to provide network access on terms and conditions which are in accordance with international best practices.[20] |
| UK (2014) | Mobile Termination | All CSPs must provide network access (termination) on reasonable request on fair and reasonable terms and conditions.[21] |

*Facilities Unbundling*

5.24. Unbundling provides access to specific elements of a CSPs network to other CSPs which would otherwise be bundled together and not available on a standalone basis. Unbundling is typically used to provide access to those elements that cannot be easily duplicated without requiring CSPs to also purchase other elements that are replicable.

5.25. In Europe, local loop unbundling (LLU) provides a well-known example. CSPs with SMP in the fixed access market are required to provide other CSPs with access to local loops through the mechanism of LLU. The competing CSPs are able to install their own network electronics to provide broadband and fixed-line telephony over the unbundled loops.

5.26. Unbundling is frequently accompanied with additional regulation to enable the access seeker make use of the unbundled facilities. For example, in the case of LLU there may be an obligation for the access provider to also supply co-location and other ancillary services.

*Facilities Sharing*

5.27. Facilities sharing may apply to either passive or active infrastructure. Passive infrastructure includes all the civil engineering and non-electronic elements of infrastructure, such as physical sites, poles, ducts and power supply. Active infrastructure refers to all the electronic telecommunication infrastructure elements, including lit fibre, access node switches and broadband remote access servers.

5.28. There are several benefits of facilities sharing when properly implemented, for it allows greater efficiencies, and hence, lower unit costs. Facilities sharing can also offer environmental benefits (for example fewer cell towers or less street works). Finally, as with facilities unbundling, facilities sharing may support competition by providing CSPs with access to network facilities that are uneconomic to reproduce.

5.29. The main policy issues NRAs face in terms of infrastructure sharing are ensuring that sharing does not lessen competition in the market (e.g. through collusion) or inhibit innovation in the market.

[20] http://www.tra.gov.ae/processfile.php?file=Determination_remedies_Public_Version_FINAL.pdf

[21] http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/summary/MCT_Consultation.pdf

*Number Portability*

5.30. Number portability is the mechanism by which a subscriber can continue to use the same phone number following a change of CSP. Several countries have implemented number portability, both for fixed line numbers and mobile.

5.31. From a consumer perspective, number portability offers increased convenience as the consumers contacts are able to reach them using the same number as before. The change of CSP is transparent to the consumer's contacts.

5.32. Having to change one's number represents a transaction cost to the consumer and may therefore act as a barrier to switching. From a competition perspective, number portability overcomes this barrier and can therefore reduce friction in the marketplace.

5.33. Number portability is not without cost. There are set-up costs for the new system and processes and on-going costs to administer and operate it. These incurred costs will need to be recovered and ultimately are likely to be passed onto the consumers in some form.

5.34. The extent to which these costs are justified will depend upon the perceived competitive benefits. Potential consumer benefits arising for less friction in the market include lower prices and higher service levels as a result of greater dynamic competition. These would need to be weighed against the setup and ongoing costs of number portability in a cost-benefit assessment.

5.35. The ability to port numbers between fixed and mobile services is also possible, although less common. One issue with this type of porting is that call tariffs may differ between mobile-terminated and fixed-terminated calls.

## Price control and Cost Accounting Obligations

5.36. Price control is a classic regulatory remedy for markets with SMP and provides a countervailing force to introduce a price pressure similar to that of a competitive market. Price control can be applied in either retail or wholesale markets. Prices are normally reviewed periodically.

5.37. Under the principle of only regulating where necessary, more intrusive regulatory intervention in the retail services is typically only considered where regulation of the relevant wholesale market would fail to ensure effective competition. However, remedies applied to wholesale markets may take time to start to generating effects in the retail market. NRAs may therefore turn to direct regulation of retail markets for more rapid results.

5.38. In wholesale markets, price controls are implemented to prevent excessive charging. In retail markets, price controls may establish a price ceiling (to protect consumers from excessive prices) or a price floor (to protect competitors against predatory pricing).

5.39. Price controls can take different forms. Depending on the circumstances, it may be sufficient to require prices to be fair and reasonable. Where more control is required, an NRA can require that a CSP sets prices that are cost-oriented. Finally, in some cases an NRA may establish the maximum reference prices/rates that can be charged.

5.40. Price control regulation should aim to give the regulated party an incentive to be efficient and to minimise costs. The price control of a basket of goods as opposed to individual prices enables CSPs to have more commercial freedom that meets the price control aims and purposes.

5.41. Price regulation is normally only applied to CSPs with SMP, since CSPs without SMP are already experiencing some competitive pressure. As competition develops, an NRA may determine that a market has become sufficiently competitive for price controls to be lifted.

5.42. NRAs may also mandate a cost accounting system in order to support its price control obligation. In this case, NRAs have the chance to choose the format and accounting method used and require CSPs to provide their costs accounting on a periodic basis.

5.43. There are three basic types of price control:

- Cost-based price control;
- Rate-of-return control; and
- Direct price control.

*Cost-based Price Control*

5.44. The first method of price control, cost-based control, is often used to set interconnect rates.

5.45. There are two main methods for cost-based price control. The first one is **cost-allocation**, where NRAs use accounting information from CSPs to determine the cost of providing a service and add a margin to cover the cost of capital. The resulting prices will often depend on a future traffic volume forecast.

5.46. The main benefit of cost-allocation is that it uses real data collected directly from the CSPs and thus provides a scenario which reflects the market reality. However, any inefficiencies in the CSPs operations or asset utilisation will be factored into the cost.

5.47. The main alternative is **hypothetical cost-allocation**. This type of control uses a number of assumptions to build a cost model of a hypothetical operator providing the service. The benefits of this approach include the opportunity to exclude operational inefficiencies and to avoid the long process of collecting market data. However, to the extent that the model does not use actual data from CSPs, it may not reflect the reality of the market.

*Rate-of-Return Control*

5.48. The second type of price control, rate-of-return control, limits the regulated CSP's profit to a determined return on the assets employed. The prescribed return is periodically reviewed and should reflect what would constitute a normal profit of a competitive market. This type of price control relies on the assumption that CSPs in a competitive market make normal profits, which can be used as reference.

5.49. However, although rate-of-return control may stimulate competition, it fails to consider the competitive dynamics. For example, companies enter the market to pursue economic profit and not "normal" profit. This therefore, diminishes CSPs motivation to invest and improve their services quality and availability. Return-of-return control guarantees a given return on assets, no matter how inefficiently they are employed.

*Direct Price Control*

5.50. The third method of price control is the direct price control. This way of controlling price mandates the amount of increase or decrease applied to a specific price on a yearly basis. Typically, direct price control are linked to Consumer Price Indexes (CPI) or Retail Price Indexes

(RPI). This method offers the benefits of regulating prices (not profits), which is more understandable and beneficial to consumers. It also provides freedom for CSPs to improve process and increase efficiency since it does not limited CSPs' profit margins.

5.51. However, there are some challenges for direct price control. NRAs need to fix the permitted level of increase (or decrease) and identify a proper index to link prices. Regulators also need to select the periodicity of review and most importantly which prices to control.

5.52. Examples of price control are presented in the table below.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Colombia (2012) | Mobile Termination | The NRA found Comcel to have a dominant position in the mobile voice market and that it was using a significant on-net/off-net price differentials to weaken competition. Comcel (assessed to hold SMP) was not allowed to charge more for traffic than the on-net price offered to its users (including promotions and discounts of any kind).[22] |
| Europe (2009) | Mobile Termination | Termination rates must be calculated on the basis of pure LRIC. |
| Jordan (2005) | Passive Infrastructure | Cost-based pricing for passive infrastructure deals. |
| Mexico (2003, 2011) | Retail Mobile Voice | Telmex/America Movil was found to be dominant in the mobile retail market. Since the CSP control several upstream inputs, the NRA decided to regulate retail prices. The CSP was found to have power to fix prices. Telmex was subject to price caps on its mobile retail voice services. The price cap scheme is designed to ensure that Telmex passes on to its customers at least a part of the benefits of productivity and efficiency improvements the company achieves. [23] |
| Nigeria (2013) | Retail Mobile Voice | MTN (assessed to hold SMP) was required to collapse the differential between the on–net and off net retail tariffs, meaning that both tariffs should be the same.[24] |
| Nigeria (2006) | Passive Infrastructure | Cost-based pricing for passive infrastructure deals. |

[22] https://www.crcom.gov.co/resoluciones/00002062.pdf
[23] http://www.oecd.org/sti/broadband/50550219.pdf
[24] http://www.ncc.gov.ng/index.php?option=com_content&view=article&id=1029&Itemid=210

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Tunisia (2014) | Retail | CSPs need to follow minimum price references and conditions published by the NRA. CSPs can only offer unlimited services for one hour of traffic per day. |
| UK (2011) | Mobile Termination | Implementation of the EC guidance on termination rate calculation. Termination rates are determined using a cost-based bottom-up model of a hypothetical operator.[25] |

## Accounting Separation

5.53. Accounting separation ensures that vertically integrated CSPs make transparent their wholesale and internal transfer prices. This enables NRAs to identify where CSPs may engage in anti-competitive behaviour such as cross subsidisation, margin squeeze and wholesale price discrimination.

5.54. The exposure of business processes, efficiencies and strategy to competitors can be mitigated by appropriate control of the information. NRAs have the choice to specify the format and accounting method to be followed. Furthermore, information provided under this obligation facilitates ongoing monitoring of the market, including data that would not be normally available.

5.55. Examples of accounting separation remedies are presented in the following table.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| Nigeria (2013) | Mobile Termination | MTN was found to be a dominant player in the mobile voice market. Accounting separation was mandated for MTN. |
| Norway (2010) | MVNO Access | CSPs must provide accounting separation for MVNO access services. |
| Saudi Arabia (2010) | Mobile Termination | STC (assessed to hold SMP) is required to separate telecommunications services for mobile termination services for accounting and regulatory purposes. |
| UAE (2013) | Eight defined markets | Etisalat (assessed to hold SMP) must submit separate accounting reports for both regulated and unregulated services (including wholesale and retail services). Regulatory accounts to be submitted on HCA, CCA and LRIC basis. |

[25] http://stakeholders.ofcom.org.uk/binaries/consultations/mobile-call-termination-14/summary/MCT_Consultation.pdf
[25] http://www.tra.gov.ae/processfile.php?file=Determination_remedies_Public_Version_FINAL.pdf
[25] http://www.mca.org.mt/sites/default/files/attachments/decisions/2012/mobile-wholesale-access-and-call-origination-final-decision.pdf

### Functional and Structural Separation

5.56. Beyond accounting separation lie functional separation and structural separation.

5.57. In functional separation, the CSP is required to operate their retail and wholesale businesses in isolation from one another. In practice this means information cannot be shared between the two organisations, they will have separate reporting lines and systems. There are two variants:

- Equivalence of Outcomes (EoO) – requires that competing CSPs receive the same outcomes from the dominant CSP's wholesale organisation as its retail organisation, i.e. they are able to access the same products and service levels at similar prices.
- Equivalence of Inputs (EoI) – requires that competing CSPs interact in the same way with the dominant CSP's wholesale organisation as its retail organisation, i.e. they place orders and raise trouble tickets using the same processes and systems.

5.58. Structural separation, on the other hand, requires the dominant CSP to divest its network assets into a separate legal entity.

5.59. Examples of functional and structural separation remedies are presented in the following table.

| Country (Date) | Market | Issue and Remedy |
|---|---|---|
| New Zealand (2011) | Fixed Access | Telecom NZ was structurally split into two legal entities. The owner of the network assets is now called "Spark" whilst the unregulated services business is called "Chorus". |
| Poland (2008) | Fixed Access | Telekomunikacja Polska (assessed to hold SMP) functionally separated its retail and wholesale businesses into two separate units. |
| UK (2005) | Fixed Access | BT (assessed to hold SMP) functionally separated its regulated wholesale business "Openreach" to supply access services under EoI conditions |

## 6. Monitoring the Market

6.1. Monitoring the market enables NRAs to identify potential competitive issues. By constant monitoring the market, NRAs are able to build a historical information base through which they can assess how the market has evolved to date and where it may be headed.

6.2. Regulatory authorities will typically monitor several aspects of the market using a combination of their own records and information submitted by CSPs. This information may be supplemented by additional sources, for example consumer surveys.

6.3. In the following sections we discuss information needs under the following headings:

- Retail service adoption;
- Retail service availability;
- Retail pricing;

- Quality of service;
- Wholesale services; and
- Financial information.

## Retail Service Adoption

6.4. Measuring service adoption and usage provides valuable indicators of how well the market is functioning. Using service adoption data, NRAs can determine market shares and monitor how these are progressing over time.

6.5. The metrics that NRAs collect will depend upon the services monitored, but will typically include:

- Number of active subscriptions;
- Number of gross adds;
- Churn;
- Traffic volumes.

6.6. It is helpful for business and residential subscription volumes to be reported separately. Similarly, separate data should be gathered for pre-paid and postpaid subscriptions.

6.7. Traffic volumes will depend upon the nature of the service. For telephony, the number of outbound minutes by destination (on-net, off-net domestic, off-net international) is useful, as is a split between on-net and off-net call volumes if applicable.

6.8. Text message volumes may also be segmented by destination. Broadband data volumes should be expressed in Megabytes or Gigabytes per month.

6.9. It is normal for NRAs to mandate that licensed CSPs report service adoption data on a regular basis, e.g. monthly or quarterly.

6.10. In order to improve market transparency, NRAs may consolidate the data and publish important metrics. This can ensure that government and industry stakeholders have access to market numbers. NRAs often publish the consolidated data in a quarterly or annual report on their websites.

## Retail Service Availability

6.11. Measuring service availability, or network coverage, serves a number of purposes. It enables the NRA to monitor progress against universal access goals, adherence of CSPs to any coverage obligations they may have, and determine the degree of choice and competition that exists in different regions.

6.12. The metrics collected vary accordingly to the set of obligations, but the most common ones are:

- Number and location of cell sites; and
- Coverage area by service and/or technology.

6.13. Coverage area may be expressed either in terms of the share of population or geography covered.

6.14. The NRA may rely upon coverage reports from the CSPs. Alternatively, the NRA may choose to conduct independent drive tests.

## Retail Pricing

6.15. Retail pricing is another important indicator of the performance or the market. In conjunction with service adoption, historical price information can provide important insights into the competitive dynamics within the market.

6.16. Retail price monitoring is also necessary in markets where price controls are in place.

6.17. There are different methods NRAs can use to monitor prices. The method will depend on the resources of the NRA and the market that is being monitored. One option is to require CSPs to notify the NRA of their prices (including any changes to prices or introduction of new tariffs). Alternatively, NRAs may collect retail prices from public sources.

6.18. Analysing price information can be challenging, particularly in situations where CSPs have multiple tariffs and/or bundles and discounts are being used. In these situations, NRAs may need additional data from CSPs, e.g. the volume of subscribers on a particular tariff.

## Quality of Service

6.19. Quality of service is another important indicator of how well a market is performing. Over time, in the presence of effective competition, quality should improve as firms seek to win customers.

6.20. Quality of service can be measured in terms of technical performance or consumer complaints. For the latter to be effective, a reliable process for reporting complaints is required.

6.21. Complaints may be raised either directly to CSPs, or to NRAs or consumer protection organizations. The data is periodically collated by the NRA and analysed.

6.22. Measuring quality in technical terms requires the NRAs to establish a set of quality indicators with the CSPs. The most common indicators for voice services are number of call drop and call block rate; for broadband services, peak download speed, average throughput and connection drop rate may be used.

6.23. Irrespective of whether quality is measured in terms of complaints or technical indicators (or both), the NRA may choose to publish the results. Making this information transparent gives customers more information for making their purchase decisions. This in turn will put pressure on CSPs to improve their service quality to compete in the market.

## Wholesale Services

6.24. In addition to the retail market metrics described above, the NRA may also require CSPs to report against their wholesale activities. Wholesale metrics may also include service volumes, availability, pricing and QoS.

6.25. The terms of wholesale supply agreements may also be subject to notification to the NRA.

## Financial Information

6.26. Financial information provides the NRA with insight into the performance of the CSPs in the market.

6.27. The most significant information is the CSP’s revenue, capital expenditure and profit. Revenue and profit information provides insight into how much value the CSP is capturing from the overall market. Capital expenditure provides insight into how much investment the CSP is making, for example in new technologies or extended coverage.

6.28. Segmenting the revenue by product line or business unit may be justified. CSPs that are subject to cost accounting obligations will provide this level of detail and more.

# 7. Markets Assessed for SMP: Potential Remedies

## Retail Mobile Access, Voice and SMS

*Conclusions of SMP Assessment*

7.1. Cartesian assessed the market for Retail Mobile Access, Voice and SMS and submitted its findings to the UCC in December 2014.

7.2. Our initial view is that there is evidence to suggest that MTN and Airtel are jointly dominant in the market for mobile calling and SMS services. The combined market share of MTN and Airtel is 90%, which is consistent with a market in which joint dominance exists.

7.3. In addition to the finding of possible joint dominance, Cartesian identified a number of issues in the market. These are listed below and are described in full in the relevant SMP Assessment Report.

- High Market Concentration
- Lack of True Growth
- Significant Network Effects
- Control of Sales and Distribution Channels
- Mobile Money Network Effects

7.4. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.5. Note also that some of the remedies identified below apply in upstream wholesale markets. This is consistent with the finding that CSPs are leveraging power in these upstream markets to benefit their retail operations.

7.6. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

*Potential Remedies*

1. Require CSPs with SMP to publish separated accounts for their retail and wholesale activities.
2. Prohibit CSPs with SMP from offering differentiated on-net/off-net tariffs.
3. Introduce an asymmetric interconnect regime that favours the CSPs with least market share.
4. Prohibit CSPs from entering into exclusive agreements with independent sales agents unless such agents are franchisees of the said CSP.
5. Require all CSPs to publish their tariffs, including special promotions and bundles. Published information should be easy to find and easy to understand.
6. Increase the frequency of reporting by all CSPs to the UCC from quarterly to monthly, to enable timely analysis of market issues and application of interventions.
7. Require mobile money suppliers to allow their users to make airtime payments to any CSP on a non-discriminatory basis.

8. Decouple mobile voice and mobile money services through improved wholesale access to the USSD platform.
9. Implement functional separation of mobile voice and mobile money services.

## Retail Broadband Internet Access from a Mobile Terminal

*Conclusions of SMP Assessment*

7.7. Cartesian assessed the mobile broadband market and submitted its findings to the UCC in December 2014.

7.8. Our initial finding is that CSPs in the mobile broadband market are neither individually nor collectively/jointly dominant at the present time. Demand for the mobile broadband services has grown rapidly, there appears to be downward pressure in handset price, and usage prices are consistent with international comparators.

7.9. Although the evidence suggested there was no CSP with SMP, Cartesian did identify a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- High Market Concentration
- Control of Sales and Distribution Channels
- Spectrum Availability

7.10. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.11. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

7.12. Furthermore, consideration will need to be given to the extent to which remedies can (and should) be applied to firms where there is no finding of SMP.

*Potential Remedies*

1. Prohibit CSPs from entering into exclusive agreements with independent sales agents.
2. Require all CSPs to publish their tariffs, including special promotions and bundles. Published information should be easy to find and easy to understand.
3. Review the spectrum holdings of licensees. Consider mechanisms to redistribute spectrum if this deemed necessary.

## Wholesale Voice Call Termination on Mobile Networks

*Conclusions of SMP Assessment*

7.13. Cartesian assessed the market for Wholesale Voice Call Termination on Mobile Networks and submitted its findings to the UCC in December 2014.

7.14. Mobile call termination services are supplied in Uganda by Airtel, MTN, Orange, Smart Telecom and Uganda Telecom. We concluded that all five MNOs have SMP in the market of mobile termination on their own networks. This follows from the simple technical fact that a mobile use that subscribes to one network, that calls a person that subscribes to another network, does not have the choice to call that person via a third network.

7.15. In addition to the finding of SMP, Cartesian identified a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- Natural Monopolies
- Network Access Discrimination
- MTR Implementation
- Lack of Transparency

7.16. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.17. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

*Potential Remedies*

1. Require CSPs with SMP to develop a reference interconnect offer including termination rates, access terms and conditions.
2. Require CSPs with SMP to publish their reference offer in the public domain.
3. Require CSPs with SMP to meet all reasonable requests for interconnection in a fair, reasonable and non-discriminatory manner.
4. Require CSPs with SMP to submit full details of interconnection agreements to UCC for approval.
5. Require CSPs with SMP to not charge more than the reference rate established by the UCC.
6. Reduce the reference rate over time to the long-run incremental cost of termination.

## Mobile Network Access for MVNO

*Conclusions of SMP Assessment*

7.18. Cartesian assessed the market for Mobile Network Access for MVNO and submitted its findings to the UCC in December 2014.

7.19. Our initial finding is that Orange does not have significant market power in this market, and neither do any of the other CSPs. This assessment is based on the observation that Orange and K2 both freely entered into the MNA. In other words, both K2 and Orange were able to negotiate contract terms that were sufficiently beneficial to them so that they could reach an agreement.

7.20. Although the evidence suggested there was no CSP with SMP, Cartesian did identify a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- Network Access Discrimination

- Vertical Integration
- Lack of Transparency

7.21. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.22. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

7.23. Furthermore, consideration will need to be given to the extent to which remedies can (and should) be applied to firms where there is no finding of SMP.

*Potential Remedies*

1. Require CSPs to develop a reference offer for Mobile Network Access and submit it to the UCC for explicit approval.
2. Require CSPs with SMP to publish their reference offer in the public domain.
3. Require CSPs to gain explicit approval from the UCC for any deviations from their reference offer.
4. Require CSPs to submit MVNO agreements to the UCC, inclusive of price and non-price terms, for its explicit approval prior to becoming effective. This should also apply to any subsequent amendments to the agreement.

## Wholesale Mobile Platform Access for SMS-based Applications (MPA-SMS)

*Conclusions of SMP Assessment*

7.24. Cartesian assessed the market for Wholesale Mobile Platform Access for SMS-based Applications (MPA-SMS) and submitted its findings to the UCC in December 2014.

7.25. MPA-SMS services are supplied in Uganda by Airtel, MTN, Orange, Smart Telecom, Uganda Telecom and K2. All six of these CSPs have SMP in the market of MPA-SMS on their own networks. This follows from the simple technical fact that a SMS SP that wants to offer services to mobile users on a particular CSP's network must acquire access to that CSP's MPA-SMS.

7.26. In addition to the finding of SMP, Cartesian identified a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- Natural Monopolies
- Vertical Integration
- Network Effects
- Limited Access to Sales & Distribution Channels
- Limited Countervailing Buyer Power
- Excessive Pricing
- Poor Service Quality

7.27. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.28. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

*Potential Remedies*

1. Require CSPs with SMP to develop a reference offer for MPA-SMS and submit it to the UCC for explicit approval.
2. Require CSPs with SMP to publish their reference offer in the public domain.
3. Require CSPs to gain explicit approval from the UCC for any deviations from their reference offer.
4. Require CSPs with SMP to meet all reasonable requests for interconnection in a fair, reasonable and non-discriminatory manner.
5. Prohibit CSPs with SMP from denying, or charging a premium for, access to specific customer groups.
6. Require CSPs to submit MPA-SMS agreements to the UCC for approval.
7. Require CSPs with SMP to publish separated accounts for their retail and wholesale activities.
8. Require CSPs with SMP to charge for MPA-SMS on a cost-oriented basis.
9. Establish reference rates for MPA-SMS services and direct CSPs with SMP to not charge more than these rates.
10. Establish a dispute resolution mechanism to deal with cases where the SMS SP disagrees with the CSP's revenue share calculations.

## Wholesale Mobile Platform Access for USSD-based Applications (MPA-USSD)

*Conclusions of SMP Assessment*

7.29. Cartesian assessed the market for Wholesale Mobile Platform Access for USSD-based Applications (MPA-USSD) and submitted its findings to the UCC in December 2014.

7.30. MPA-SMS services are supplied in Uganda by Airtel, MTN, Orange, Smart Telecom, Uganda Telecom and K2. All six of these CSPs have SMP in the market of MPA-SMS on their own networks. This follows from the simple technical fact that a SMS SP that wants to offer services to mobile users on a particular CSP's network must acquire access to that CSP's MPA-USSD.

7.31. In addition to the finding of SMP, Cartesian identified a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- Natural Monopolies
- Vertical Integration
- Network Effects
- Limited Access to Sales & Distribution Channels
- Limited Countervailing Buyer Power
- Excessive Pricing
- Poor Service Quality

7.32. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.33. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

*Potential Remedies*

1. Require CSPs with SMP to develop a reference offer for MPA-USSD and submit it to the UCC for explicit approval.
2. Require CSPs with SMP to publish their reference offer in the public domain.
3. Require CSPs with SMP to gain explicit approval from the UCC for any deviations from their reference offer.
4. Require CSPs with SMP to meet all reasonable requests for interconnection in a fair, reasonable and non-discriminatory manner.
5. Prohibit CSPs with SMP from denying, or charging a premium for, access to specific customer groups.
6. Require CSPs to submit MPA-USSD agreements to the UCC for approval.
7. Require CSPs with SMP to publish separated accounts for their retail and wholesale activities.
8. Require CSPs with SMP to charge for MPA-USSD on a cost-oriented basis.
9. Establish reference rates for MPA-USSD services and require CSPs with SMP to not charge more than these rates.
10. Establish minimum reporting requirements for CSPs with regard to MPA-USSD traffic usage and charges.
11. Establish a dispute resolution service to deal with cases where the USSD SP disagrees with the CSP's revenue share calculations.

## Cell Site Passive Infrastructure

*Conclusions of SMP Assessment*

7.34. Cartesian assessed the market for Cell Site Passive Infrastructure (CSPI) and submitted its findings to the UCC in December 2014.

7.35. Our initial finding is that the tower companies in the CSPI market currently do not have SMP. This conclusion is based on the observed recent growth in the number of CSPI sites; the improving quality of service offered by CSPI operators; and, even though there are only two tower companies, there is little incentive or opportunity to coordinate their actions, particularly given the MNOs ability to build their own CSPI.

7.36. Although the evidence suggested there was no CSP with SMP, Cartesian did identify a number of issues in the market. These are listed below and are described in full in the SMP Assessment Report.

- High Market Concentration
- Barriers to Entry
- Limited Transparency

7.37. In this section of the report we identify a number of remedies which the UCC should evaluate to address the issues observed in this market.

7.38. Cartesian recommends that an impact assessment of the costs and benefits arising from regulatory remedies be conducted prior to a decision on which remedies (if any) to implement.

7.39. Furthermore, consideration will need to be given to the extent to which remedies can (and should) be applied to firms where there is no finding of SMP.

*Potential Remedies*

1. Require each tower company to develop a reference offer for CSPI and submit it to the UCC for explicit approval.
2. Require tower companies to publish their reference offer in the public domain.
3. Require tower companies to gain explicit approval from the UCC for any deviations from their reference offer.
4. Require tower companies to meet all reasonable requests for interconnection in a fair, reasonable and non-discriminatory manner.
5. Require tower companies to submit CSPI agreements to the UCC for approval.

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