

Acision

Innovation Assured

Seizing the opportunity in Mobile Broadband

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In association with:

YouGov[®]



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1. Introduction and Overview

In June of 2010 Acision commissioned independent market research agency, YouGov to undertake a detailed survey regarding consumer perception of mobile broadband in the UK. The research covered key aspects such as Quality of Experience, customer satisfaction, video quality and consumer acceptance and awareness of possible VAS and fairness policies. The commissioned research was based on the same panel as YouGov's 'Dongle Tracker', which has been providing quarterly trends in mobile broadband for the past two years. This report provides a detailed description of the outcomes of both sets of research, providing a longer term trend analysis of broadband in the UK as well as a detailed snapshot of the state of mobile broadband in June of 2010.

About the Research

The Acision research focuses on all aspects of mobile broadband including the use of the mobile internet on Smartphones, dongles, modem sticks, data cards, netbooks, and integrated mobile broadband within laptops. YouGov's quarterly 'Dongle Tracker' survey is based on a group of 2,000 mobile broadband users and 2,000 nationally representative respondents based in the UK. The tracker monitors dongles, modem sticks and data card usage. YouGov's online panel is screened on a monthly basis and receives excellent response rates.

Main Conclusions

The changing role of the operator - With the introduction of mobile broadband, mobile operators have fundamentally entered a new market. This new market has very different dynamics than the traditional telecom environment and poses a number of new challenges to operators. Being effective in dealing with these challenges will be essential in moving forward successfully:

- **The incessant growth of data volumes** – Traffic levels are growing at an alarming rate. Penetration levels are still relatively low so the majority of users and related bandwidth usage is yet to come. Alternative solutions, in addition to network expansion, are required to effectively manage this scarce resource.
- **Managing Quality of Experience** – A number of issues, especially traffic growth and congestion, are heavily impacting all the basic elements of the mobile broadband service such as connection speed, stability and reliability. As a result operators in the UK have seen the perception of quality decline significantly compared to June 2008, when the UK Dongle Tracker was first launched. This downward trend needs to be reversed in order to boost consumer confidence in mobile broadband.
- **The end of 'all you can eat'** - The success of mobile broadband can be partly attributed to the "all you can eat" and "flat fee" pricing models, providing clarity to consumers on usage allowance with little risk of bill shock. These models are, however, a major contributor to fuelling the traffic growth we have witnessed. Operators need to move away from these simplistic pricing models, as some have done already, and introduce more innovative and targeted approaches.
- **Creating value add** – To date, marketing mobile broadband has been relatively basic, differentiating the offer on price, usage allowance, speed and in certain longer term contracts, a subsidized device. In the short term, this has been good for customer acquisition but long term revenue growth opportunities are severely restricted with this approach. Operators need to move towards a sustainable targeted and segmented market approach in order to increase revenue and secure a profitable business that provides a basic quality service for all.

- **Partner with internet ecosystem players to create new value** – Over recent years, operators have entered an entirely new ecosystem which is driven by content. To ensure operators embrace the content market and ‘over the top’ services, there are two key activities they need to deploy. Firstly, operators need to become an integral part of resolving the net neutrality debate working together with content providers, regulatory bodies and consumers to agree on a clear definition of ‘fairness’ that can be applied uniformly across the market. Secondly, the internet ecosystem provides fresh opportunities for operators to leverage internet based content within the mobile domain. Operators need to look for ways to partner with content providers and create a differentiated content offering which is beneficial to the consumer as well as the content provider.

The lessons from the first two years of YouGov’s Dongle Tracker - A historic analysis of the past two years demonstrates that nothing can be taken for granted in the mobile broadband.

- Of the UK mobile broadband providers, **none have been able to consistently outperform their competitors** for more than three straight quarters.
- No operator has been able to **keep satisfaction from sliding** the moment the top spot was attained.
- All operators have **dropped in terms of customer satisfaction since June 2008** and none have been able to reclaim their highest ratings.
- **Consumers choose to be more independent of operators**, translated in the increase in PAYG contracts vs subscriptions, and prefer a loose relationship allowing them to switch to alternative suppliers easily.
- With mobile broadband still in its early stages, this **precarious situation is likely to deteriorate** unless action is taken quickly.

Consumer perception and acceptance – The results of the consumer research shows there are clear reasons driving the turbulence in the current market. There are a number of serious issues in mobile traffic which are creating customer dissatisfaction and consumer volatility.

- **The vast majority of consumers regularly have Quality of Experience issues of some kind** especially regarding core aspects of the service such as speed, connection stability and network coverage. Of these three, speed is by far the biggest issue. Image quality is not seen as an issue.
- **Customer loyalty and churn potential are clearly affected by these Quality of Experience issues.** Average churn potential is over 30% and speed and connection quality are in the top 3 of churn reasons.
- **Video as a service is providing even more headaches for consumers**, to such an extent that nearly every video watched on a mobile network experiences some sort of Quality of Experience problem. 36% of broadband consumers watch video. They are prolific users of many other broadband services and generate 9% more ARPU than average customers.

The research results, however, also provide many important insights which operators can leverage to seize the opportunity in mobile broadband. In particular, the research has identified key areas where additional capability could be deployed which are showing high levels of consumer acceptance:

- **Fairness policies** - Consumers, once they understand the need for resource management, have a high acceptance of policies which enable a fair allocation of the available capacity. The research even indicates that consumers are prepared to pay a premium to enable this service if it translates into an improved Quality of Experience.
- **Content adaptation** - Consumers are willing to accept and even pay for content optimisation as long as they benefit in those aspects of the service experience which they find most important. Customers are very well able to decide which kind of trade off they are willing to accept to get the optimal outcome given constraints they understand.
- **Paid for Value Added Services** - There is a broad need for different types of VAS services and a willingness to pay an additional fee. This provides another key area where operators can build a more diverse and long term revenue model.

Seizing the opportunity in Mobile Broadband – The challenges in Mobile broadband will not be solved by simply throwing more network capacity at it. Even if it were possible to create such capacity levels in the Radio Access Networks and core networks, the investment levels alone would destroy the business case. A more comprehensive and broader approach will therefore be required which addresses all essential areas:

1. **Focus on key business priorities** – Ensuring the long term sustainability of mobile broadband is essential. In order to achieve this the following four business areas require focused attention:
 - a. *Grow Average Revenue Per User (ARPU)* by enabling a rich and differentiated service offering
 - b. *Decrease Average Cost per User (ACPU)* by maximising network utilization
 - c. *Control Quality of Experience* by managing all relevant aspects of the service
 - d. *Leverage key internet ecosystem players* such as regulators and content providers
2. **Invest in key capabilities** required to meet these business challenges:
 - a. At the *data layer* capability is required with very *high performance and reliable* components that handle all network traffic
 - b. At the *content layer* fit for purpose components are needed which *optimise specific content services* such as video or browsing
 - c. At the *control layer* highly *intelligent components* are required which enable *real-time, complex and rich decision making*
 - d. In addition to creating these enhanced functional capabilities it is vital to achieve *affordable systems scalability & unprecedented levels of performance*.
3. **Evolve the consumer offering** to fuel the next round of growth and long term sustainability.

In conclusion, Acision believes the research shows very clearly where the opportunity in mobile broadband exists. The research identifies what consumers value most about the service and it points to very specific aspects where the service could be improved in the eyes of the consumer. Also there is clear consumer support to tackle the fundamental issues in broadband such as cost, quality of experience and revenue. Very significant opportunities in mobile broadband are therefore still to come. It is up to operators to leverage their unique capabilities and intrinsic value to seize this great opportunity.

Report Synopsis

A – UK historic developments and trends in Mobile Broadband (YouGov UK 'Dongle Tracker' 2008-2010)

The conclusions outlined below are based on YouGov's UK 'Dongle Tracker', which has been providing quarterly trends on the UK's mobile broadband market for the past two years

Market Dynamics – The past two years have shown to be very turbulent, to say the least. Each quarter of YouGov's Dongle Tracker research has shown variations in operator performance in relation to perceived satisfaction with quality and value. Only one operator, 3, has been able to show four consecutive quarters of increased satisfaction, from July 2009 till July 2010

Customer satisfaction – Over the past two years customer satisfaction is showing a downwards trend compared to when measurements began in June 2008:

- All operators have dropped in terms of customer satisfaction as well as perceived value, below the initial levels outlined in the first two waves of the Dongle Tracker in June and October 2008.
- Customer satisfaction and perceived value of Vodafone has dropped the most, losing 10.9% compared to June 2008. Orange has been the best performer, but still losing 4.9% compared to June 2008.

Market leadership – Over the past two years, 3 out of the 5 MNO mobile broadband providers in the UK have been able to secure the top position in the market (measured against a basket of 15 satisfaction criteria). No operator has been able to retain market leadership for more than 3 consecutive quarters:

- Both T-Mobile (January to October 2009) and Orange (October 2009 to July 2010) have been able to secure 3 consecutive quarters of growth. In both cases they were rated best in class for 9 measures of quality.
- In the last quarter 3 has shown continued increased satisfaction to now become best operator for 12 out of 15 measures

Post pay contract decline – Quickly after the launch of YouGov's Dongle Tracker in June 2008, the number of post pay contracts started to decline. Although this decline has stabilised in the past 9 months, the percentage of people on pay as you go has never been so high as today.

- Post paid contracts have declined from its peak of 76% in October 2008 to 54% today,
- The last quarter of major decline was October 2009, when post paid subscribers dropped 9 percent from 64% to 55%.

Consumer perception of mobile internet versus mobile broadband – Although small screen ('mobile internet') devices and PC based ('mobile broadband') devices (such as laptops and net books) use the same network, small screen devices have significantly higher Quality of Experience.

- If the scores for quality, value and satisfaction of the 3 *worst* mobile internet waves are compared with the equivalent score of the *best* mobile broadband wave, mobile internet still scores on average about a full point higher (7.25 compared to 6.25).

B – The consumer perspective on mobile broadband (June 2010 UK consumer research)

The conclusions outlined below are based on the research Acision commissioned YouGov to conduct in June 2010.

Quality of Experience - Mobile Broadband Quality of Experience issues are widespread. 84% of consumers state they have experienced QoS issues in the past such as low speeds (67% of respondents), coverage (49%) and connection problems (45%):

- Speed of the broadband service is the most encountered problem with 67% affected. 54% of respondents also stated this issue is their most frequently experienced problem.

Video Quality of Experience – 36% of consumers use video and 17% watch video regularly. Quality of Experience issues are widespread:

- Video QoE is a specific issue affecting all video users. 59% of users that regularly use video state that time to screen is often very long. Frequent pauses of the video (55%) and poor quality (45%) are additional issues that very regularly occur.
- Most unacceptable, by far, is frequent stalling of the video (59%). Having to wait 30 seconds for the video to play (13%), waiting 10 seconds (11%) and the video stalling once (10%) are much less important to consumers. The ability to watch the video with high quality at full screen is important to only 3% of users.
- These video issues are all the more relevant as regular video users represent an important customer segment that have a 9% higher ARPU than average and consistently are among the most active users of email, browsing, upload, video, music and online gaming services.

Consumer satisfaction and churn - Over 25% of respondents state they are dissatisfied with multiple aspects of the mobile broadband service creating a churn potential of close to 30%:

- Consumers are most dissatisfied with speed (37%), coverage (27%), reliability (27%) and price (22%)
- In terms of importance, coverage (24%), reliability (25%) and price (27%) are the main concerns of mobile broadband consumers taking precedence over other service criteria such as speed and bundle sizes.
- The churn potential of consumers contemplating to change operators, stop using broadband altogether or unsure what to do next is close to 30%.
- Consumers that have concrete plans to churn state speeds (45%) as the key reason to churn followed by connection issues (39%), infrequent use (39%) and price (20%).

Fairness policies – 71% of the respondents are not aware that network resources can be unfairly claimed by a limited amount of users. 56% of consumer is not aware that their provider adopts a fair use policy. Once aware of the fairness issue, 74% of consumers favour an active fair use approach aimed at distributing bandwidth fairly between as many people as possible.

Content optimisation – Only 19% of the video users would oppose decreasing video size in order to increase overall video quality in terms of time to play and no stalling while playing. This is in line with only 16% stating that image quality is an issue and 3% stating that being able to watch a video full screen is important to them.

Differentiation – Analysis of user spend on mobile broadband demonstrates a very wide range of spend levels. This provides ample space for a wide range of packages and pricing points to be set by operators. When asked about specific value added services, broad support exists within the consumer base for additional paid service. The top 3 services, each having over 50% consumer support, are roaming bundles, notifications and fair bandwidth allocation.

- Roaming (58% yes, 11% maybe)
- Notifications (56% yes, 8% maybe)
- Fair bandwidth allocation (49% yes, 15% maybe)
- Compress traffic to decrease usage (39% yes, 20% maybe)
- Spend limits (44% yes, 12% maybe)
- Personalisation (40% yes, 15% maybe)
- Group bundles (38% yes, 16% maybe)
- Priority (32% yes, 13% maybe)

2. The changing role of the operator

With the widespread adoption of mobile broadband in the UK, operators have entered a fundamentally new playing field. Until recently, mobile broadband was a niche service reserved for the business user or the affluent consumer. However, today things are very different and mobile broadband is on the verge of becoming telecom's next mass market service.

According to Ofcom (figure 1), mobile data revenues in the UK have been steadily growing to around 17% of total revenue by 2009, countering a steady decline in voice and messaging revenues. With its stellar growth, especially in recent times, the mobile broadband service has become of vital importance to the future of mobile operators.

There is, however, more at stake than operator revenue. Broadband access is increasingly seen as playing a vital role in society at large. Many countries are making broadband a key policy area and are increasing regulatory control. Finland is a case in point, being the first country to designate broadband access as a statutory right¹. This is especially relevant to mobile broadband as large parts of Finland can only be reached through using mobile technologies.

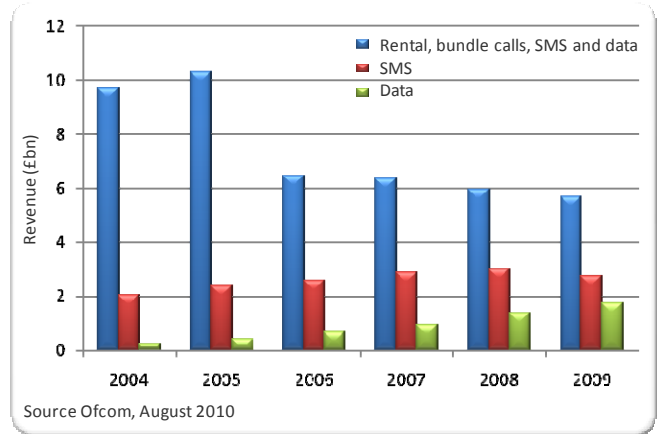


Figure 1 - Mobile Revenue UK Operators

Clearly mobile broadband is here to stay and is providing operators with an excellent opportunity to create a new long term revenue stream. Achieving long term success is however far from obvious and many challenges lie ahead on the road to broadband profitability. Some of the key challenges facing mobile broadband providers will be outlined in the following sections.

A slow tsunami – the incessant growth of data volumes

Where a phone call or SMS puts little pressure on the network, and is very predictable in the capacity it requires,

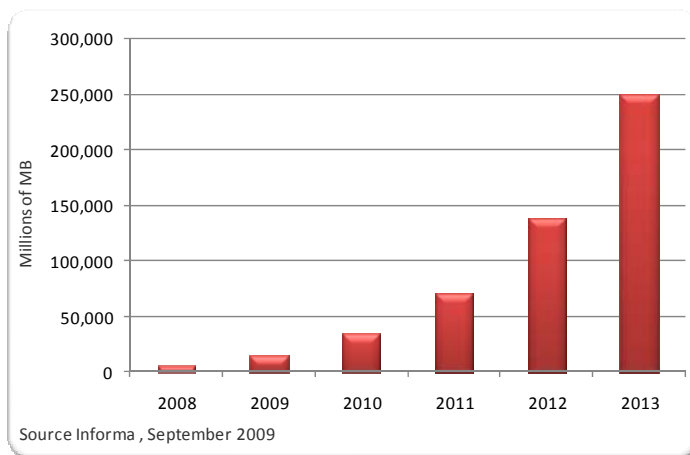


Figure 2 - Projected Mobile Laptop Traffic ,UK

mobile broadband traffic is completely the reverse. An internet session can range from kilobytes to gigabytes, with only a handful of users capable of bringing down the network at a specific cell site. Recently, there has been much publicity on networks collapsing under the pressure of mobile broadband data consumption, such as O2 and 3 in the UK². Perhaps even more worrying is the fact that these problems are occurring with mobile broadband penetration well below 20%.

The majority of users and traffic is therefore yet to come. Mobile Laptop traffic alone is expected to grow 25-fold when compared to 2009 levels (figure 2). Expanding network capacity in order to meet current and future demand will run into billions of pounds. Without alternative solutions besides network expansion to effectively manage this scarce resource, mobile broadband will become a very expensive and unusable service.

Mastering the basics – managing Quality of Experience

Quality of Experience of even the basic access service (let alone any ‘frills on top’) is under continuous threat from a number of different impact points. In the past, mobile operators only had to take into account a relatively uniform device, the mobile phone. However, with mobile broadband, a wide variety of devices can be used to connect to the internet ranging from laptops, smartphones, netbooks, iPads to game consoles. Each device has its own characteristics, screen size, memory capacity and usage patterns all impacting on the overall Quality of Experience. The most important impact on the user experience is, however, network capacity and congestion issues caused by the data explosion mentioned above. This is heavily impacting all the basic elements of the broadband service such as connection speed, stability and reliability. As a result operators in the UK have seen the perception of quality decline significantly compared to June 2008, when the service was first launched (figure 3).

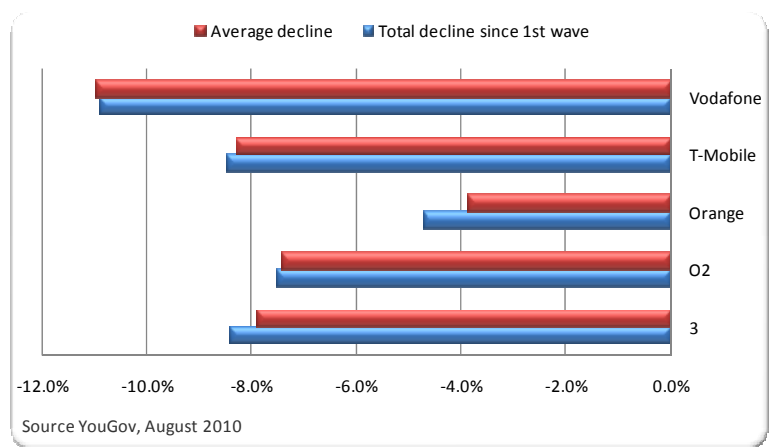


Figure 3 - Perception of Quality Decline June 2008 - July 2010

The broadband binge – the end of ‘all you can eat’

The success of mobile broadband can be partly attributed to the "all you can eat" and "flat fee" pricing models, providing clarity to consumers with little risk of bill shock. In the UK, for example, only 4% of consumers states they have a per Megabyte contract (figure 4). These fixed fee pricing models have been very effective to boost penetration during the early acquisition stages of mobile broadband. As we are all too aware today, the luxury of spare capacity which fuelled the early acquisition of mobile broadband customers was short lived, as data consumption per subscriber had been greatly underestimated. With network congestion increasingly rearing its ugly head, it is clear that unrestricted access can no longer be maintained. As a result, a number of operators have already bitten the bullet, including O2 UK and AT&T US, switching to a model with data caps³. These are just the first steps in defining new pricing models. Much is still to come in this area and operator capabilities will be stretched to the limit to support more innovative and targeted pricing models.

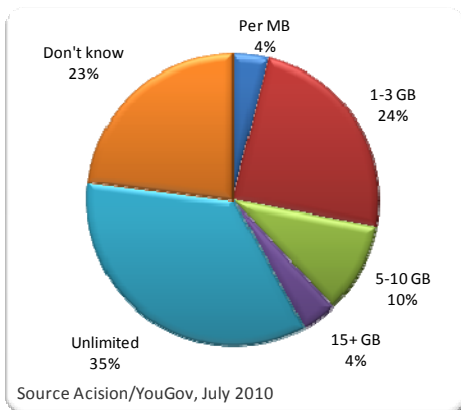


Figure 4 - Size of allowances for UK subscribers

Be different – creating value add

The marketing of mobile broadband has been relatively basic, differentiating the offer only on price, usage allowance, speed and in certain longer term contracts, a subsidized device. While this has driven subscriber acquisition, the consequences of this approach are now becoming apparent. Price competition has put profit under severe pressure and consumer confidence has hit a low as advertised speeds and QoS expectations are rarely met⁴. In addition, consumers have become used to all you can eat and unrestricted access subscriptions, making the introduction of premium and differentiated offerings difficult. “Why pay for something I already have?”. The marketing challenge is to secure mobile broadband uptake and to improve the profitability by moving beyond 'one size fits all' model approach, developing a sustainable segmented market approach.

Leverage content – partner with internet players to create new opportunities

Operators have entered an entirely new ecosystem which is driven by content accessed in many different ways and provided in even more varied formats and business models. In this content driven ecosystem operators need to develop fruitful relations with its key actors, especially content providers, (content) consumers and regulators. Two important aspects of this eco system are especially important.

First of all, operators should consider playing a leading role in the net neutrality debate. For some, the concept of net neutrality means providers should treat all consumers equally in terms of internet use and access, preventing them from inspecting, shaping or controlling any traffic running over their networks. However, mobile broadband capacity is a physically constrained resource where demand will fundamentally outstrip supply for the foreseeable future. If left ‘free’ and unchecked, congestion will become a permanent feature of the mobile broadband service turning it into a service which is very difficult to use in any real sense of the word. Also, it does not consider the interest of all stakeholders involved. Operators, content providers, regulatory bodies and consumers need to work together to agree on a clear definition of ‘fairness’ that can be applied uniformly across the market. The debate is essential to the fundamentals of the industry and it is essential that all parties, including operators, are heard to ensure a fair and sustainable outcome is achieved. For operators there is an opportunity to lead in this area and build a reputation of internet transparency, fairness and trustworthiness.

Secondly, the internet ecosystem provides fresh opportunities for operators to leverage internet based content within the mobile domain. Operators need to look for ways to partner with content providers and create a differentiated content offering which is beneficial to the consumer as well as the content provider. On top of this, alternative business models could also be developed. This of course places very different demands on mobile providers, creating wholesale type relationships with certain content providers, including developing capabilities in areas such as content mediation. This creates a completely new space in terms of consumer interaction, revenue potential, business models and capabilities for operators to occupy and develop.

Conclusions

It is clear that mobile broadband creates exciting opportunities for operators while, simultaneously, posing very substantial challenges. In the next sections the report explores how effective operators have been in exploiting the opportunities of mobile broadband as well as dealing with the challenges the service poses from a consumer perspective in terms of customer satisfaction and Quality of Experience levels.

3. UK historic developments and trends in Mobile Broadband

YouGov launched their Dongle Tracker product - an analysis of the UK mobile broadband market in June of 2008. This tracker looks at dongles, modem sticks and data card usage. Since that time YouGov has been tracking consumer perception on a quarterly basis on a number of key performance indicators such as attitudes and behaviours, the consideration and buying process, product substitution effects, satisfaction, recommendation and churn and demographic understanding of target groups .

The Dongle Tracker is based on a group of 2,000 mobile broadband users and 2,000 representative UK respondents. The tracker monitors dongles, modem sticks and data card usage. YouGov’s online panel is screened on a monthly basis and receives excellent response rates.

Market dynamics – a roller coaster ride

To say that the UK Mobile Broadband market is ‘very dynamic’ is by any measure an understatement. In terms of consumer perception each quarterly broadband ‘wave’ has shown great changes in for each operator. As we will see later on, it is the underlying dynamics of service quality and operator investment which is driving these high levels of turbulence. As figure 5 shows, most operators increase in customer satisfaction in one quarter, only to decrease again in the next. Only 3 has been able to produce four quarters of increased satisfaction for perceived quality, but as we will see later in this report, this is to a large extent explained by 3’s fall from grace after which they have been recuperating from the most substantial recorded drop in customer satisfaction. It

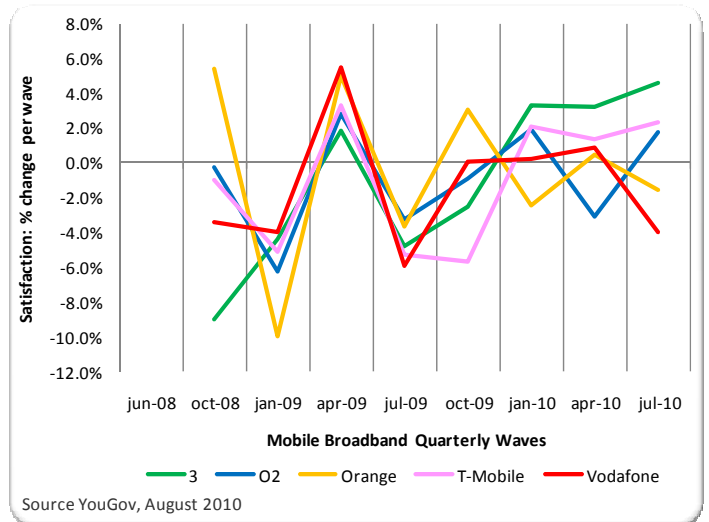


Figure 5 – Customer satisfaction: % change per wave

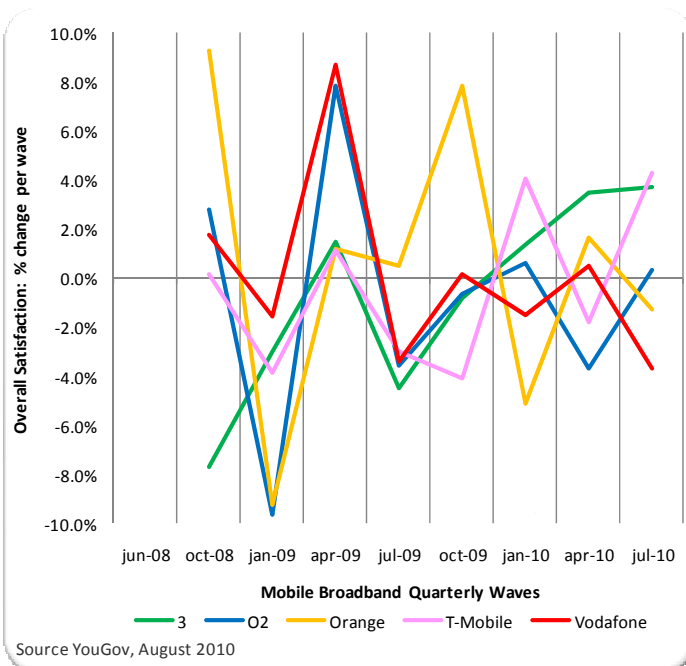


Figure 6 – Overall Customer satisfaction: % change per wave

has taken 3 the better part of two years to recuperate from this decline. As seen later on, although 3 seems to have regained top position again, it is far from easy to regain pole position, once it has been lost. Taking the perspective of perceived value for money (figure 6) there is a comparable picture. Again operators alternate quarters with perceived value growth with quarters where perceived value decreases. Again only 3 has been able to demonstrate four successive quarters of growth. The perception of quality and value for money therefore seems to go hand in hand. A satisfying Quality of Experience evidently increases the value for money that is perceived. This is an important correlation operators should focus on.

Perceived quality – a downwards trend

Satisfaction for mobile broadband quality in the past two years is showing a downward trend. None of the operators is currently able to reach the levels of perceived quality they had been able to achieve in the past. All operators have achieved their highest scores either in the first or second mobile broadband wave. At that point in time acquisition levels were still relatively low and spare capacity was still available in most networks. Within months however, perceived quality started to drop and operators have not been able to repeat the perceived quality levels they achieved when they had just launched the service. One of the conclusions that can be drawn is that perceived quality is a fragile thing. It can be here today and gone tomorrow. Clearly operators can't be complacent in this area.

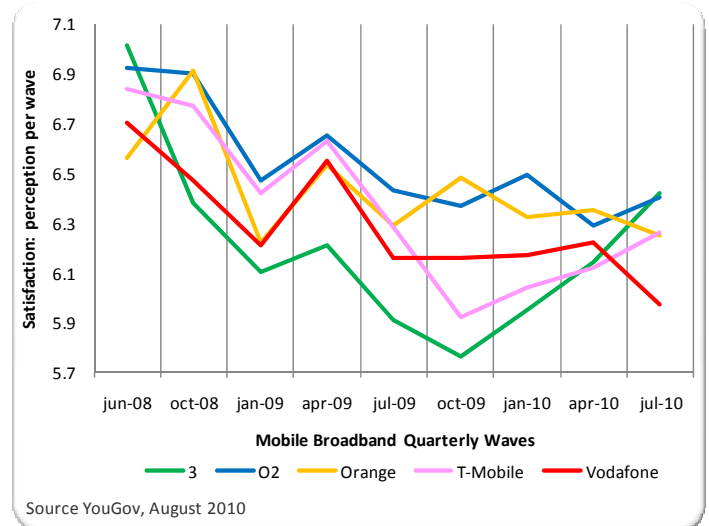


Figure 7 – Customer satisfaction: perception per wave

This downward trend has resulted in significant loss in perceived quality for all mobile broadband providers (figure 8).

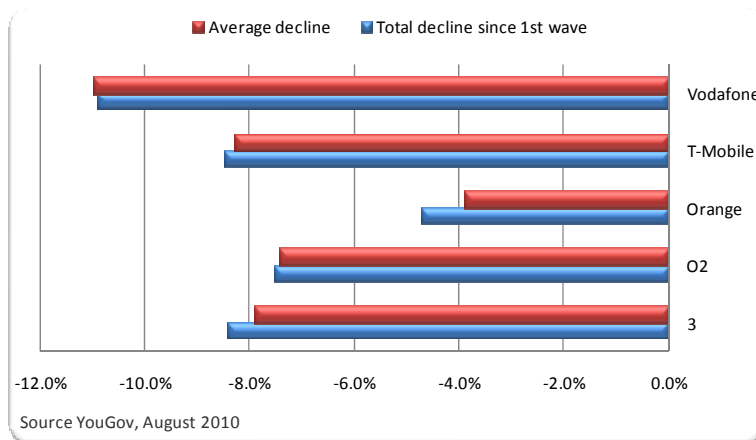


Figure 8 – Decline of perceived quality for UK operators

Vodafone has seen the biggest drop compared to the perceived quality in wave 1, losing 10.9% in perceived quality. Orange, which has been the top provider in the past quarters, has lost least value with a 4.7% drop compared to the initial perceived quality levels. Today operators are therefore still in a position where they are trying to catch up with the Quality of Experience levels they once were able to achieve. The ability to exceed these initial levels seems elusive, given the challenges which still lie ahead.

Who's the boss – the struggle for pole position

Part of the dynamics of the UK mobile broadband market is the battle for pole position. The YouGov tracker determines the relative operator position based on a set of fifteen satisfaction attributes such as connection speed, reliability during the day and evening, network coverage, upload speeds, customer services and billing. Of the five mobile broadband operators only 3, T-Mobile and Orange have been able to achieve top performer status. Both T-Mobile (in 2009) and Orange (in 2010) have been able to enjoy three consecutive quarters of market leadership. In both cases pole position was achieved following considerable network investment flanked by an aggressive marketing campaign. Also, in both cases, the surge to the top was soon followed by a slow decline when acquisition success started to affect service performance and quality.

The story of operator, 3 is quite different. They entered the mobile broadband market in 2007, claiming to be the ultimate mobile broadband provider. They achieved impressive acquisition success and were rated top for satisfaction in June 2008 according to YouGov's Dongle Tracker. They became, however, a victim of their own success and were unable to deliver against highly strung consumer expectations. The following quarter they immediately fell from grace and were relegated to being the lowest performer for seven consecutive quarters. In the July 2010 wave, however, they have shot up to pole position after a period in which they heavily invested in the network through the MBNL (joint partnership with T-Mobile, increasing network coverage from 7500 masts to now nearly 11,000.), implemented a traffic management policy at peak times and a decrease of promotional activities in heavily congested areas.

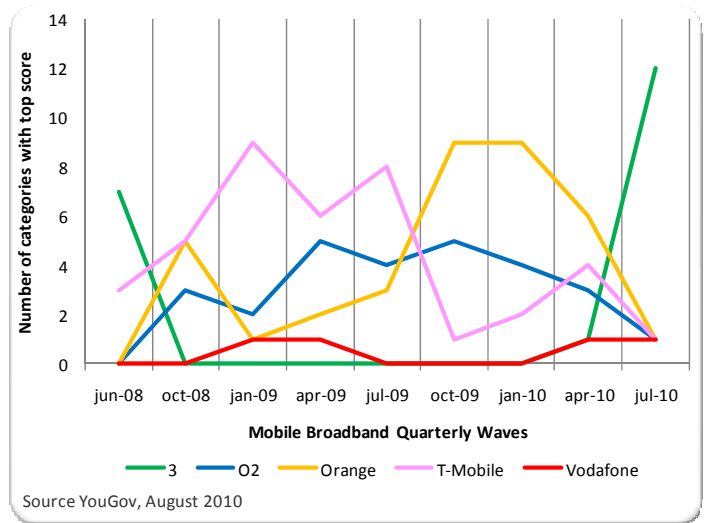


Figure 9 – Operator ranking based on nr. of top scores per category

Another angle that may affect an operator's performance and popularity is service convergence. YouGov's data suggests an operator that has both voice and mobile broadband customers are more likely to have higher satisfaction ratings. 3, with a modest 6% share of the UK mobile voice market, has only 28% of its mobile broadband customers taking voice as well. O2 and Orange, on the other end of the spectrum, both have over 70%

		Provides mobile broadband						
		3	O2	Orange	T-Mobile	Vodafone	Virgin* Mobile	BT
Provides voice	3	28%	2%	0%	2%	3%	4%	3%
	O2	27%	71%	10%	18%	22%	17%	31%
	Orange	15%	10%	72%	15%	11%	9%	18%
	T-Mobile	7%	3%	3%	44%	6%	9%	5%
	Vodafone	11%	7%	4%	10%	47%	11%	19%
	Virgin	6%	4%	5%	7%	6%	41%	4%
	BT Mobile	1%	1%	1%	0%	0%	0%	16%

Source YouGov, August 2010

Figure 10 – Which operator provides a consumer with mobile broadband and voice

of their broadband customers also taking voice. This is of no surprise given that both operators were last to enter the mobile broadband market and it appears that they have strategically targeted their own customers rather than those on other networks. Orange (72%), T-Mobile (44%) and 3 (28%) have all been leaders in the market while providers such as O2 (71%) or Vodafone (47%) have never been able to claim that position.

Loosening commitments – the decline of the post paid contract

The Dongle Tracker research has seen post paid contracts steadily decline during the whole of 2009 from approximately 75% to 55% of total contracts (figure 11). This figure has been quite stable during the whole of 2010 and equilibrium seems to have been reached in this area. In contrast PAYG and pay per day deal penetration has increased. O2 in particular focuses on the pay as you go segment of the market. The operator's promotions, offering half price dongles throughout 2009, have certainly been the catalyst for this increase. In contrast to O2, Orange does not offer a PAYG proposition. Instead the operator promotes a low value post pay package, wanting to stick to a post pay based marketing approach.

In the end this means the consumer and operator have now entered a phase where a more loose relationship exists. There are less long term contracts in place and the level of device bundles is decreasing. In the end this adds to the volatility of the market. If unhappy it is getting easier for many consumers to switch to perceived better alternatives. Customer perceptions of quality and value for money have thus become even more important.

The device gap – mobile internet versus mobile broadband experience

A final aspect of consumer perception is the difference which exists in customer experience between consumers accessing the internet via small screen devices ('mobile internet') and PC based devices, including laptops and net books ('mobile broadband'). Although both types of device access the internet via exactly the same network, a markedly difference in perception of quality, value and satisfaction exists. Even taking an extreme view, comparing the three worst scores for mobile internet with the three best scores for mobile broadband, mobile internet still has far higher satisfaction ratings - about a point higher in terms of quality, value for money and satisfaction. Evidently the key challenge for operators is

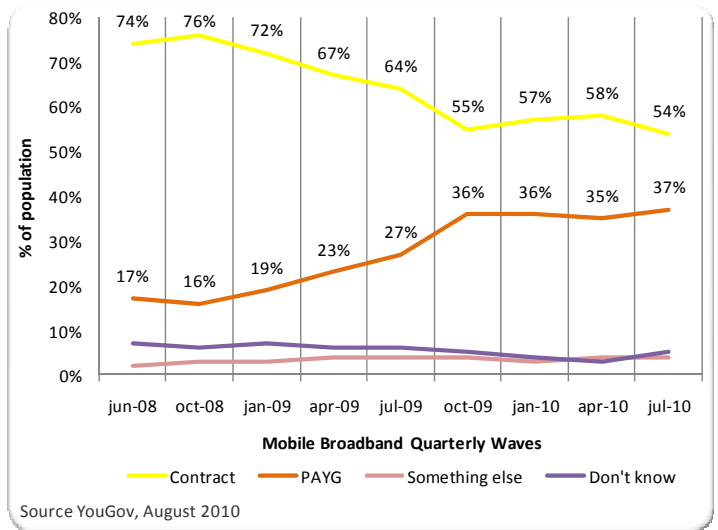


Figure 11 – Mobile broadband post paid contracts vs. pay as you go

around these 'big screen' devices. As such these devices provide the benchmark for customer satisfaction setting the standards against which operators will be measured. Getting mobile broadband to work satisfactorily for laptops, notebooks, iPads and netbooks is therefore the key challenge operators are facing.

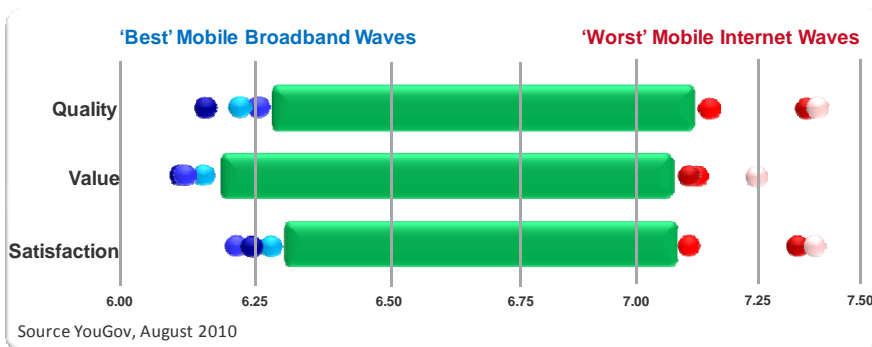


Figure 12 – Customer perception of mobile internet versus mobile broadband. Compares 3 highest mobile broadband scoring waves with mobile internet worst scoring waves

Conclusions

A historic analysis of the past two years demonstrates that nothing can be taken for granted in the mobile broadband market. None of the providers have been able to consistently outperform their competitors for more than three straight quarters. Neither has any operator been able to keep satisfaction from sliding the moment the top spot was attained. Once fallen from grace, the road to redemption can be very long, if indeed ever accomplished. All operators have dropped in terms of perceived quality and none have been able to reclaim their highest ratings. Consumers are becoming increasingly independent of operators and prefer a loose relationship allowing them to switch to alternative supplier easily. With mobile broadband still in its early stages, this precarious situation is likely to deteriorate.

4. The consumer perspective on Mobile Broadband

Research commissioned by Acision with YouGov in June 2010, aimed to understand in greater detail the specific drivers for the market dynamics. As the results will show, there are clear reasons behind the turbulence in the current market. There are a number of serious issues in mobile traffic which are creating customer dissatisfaction and consumer volatility. The vast majority of consumers are experiencing quality of service issues of some kind. This is having a clear effect on customer loyalty and churn potential. Video as a service is providing even more headaches for consumers, to such an extent that nearly every video watched on a mobile network experiences some sort of Quality of Experience problem.

There are, however, also many positive aspects to be found. The research identifies what consumers find most important in the service. In addition, some of the key areas where operators could be deploying additional capability are showing high levels of consumer acceptance. Capabilities such as fairness policies, content adaptation and paid for value add services can count on consumer buy-in as long as these are well explained and providing clear benefit. This is proving important areas of improvement which will benefit the operators as well as the consumers.

Consumer satisfaction and churn potential

One of the key topics in mobile broadband is consumer satisfaction and the potential for churn. In order to

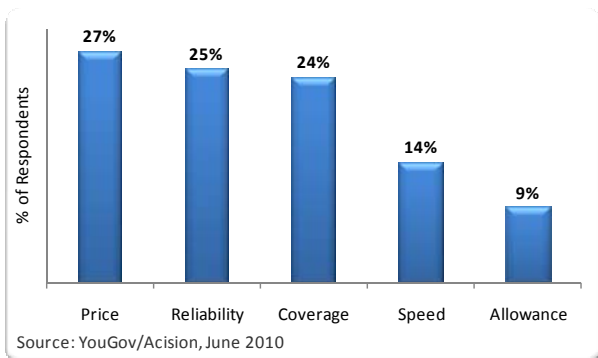


Figure 13 –Service aspects deemed most important

Understand the drivers in this area, it is first of all important to understand what consumers deem most important regarding the service. Price (27%), Reliability (25%) and coverage (24%) constitute the three main determinants of consumer value (figure 13). It is important to note that speed is in fourth place in terms of importance. Operators therefore have some room to play on this front as long as they ensure the coverage and reliability are satisfactory. It also begs the question to which extent download speeds should be at the centre of acquisition strategies as other service aspects seem more important to consumers. Allowances seem only of modest importance compared to the other service elements. It is therefore the quintessential broadband service (reliability, coverage and speed) which is deemed most important to consumers (63% of the total).

Looking at customer satisfaction, it is also this basic mobile access service which is creating the highest level of dissatisfaction with speeds (37%), coverage (27%) and reliability (27%) making up the top 3 reasons for dissatisfaction (figure 14). In total, these three aspects of the basic service create three times more dissatisfaction than allowance and price.

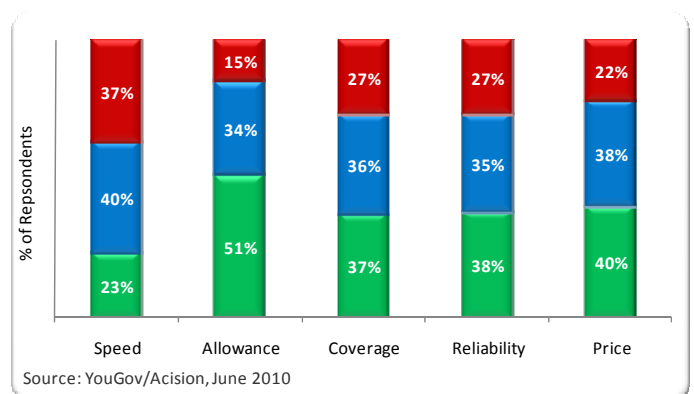


Figure 14 –Satisfaction levels (red is low, green is high)

By combining these two determinants of satisfaction (service relevance and dissatisfaction) with the number of people that have been affected with quality of service issues in one these areas, it is seen that broadband speed has the highest impact of all (figure 15). Although it is not deemed the most important aspect of the service (compared to coverage, reliability and price), it does get the highest dissatisfaction level and affects the highest number of people (the size of the bubble).

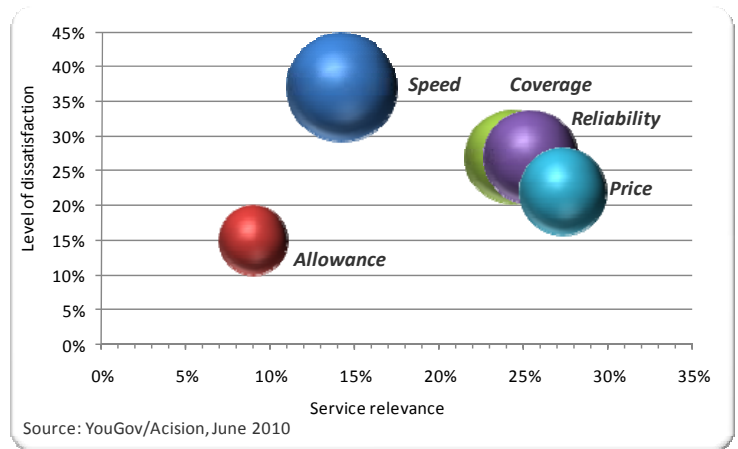


Figure 15 – Impact of dissatisfiers on customer base
Size of the bubble is number of respondents affected

Focussing on churn, it can be seen this analysis confirmed (figure 16). Again speed and connection are key determinants of the stated reasons to churn with low use as another reason for churn, which is likely the result of quality of service issues on the basic broadband service.

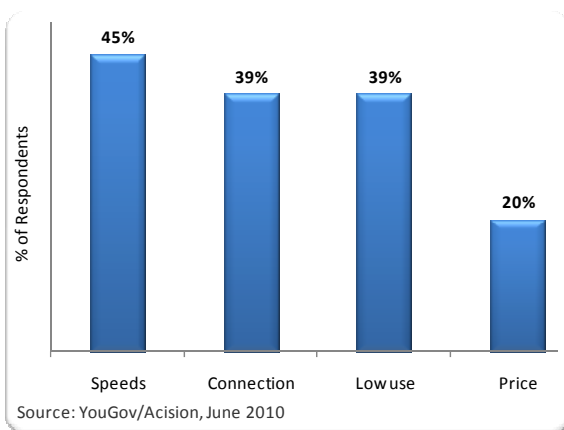


Figure 16 – Stated reasons for churn

About 35% of respondents voice uncertainty over the next steps they will be taking with the service and are contemplating to change operator, stop using the service altogether or not sure what to do yet (figure 17). This is taking into account a large group of 18 months to 2 year contract users who are in many cases not considering their future with the service yet. The potential for churn is therefore very significant indeed.

As seen from the above, satisfaction is clearly under pressure. The key driver for dissatisfaction, which is driving this churn potential, are the basic elements of the broadband service, speed, connection and reliability. Price and allowances are much less important in relative terms.

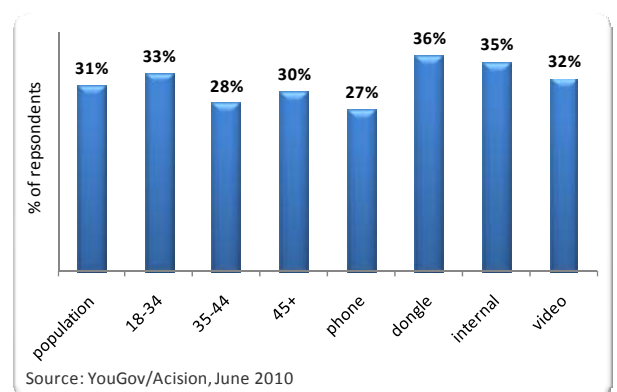


Figure 17 – Churn potential per group
Respondent stating: change operator/contract, stop service or unsure

Quality of Experience - Overall service

The erosion of customer satisfaction and loyalty identified in the previous section is driven by a number of quality of service issues which are affecting the majority of users. The vast majority of consumers have experienced problems with quality of service with only 16% stating they have experienced no issues in the past (figure 18). The majority of issues relate to the network where speed is the main issue with 67% of consumer experience problems with this aspect of the service. 49% of users have experienced poor network Coverage, 45% of consumers can not connect at all and 40% experience connection drops. Other issues such as image quality have significantly lower numbers.

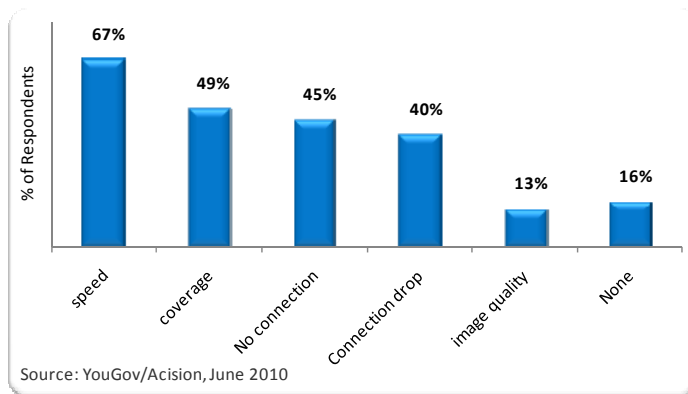


Figure 18 – Quality of Experience issues (multiple can be selected)

When considering the frequency of these issues, connection speed again tops the poll with 54% of respondents

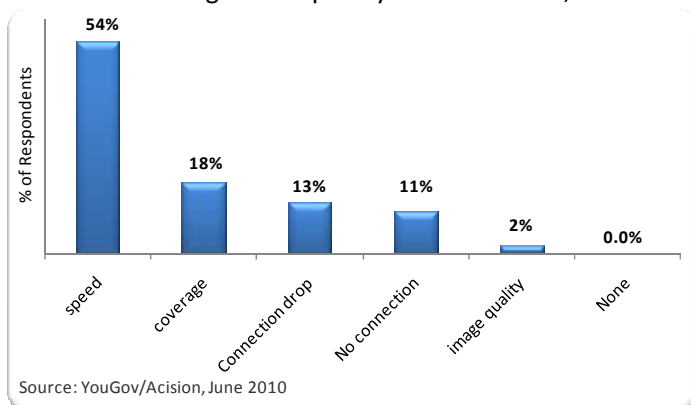


Figure 19 – Frequency of QoE issues (most frequent issue is selected)

stating it is their most frequent Quality of Experience issue (figure 19). This makes speed the most prominent Quality of Experience issue by far as it affects most users (67%, see previous chart) and is rated by 3 times more consumers as the most frequent problem than the next issue in line (coverage at 18% frequency).

Combining the importance of the service aspect by consumers (which has been outlined in the previous section) with the frequency of the issue occurring and the number of people stating they are affected by the service, it is clear that all the basic aspects of the mobile broadband service are generating significant service dissatisfaction, with speed being the most important issue to solve (figure 20).

Basically operators need to focus first and foremost on ensuring the basic access service is meeting consumer expectations.

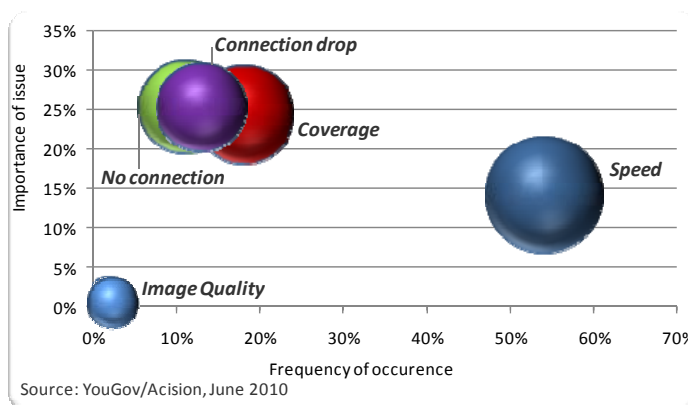


Figure 20 – Impact of dissatisfiers on customer base
Size of the bubble is the number of people affected

Quality of Experience - Video

The research has focused specifically on video as part of the mobile broadband user experience. One of the reasons is the fact that video consumption is one of the key determinants of network congestion and resulting network performance issues. Compared to any other internet service, video generate significantly more traffic, it claims more continuous network resource and is very time sensitive where any delay in service is immediately noticeable to the consumer.

For these reasons it is very important to understand in more detail what type of consumers are using the service and what is currently determining their Quality of Experience. 36% of users watch videos, with 17% regular users of the service (figure 21).

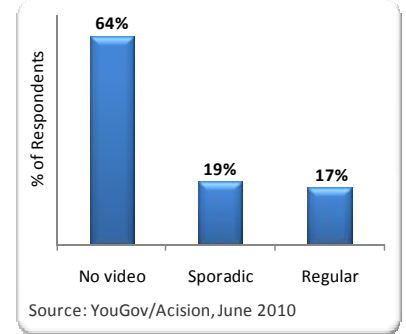


Figure 21– Percentage of video users

These regular users of the service represent the most prolific and active users of the mobile broadband service

being number one in 7 of the 9 measured service types (figure 22). In terms of ARPU, these users generate revenue which is 9% above average. These users therefore clearly represent an important customer segment which operators need to pay special attention to.

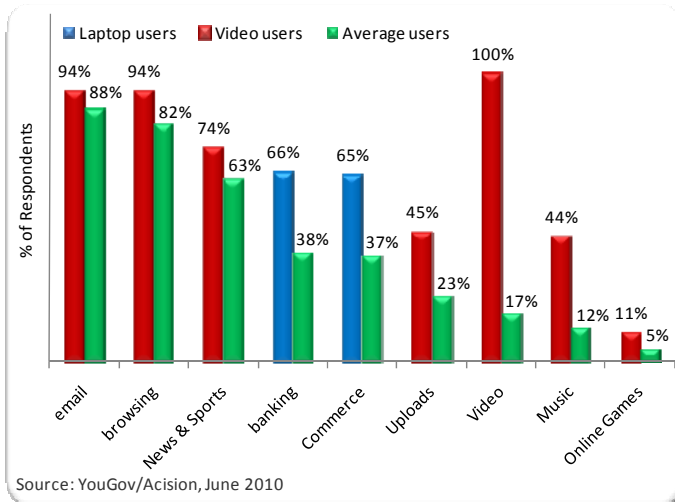


Figure 22 – Usage patterns of video users (based on % stating they use a service)

Quality of Experience in video is problematic. Of the subscribers using the service most experience a wide range of issues regarding the video experience (figure 23). With 63% of respondents, frequent pauses is the issue experienced by most consumers. Waiting for the video to play is in second place with 58%. Poor quality of the video and no video playing at all come in third place, at approximately 30% of respondents. The Quality of Experience of video therefore seems to be hampered at all stages of the video delivery cycle and is affecting the majority of frequent users.

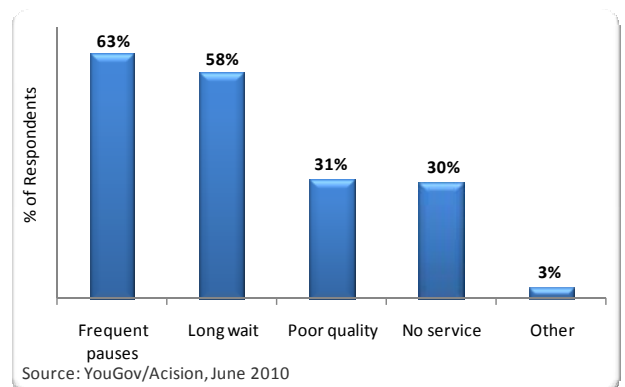


Figure 23 – Video QoE issues encountered (multiple can be selected)

The Quality of Experience issues in video occur very frequently, further exacerbating the situation (figure 24). Especially having to wait long before the video starts to run (59%), frequent pauses during the video (55%) and video quality (45%) occur regularly (either always, most of the time or often). This basically means that a large majority of consumers regularly experience at least one Quality of Experience issue with the videos they watch.

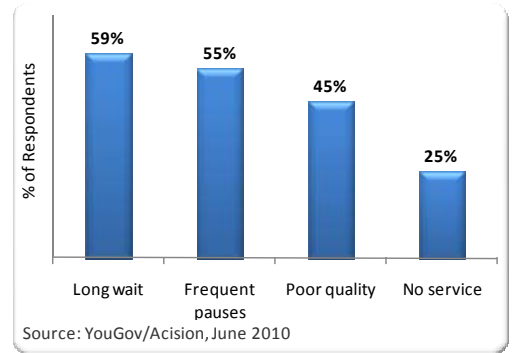


Figure 24 – Frequency of video issues
Based on response: always, most of the time and often

The Quality of Experience issue deepens even further when consumer annoyance levels of these issues are considered (figure 25). When asked which Quality of Experience issue is most annoying, 59% of respondents choose multiple pauses as the most annoying issue by far. It is exactly this issue which is experienced by most consumers and is a close second in terms of frequency of occurrence.

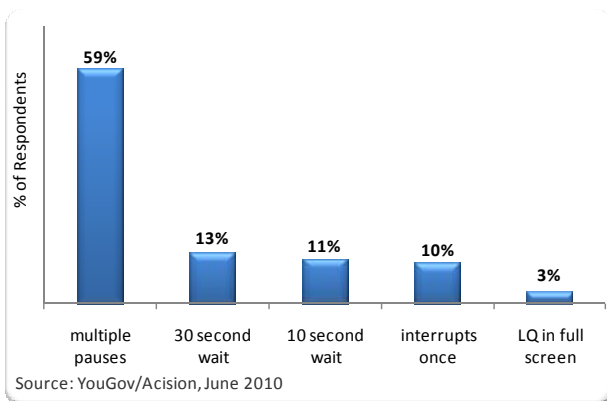


Figure 25 – Video QoE issue deemed most unacceptable

The most annoying Quality of Experience issue affects therefore the highest part of the population and occurs very frequent. This clearly is a key aspect of the video experience that operators will need to focus on. Other aspects such as waiting for the video to download and a single interruption are deemed much less of a nuisance (each around 10%). Interestingly enough, having a low quality experience in full screen is seen as very insignificant (only 3% of respondents). By combining these elements together (figure 26) it becomes very apparent to what extent video interrupts is the key issue for operator to focus on.

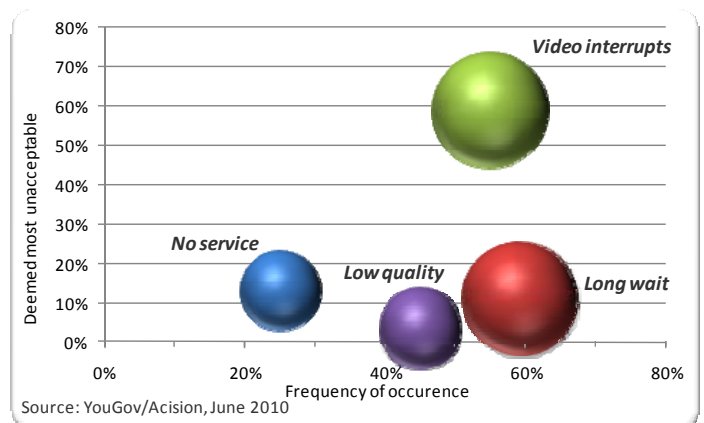


Figure 26 – Impact of video issues on customer base
Size of the bubble is the number of people affected

Seizing the opportunity - Fairness policies, content adaptation & VAS

It is clear that mobile broadband operators are facing significant challenges. The opposite can, however, be stated as well. Many opportunities exist to excel as a mobile broadband provider and differentiate the offering against competitors. As part of the research Acision have therefore focused specifically on areas of opportunity, an aspect of mobile broadband which, to date, has had little to no attention. In particular the following areas of opportunity have been focused on:

- **Applying fairness principles to resource allocation** – One of the areas where operators can act is in the area of dividing the constrained mobile broadband resource across the demand at any one point on time. The research shows that consumers, once they understand the need for resource management, have a high acceptance of policies which enable a fair allocation of the available capacity. The research even indicates that consumers are prepared to pay a premium to enable this service if it translates into an improved Quality of Experience.
- **Content optimisation to improve Quality of Experience** – Another area where operators can deploy capability to address QoE issues is content optimisation. The research shows that consumers are willing to accept and even pay for content optimisation as long as they benefit in those aspects of the service experience which they find most important. Customers are very well able to decide which kind of trade off they are willing to accept to get the optimal outcome given constraints they understand.
- **Consumer willingness and interest for premium VAS services** – A third area explored is the willingness of consumers to pay for additional value added services. This is of course only a preliminary sounding to determine the overall willingness to pay for VAS service. The research does not aim to determine the ‘top 10 killer VAS services’ for broadband as this would require in depth and iterative consumer testing. The research does show, however, that there is a broad need for different types of VAS services and a willingness to pay an additional fee. This provides another key area where operators can build a more diverse and long term revenue model.

Applying fairness principles to resource allocation

Fair use policies of some kind are being deployed by most of providers of fixed and mobile broadband. Consumer awareness of these fair use policies is, however, quite limited with 56% of consumers not aware whether they

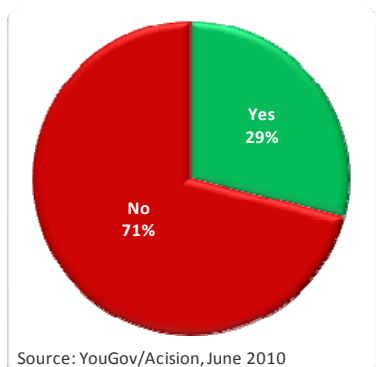


Figure 28 – Awareness of bandwidth hogs

have a fair use policy as part of their service (figure 27). The other 44% is aware whether or not a fair use policy is in place. When asked about the underlying reasons for fair use policies, consumers are quite unaware of the drivers behind these policies. When asked whether they are aware that a small percentage of users can generate the majority of network traffic and impact the user experience of all users, 71% states they had never been aware of this issue (figure 28). Without such awareness, it is unlikely that any customer would be interested in applying certain fairness principles to secure a better overall Quality of Experience for all. Raising awareness of such key technological and business issues is therefore essential.

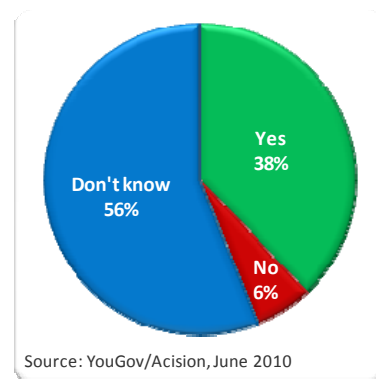


Figure 27 – Respondents with fair use policy

Once consumers have a better understanding of the reasons behind fair use policies in the first place, they are able to consider the value that applying fairness principles can provide to them. It is, however, very important that they understand how the fairness principle applies to them personally and how it enables a better Quality of Experience for all. When asked whether a fairness policy is acceptable which ‘distributes bandwidth between as many people as possible to ensure a better Quality of Experience, only 19% of consumers state categorically they would not accept such a policy. There is, therefore, a clear basis for fairness principles to be applied as long as consumer buy in is created through education and raising awareness.

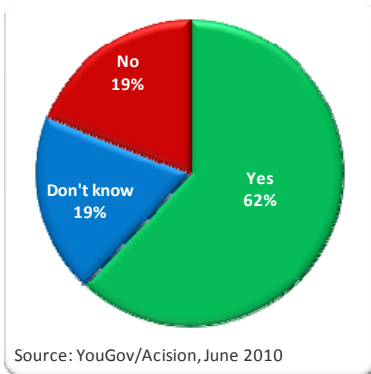


Figure 29 – Acceptance of fair distribution

Content optimisation to improve Quality of Experience

A key capability which operators can deploy as well is content optimisation, especially in those cases where it can aid in improving the consumer experience. A very good example is video. As figure 25 has shown, consumers are annoyed most of all with having multiple pauses during a video. They not at all worried about lower quality in full screen. What is also quite interesting is that consumers find a 10 second wait as annoying as a 30 second wait. Overall the annoyance level is about equal.

This understanding of video Quality of Experience preferences provides essential input for optimizing the video service. Operators can play with the buffer time and quality of the video as long as they ensure that once the video starts running, it does do uninterrupted. In this way service optimisation can significantly enhance consumer satisfaction. When specifically asked this question (figure 30), the majority of consumers explicitly state they would accept such an approach (48%) or would contemplate it (19%).

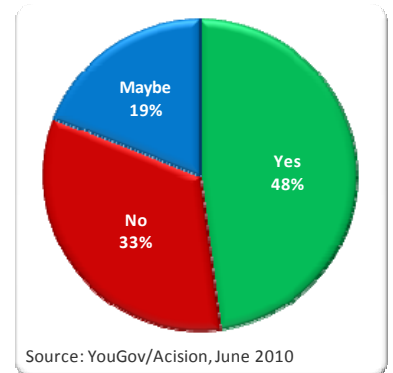


Figure 30 – Acceptance of video optimisation

When further asked if consumers would even contemplate to pay for a service which specifically compresses video and pictures to save on the data bundle, 59% state they would agree to or think about such as service (figure 31). This clearly shows that when it comes to content consumers considers a variety of parameters of which content quality is just one of the considerations. Consumers are very well able to determine which trade-offs they want to consider in creating the optimal services combination. The above provides a clear basis for a targeted content optimisation approach which operators could deploy to improve Quality of Experience across their entire services portfolio.

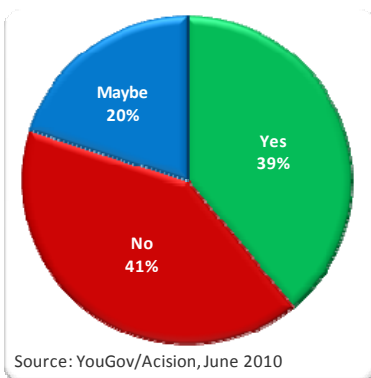


Figure 31 – Pay a small fee for compression

Consumer willingness and interest for premium VAS services

A final element of the research focused on the potential to service differentiation which could provide the basis for mobile broadband ARPU growth. For each of the VAS services the question was specifically asked whether consumers were willing to pay an additional amount for such a services.

The focus of this research was to ascertain whether there is an intrinsic need and interest in value added services which can be monetized. Many more considerations could be made in determining in depth which specific VAS services would generate the highest revenue potential and further research in this area would certainly be valuable. Such a process would, however, require much more than panel research, and as such the outcome of this research should be seen as a preliminary input to such a more detailed consumer propensity study. However, the panel research clearly shows there is a monetisable need and interest in mobile broadband VAS services. For each of the 8 example VAS services polled, all of them attracted a more than enough interest to provide the basis for a significant consumer segment:

1. Roaming packages when out of the country.
2. Notifications having reached a certain spend limit.
3. Distribute available bandwidth among as many users as possible to ensure the connection stays connected and maximum download speeds.
4. The adaptation of the quality of the video and pictures, allowing the customer to download more content for the same amount of usage allowance and same price.
5. The ability to set spend limits.
6. Allow service customisation (e.g. being able to personalise services like setting video and picture quality).
7. A bundle sharing scheme e.g. sharing a package with family/household members.
8. Purchase priority where users get a h higher speed or more usage allowance based upon what is spent.

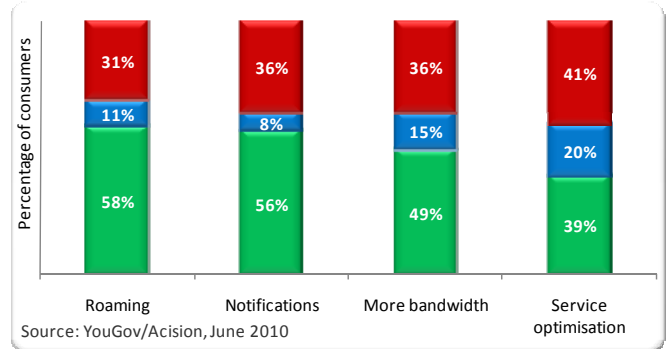


Figure 32 – Respondent interest to pay additional fee (red is low, green is high)

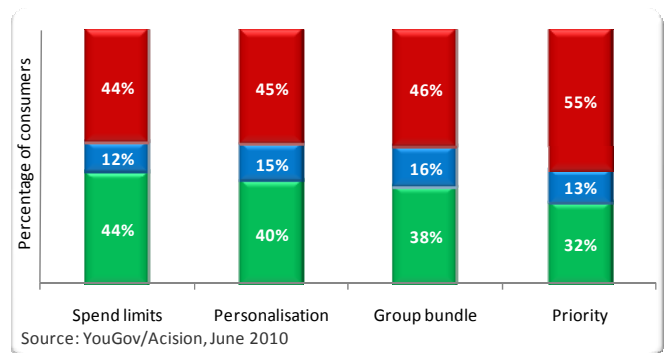


Figure 33 – Respondent interest to pay additional fee (red is low, green is high)

Conclusions

The research shows there are clear reasons behind the turbulence in the current UK market. There are a number of serious issues in mobile broadband which are creating customer dissatisfaction and consumer volatility. The vast majority of consumers are experiencing quality of service issues of some kind. This is having a clear effect on customer loyalty and churn potential. Video as a service is providing even more headaches for consumers, to such an extent that nearly every video watched on a mobile network experiences some sort of Quality of Experience problem.

There are, however, also many positive aspects to be found. The research identifies what consumers find most important in the service. In addition, some of the key areas where operators could be deploying additional capability are showing high levels of consumer acceptance. Capabilities such as fairness policies, content adaptation and paid for value add services can count on consumer buy-in as long as these are well explained and providing clear benefit. This is proving important areas of improvement which will benefit the operators as well as the consumers.

5. Seizing the Opportunity in Mobile Broadband

It is difficult to overestimate the impact of the mobile broadband challenges outlined above. Current data consumption levels are already resulting in network congestion and are seriously impacting the Quality of Experience. The majority of growth is, however, yet to come. The investments in core network and backhaul capacity required to deliver acceptable Quality of Experience levels will therefore be very significant indeed. As backhaul cost alone typically represents 30% of operator OPEX, these investments could fundamentally undermine the mobile broadband business case.

The challenges in Mobile broadband will not be solved by simply throwing more network capacity at it. Even if it were possible to create such capacity levels in the Radio Access Networks and core networks, the investment levels alone would destroy the business case. A more comprehensive and broader approach will therefore be required which addresses all essential areas:

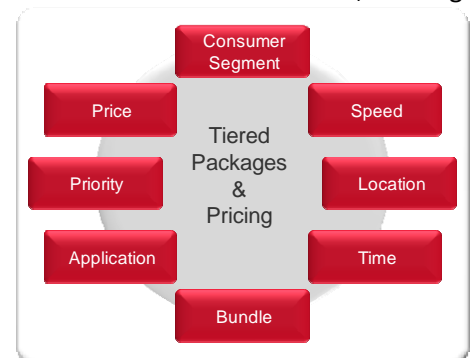
1. **Focus on key business priorities** – Ensuring the long term sustainability of mobile broadband is essential. In order to achieve this the following four business areas require focused attention:
2. **Invest in key capabilities** required to meet these business challenges:
3. **Evolve the consumer offering** to fuel the next round of growth and long term sustainability.

Focus on key business priorities

In order for Mobile Broadband providers to establish a sustainable business model with a healthy profitability level, Acision believes the following business priorities are essential:

Grow Average Revenue Per User (ARPU) by enabling a rich and differentiated service offering

Increasing revenue per subscriber is achieved by increasing the perceived value of the broadband service, enticing consumers pay a premium. The research has shown consumers are looking for such value add and are willing to pay additional fees for it. The ability to target different segments by differentiating the service and providing value added services is essential in achieving this. Especially the mobility aspects provide a rich set of possible differentiation parameters that could be used to achieve this. This requires a step change in operator capability in terms of controlling the service. If higher value segments are created, it is essential that the agreed Quality of Experience levels of these premium services are met.



Decrease Average Cost per User (ACPU) by maximising network utilisation

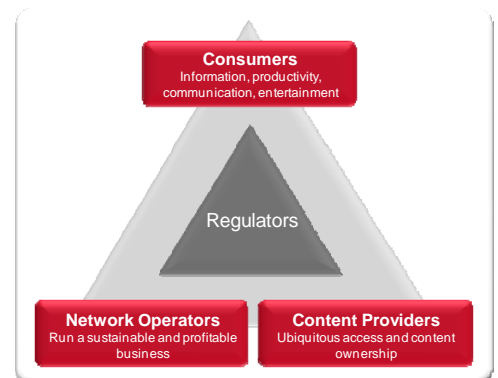
The required network capacity to handle peak concurrent users is the single most important factor in determining cost levels in mobile broadband. Operators need to bring down traffic levels at peak times to free up capacity and decrease the network cost per user. In essence this is a matter of maximizing network utilization, ensuring network demand is spread out evenly over the day and the number of concurrent subscribers that can be supported is maximised.

Control Quality of Experience by managing all relevant aspects of the service

Quality of Experience is evidently under pressure in mobile broadband. The research points to specific elements in the consumer experience which need to be addressed. In addition to more capacity, ensuring a fair distribution of available network resource will be essential in raising Quality of Experience levels. In a capacity constrained environment, of which Mobile Broadband is a case in point, it is essential to enforce a fair distribution of the limited resource between the many users of the service. Only if operators are able to fully control and influence all aspects of the Mobile Broadband service, taking into account variables such as identity, device, location, service and congestion level, will they be able to deliver the required Quality of Experience levels. This again sets requirements on operators which go far beyond today's capability levels. From a consumer perspective the research shows that customer are welcoming fairness principles which are beneficial to all.

Leverage key internet ecosystem players such as regulators and content providers

The net neutrality debate is as much a potential threat to operators as it is a great opportunity. Operators should actively participate in this debate and seek new ways to create value by working closely together with parties such as content providers to create differentiated types of services. In addition, operators can start to compete on reputation in terms of openness, transparency and accountability in the internet eco system. To achieve this, operators will have to become conversant with a new set of stakeholders, especially regulators and content providers. They will need to provide full transparency on the types of interventions they undertake and provide full accountability to individual consumers as well as regulators. In delivering content to consumers, operators can play a crucial role by mediating the most appropriate content based on available network capacity and device capability. This would enable a truly pro-active content delivery approach which matches source content with available capacity and capability at the receiving end of the value chain creating the ability for new types of services offerings and quality of experience levels.



Invest in required capabilities

To achieve the business priorities outlined above, a step change in operator capabilities will be required. In order to achieve maximum network utilisation and a differentiated consumer offering which is underpinned by accurate and effective fairness policies, unprecedented levels of control are necessary. Additional capability is required in three main areas:

DATA LAYER	CONTENT LAYER	CONTROL LAYER
very high performance and reliable components that handle all network traffic	fit for purpose components which optimise specific content such as video or browsing	highly intelligent components which enable real time, complex and rich decision making

- At the **data layer** capability is required with very high performance and reliable components that handle all network traffic. Functions like traffic shaping, deep packet inspection and flow routing are typical functions at this level. These types of components handle all traffic and essentially provide access to traffic in order to determine its origin, allocate bandwidth and direct flows to a variety of downstream systems. The ability to scale very efficiently to support hundreds of Gbps is essential for these types of components.
- At the **content layer** fit for purpose components are needed which optimise specific content services such as video or browsing. Functions like video flow management, web optimisation and content compression are typical examples at this layer. These types of functions provide highly specialised capabilities to optimise a specific service. Depending on the specific service that requires optimisation, a dedicated capability will be required which handles all aspects of the Quality of Experience of the specific service. By their very nature these types of CPU intensive applications have limitations in scaling efficiency. They should therefore only be applied if a specific need dictates their use such as certain types of customers, time of day, locations or any other relevant criteria.
- At the **control layer** highly intelligent components are required which enable real-time, complex and rich decision making. Capabilities such as policy management, quota management and subscriber control are typical examples. These capabilities enhance the operators depth of control and allow capabilities in the data and content layer to be applied intelligently based on a very wide range of criteria such as customer type, usage to date, available allowance, time of day and many other potential variables. This capabilities will be essential in enabling the flexibility required to create a targeted approach for each individual.

A final consideration is the fact that these capabilities will have to perform at massive level of traffic, without adding significant latency to the internet service. It is therefore vital to achieve affordable systems scalability and much higher levels of performance. Significant improvement in performance and affordability will be required to enable a profitable return on investment in this area.

Evolve the consumer offer

In the end the consumer offer is the essential element in mobile broadband. Its meteoric rise has been largely triggered by the all you can eat business model which fuelled aggressive acquisition and growth. Going forward a new type of consumer model will be required which will fuel the next round of growth and long term sustainability. Acision is already seeing some of these changes happening in the market regarding all you can eat packages. This is only the beginning and many changes and undoubtedly innovative consumer offers are yet to come. Where these developments will end up is, of course, difficult to predict. Based on this research Acision believes the following elements are worth considering in evolving the consumer offer to a next level:

- *Offer a low price all you can eat package for the most elementary services:* Most services, such as browsing and e-mail, don't cause any major network problems. They could therefore be offered as part of an unlimited bundle, freeing the consumer from any hassle in these service areas.
- *Treat resource intensive services differently:* But in such a way that the consumer can relate to. This is where a cap could apply. But not a cap in Megabytes but in a measure that the consumer understands, which for video could be number of minutes. Video calling would of course fit such a model easily as voice calling is no different.
- *Differentiate the offer:* Operators could start differentiating their offers based on these specific resource intensive services, as long as they are able to explain it clearly to their customers. So for example offer two hours of video for \$10 - as a bolt on package to the standard all you can eat service.

This is where Acision believes that operators should focus their attentions in evolving the consumer offer; creating a blended model of all you can eat basic services combined with transaction based premium services which consumers understand and relate to. Such an approach will enable long term sustainability in mobile broadband which balances consumer confidence and satisfaction with a viable operator business model. Very significant opportunities in mobile broadband are still to come. It is up to operators to leverage their unique capabilities and intrinsic value to seize this great opportunity.

About Acision and YouGov

Acision (For more information, visit www.acision.com)

As a world leader in mobile data, Acision powers innovation and profitable growth in mobile data services. As the pioneer of mobile messaging, Acision's real-time mobile data solutions enables customers worldwide to drive new revenues with innovative services while controlling, optimising and monetising data traffic.

Acision's proven products and services, experienced people and service innovation allows organisations to meet the challenges in today's converging telecommunications market. Acision is at the heart of its customers' strategic business services, working together to achieve profitable and sustainable growth. Acision's recognised expertise extends across a portfolio of propositions, products and services and is based upon a global track record, business insight and leading edge technology platforms.

YouGov (For more information, visit www.yougov.com)

YouGov plc - is a professional research and consulting organisation, pioneering the use of the Internet and information technology to collect high quality, in-depth data for market research and stakeholder consultation; providing companies with a rounded view of their staff, customers, brands and investors as well as assessing opinion amongst the general public and the media.

Through panel management expertise, flexibility and an innovative approach to recruitment, YouGov operates a panel of over 300,000 UK members representing all ages, socio-economic groups and other demographic types. YouGov also specialises in growing and maintaining dedicated panels of specialist consumer and professional audiences and offers innovative and tailored market research solutions, quality service and insight that allow clients to make effective decisions about their business.

YouGov has been acclaimed as the UK's most accurate opinion pollster and dominates Britain's media polling. YouGov is one of the most quoted agencies in Britain and has a well-documented and published track record illustrating the success of its survey methods and quality of its client service work.

¹ <http://www.guardian.co.uk/technology/2009/oct/14/finland-broadband>

² <http://arstechnica.com/apple/news/2009/12/o2-apologizes-for-sketchy-iphone-service-in-london.ars>

<http://www.metro.co.uk/tech/807441-o2-boss-dear-london-sorry-our-phones-dont-work>

<http://www.zdnet.co.uk/news/networking/2009/11/30/3-to-make-amends-for-poor-3g-coverage-39913352/>

³ <http://www.telecoms.com/20933/o2-data-cap-protest-will-help-out-o2/>

http://news.cnet.com/8301-17938_105-20006534-1.html

⁴ <http://stakeholders.ofcom.org.uk/market-data-research/telecoms-research/broadband-speeds/broadband-speeds-2010/>