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IRAN

TELECOMMUNICATIONS REPORT

INCLUDES 5-YEAR FORECASTS TO 2019

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Iran Telecommunications Report Q3 2015

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BMI Industry View

BMI View: *Iran's telecoms market is an underperformer in the Middle East as a result of political and economic risks, exacerbated by currency depreciation, which is limiting access to the latest devices. However, the Iranian government is making headway in the process of lifting the sanctions and is adding upside to our outlook.* ***BMI****'s Country Risk team has made a slight upward revision to our economic growth forecast for Iran, in anticipation of a deal with the West in July 2015, projecting real GDP growth to pick up from 0.6% in 2015, to 2.9% in 2016 and 3.6% in 2017. This is also likely to have a positive impact on the mobile market and potentially attract more foreign investment. Although the mobile penetration in Iran is relatively high at 136.1%,* ***BMI*** *believes that there is further scope for growth. Data services, in particular, will grow at an average rate of 36.2% CAGR over the next five years.*

Key Data

- We estimate that fixed-line connections increased by 3.0% in 2014 and we expect growth to slow down in the forecast period because of fixed-mobile substitution and a greater focus on mobile services from fixed incumbent TCI.
- We estimate that the country ended 2014 with over 111mn subscribers, boosted by MTN's performance in the latter part of the year after it launched 3G services.
- We estimate there were around 9.9mn 3G subscriptions at the end of 2014 and forecast a figure of 18.9mn at the end of 2015 and we expect the rapid growth to continue over the short term as more operators launch advanced services.

Key Trends And Developments

On April 2, members of the P5+1 - the US, the UK, France, Russia, China plus Germany - agreed to lift sanctions against the Islamic Republic once a final deal on its nuclear programme is reached. The deadline for negotiations is June 30. **BMI** believes it to be likely that the sanctions will be lifted and as a result, our country risk team upgraded its forecast for Iranian economic growth. This could also attract more interest from the foreign investors to the Iranian mobile market. As a positive development, South Africa-based **MTN Group** has stated that easing of sanctions against Iran would enable it to transfer around USD1bn accumulated dividends and a loan repayment from its Iranian subsidiary. The company has thus far been restricted from taking money out from its Iranian subsidiary.

Iran's nascent 3G/4G market is expanding and **BMI** forecasts it to grow an average of 36.2% over the next five years to 2019. **MTN Irancell** joined **Rightel** in offering 3G services in the country, launching its network in August 2014. The operator also launched the country's first 4G network in December 2014,

looking to take a lead in the mobile data market. In April 2015, only eight months after launching its 3G network, MTN Irancell claimed that the number of data subscribers on its network has increased to more than 21mn, including 7mn on its 3G and 4G networks. The operator now offers 3G services in more than 200 cities and has introduced its 4G network in more than 50 cities throughout the country.

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SWOT

Iran Mobile SWOT Analysis

Strengths	▪ Continued subscription growth despite high mobile penetration rate.
	▪ Competition between operators driving growth and innovation.
	▪ The launch of 3G and 4G services driving mobile data uptake.
Weaknesses	▪ Average customer spending levels are low.
	▪ Mobile data services are subject to government censoring and filtering.
	▪ US embargo puts limits on potential network equipment partners for the operators.
	▪ Lack of international investments.
Opportunities	▪ Smartphone penetration is low, with Iran a late developer, meaning there are opportunities for vendors over the medium term in smartphone retail and data service up-sell.
	▪ The presence of large numbers of inactive prepaid users inflates the penetration rate and masks the potential for further customer growth.
	▪ Although in the early stages, the market for mobile value-added and data services is expected to see strong growth over the next few years; the youthful orientation of Iran's population should help to underpin future growth.
	▪ The government is making headway in a process of lifting the sanctions.
Threats	▪ Government controls over mobile data and internet services could limit the growth of this potentially lucrative sector.
	▪ Unstable political and security environment could hinder investment in the sector from equipment manufacturers and content providers.

Political

Political SWOT Analysis

Strengths

- Since the overthrow of the Pahlavi family in 1979, there has been some reduction in the level of political corruption, while wealth distribution has improved marginally.
- The Revolutionary Guard and Basij militia are fiercely loyal to the supreme leader, helping to maintain social stability.
- Sanctions relief will boost economic growth notably.

Weaknesses

- The country has one of the poorest human rights records in the region, and authorities do not hesitate to quell dissidents. A number of journalists and anti-government protesters are being held in custody.
- While decision-making ultimately rests with the supreme leader, the regime is heavily fragmented, and consensus is hard to reach.
- Widespread perceptions of electoral fraud during the course of June 2009's presidential elections have damaged the regime's legitimacy in the eyes of many Iranians.

Opportunities

- The Majlis (parliament) is more than just a rubber stamp; the move by 150 parliamentarians (out of 290) to hold former president Mahmoud Ahmadinejad accountable for his handling of the economy in March 2012 is a positive indication that checks exist.
- The victory of moderate cleric Hassan Rouhani in Presidential elections in June 2013 is leading to a significant improvement in relations with the West.
- The long term potential in Iran across a range of sectors is enormous given a large population, well-educated workforce and pent-up demand.

Threats

- Despite progress in nuclear talks, the prospect of further US and EU sanctions and the possibility of a military strike by the US or Israel cannot be dismissed.
- Youth unemployment is high.

Political SWOT Analysis - Continued

- The strong influence of the Revolutionary Guards within the political and economic arena will continue to present a challenge to reform.

Economic

Economic SWOT Analysis

Strengths	▪ Iran has the world's second largest proven oil reserves after Saudi Arabia, and the world's second largest proven gas reserves after Russia. ▪ Oil and gas aside, Iran is rich in other resources and has a strong agricultural sector.
Weaknesses	▪ Local consumption of hydrocarbons is rising rapidly; this, coupled with ageing technology in the sector, will have a negative impact on its oil and gas exporting capacity. ▪ International sanctions discourage foreign oil companies from bringing much-needed technical knowledge and equipment to maintain oil output levels.
Opportunities	▪ The gas sector remains underdeveloped despite significant improvements in recent quarters, and there is considerable room to maximise this source of revenue. ▪ A shortage of housing, provides opportunities for investment in residential construction.
Threats	▪ Lower oil prices will have a marked impact on the economy. Although an Oil Stabilisation Fund exists to protect the economy at times of weaker oil prices, it has increasingly been used to fund government overspending and could be close to empty. ▪ Capital flight could accelerate should negotiations on the nuclear programme fail.

Operational Risk

SWOT Analysis

Strengths

- Iran boasts high numbers of skilled graduates in technical fields such as engineering, construction and science.
- The transport network offers good internal and cross-border connections, and is currently able to meet the country's supply chain needs.
- The banking sector is relatively well developed, allowing extension of finance and credit to citizens.
- A well established intelligence agency and robust counter-terrorist capabilities deter attacks in most areas of the country.

Weaknesses

- Costs of employment are increases because the Iranian Labour Code affords workers a high level of protection and generous benefits.
- The costs of inland transportation, as well as the risk of congestion and traffic accidents disrupting supply chains, is raised due to reliance on the road network as the dominant freight mode.
- There is widespread corruption and heavy handed censorship, which will pose unforeseeable operational costs and limit business activities.
- The expansion of IS in Iraq poses a significant risk to Iran's security.

Opportunities

- The literacy rate of the labour force is increasing as the benefits of investment in primary school education are filtering through.
- The development of road and rail connections with Iran's neighbours highlights the country's potential to develop into key transit point for East-West trade.
- Relaxing of sanctions is resulting in greater foreign direct investment inflows.
- There is potential to combat the drug supply into Europe through programmes in Iran.

SWOT Analysis - Continued

Threats

- The availability of highly skilled labour is restricted as the brain drain results in an exodus of technically qualified workers.
- The risk of electricity and water shortages will be enhanced due to growth in energy- and water-intensive agricultural, mining and manufacturing industries.
- Lax intellectual property protection carries the threat of patent theft, fraud or infringement, leading to profit losses.
- Even if sanctions are lifted, the difficult operating environment in Iran, typified by high taxes and widespread corruption, will continue to deter investors.

Industry Forecast

Table: Telecoms Sector - Historical Data & Forecasts (Iran 2012-2019)

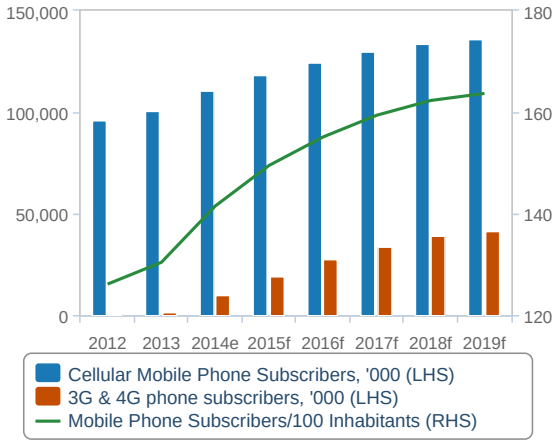
	2012	2013e	2014e	2015f	2016f	2017f	2018f	2019f
Main telephone lines in service, '000	27,448.4	28,462.4	29,316.2	30,049.1	30,650.1	31,120.1	31,586.8	32,050.0
Main Telephone Lines/ 100 Inhabitants	35.9	36.8	37.4	37.8	38.1	38.2	38.4	38.5
Cellular Mobile Phone Subscribers, '000	96,396.5	100,965.7	111,062.3	118,836.7	124,778.5	129,769.6	133,662.7	136,336.0
Mobile Phone Subscribers/100 Inhabitants	126.1	130.4	141.5	149.5	155.1	159.4	162.3	163.7
3G & 4G phone subscribers, '000	1,100.0	1,600.0	9,920.0	18,947.2	27,473.4	34,067.1	39,177.1	41,527.8
3G & 4G market, % of mobile market	1.1	1.6	8.9	15.9	22.0	26.3	29.3	30.5
Monthly Blended ARPU, IRR	47,692.8	49,488.9	48,928.8	47,099.7	46,202.5	45,758.3	45,758.3	46,206.9
Broadband internet subscribers, '000	3,076.2	3,694.5	4,531.3	5,417.2	6,403.1	7,482.1	8,641.8	9,864.6
Broadband internet subscribers/100 Inhabitants	4.0	4.8	5.8	6.8	8.0	9.2	10.5	11.8

e/f = BMI estimate/forecast. Source: BMI, operators, MCI

The most recent data from **MTN Irancell** indicates that its subscriber base expanded to 43.94mn by the end of Q414. This indicates that the market is still growing despite a relatively high penetration rate at 136.1%. Our outlook still sees growth slowing over the forecast period, through a rationalisation of multi-SIM ownership and we expect the market to have 136.3mn subscribers by the end of 2019, for a penetration rate of 163.7%. However, as the majority of these subscriptions are pre-paid, it is likely that there will be periods of inactive SIM discounting.

Industry Trends - Mobile

(2012-2019)



e/f = BMI estimate/forecast. Source: BMI, operators

Although the Iranian market has faced political and economic turmoil over recent years and **BMI** is still cautious over Iran's outlook, it appears that some positive developments have emerged regarding potential lifting of the sanctions. In April 2015, members of the P5+1 - the US, the UK, France, Russia, China plus Germany - agreed to lift sanctions against the Islamic Republic once a final deal on its nuclear programme is reached. The deadline for negotiations is June 30. **BMI**'s Country Risk team has made a slight upward revision to our economic growth forecast for Iran, in anticipation of a deal with the West in July 2015, projecting real GDP growth to pick up from 0.6% in 2015, to 2.9% in 2016 and 3.6% in 2017.

This could mean that Iran would have easier access to new mobile technology and cheaper handsets, which could add upside to the data usage. However, if Iran chooses to impose higher import taxes on consumer goods, the impact of lifting of the sanctions would be less pronounced.

The outlook for Iran's nascent 3G market still offers upside potential to growth and **MTN**'s 3G launch in August 2014, coupled with its 4G launch in December, will help the operator take a lead in the data market. The company announced that by April 2015 data subscribers on its network had increased to more than 21mn, including 7mn on its 3G and 4G networks.

Our 3G historical data and forecasts reflect **RighTel**'s weaker than expected performance throughout 2013 and the launch of 3G services by MTN and we estimate there were around 9.9mn 3G subscriptions in Iran at

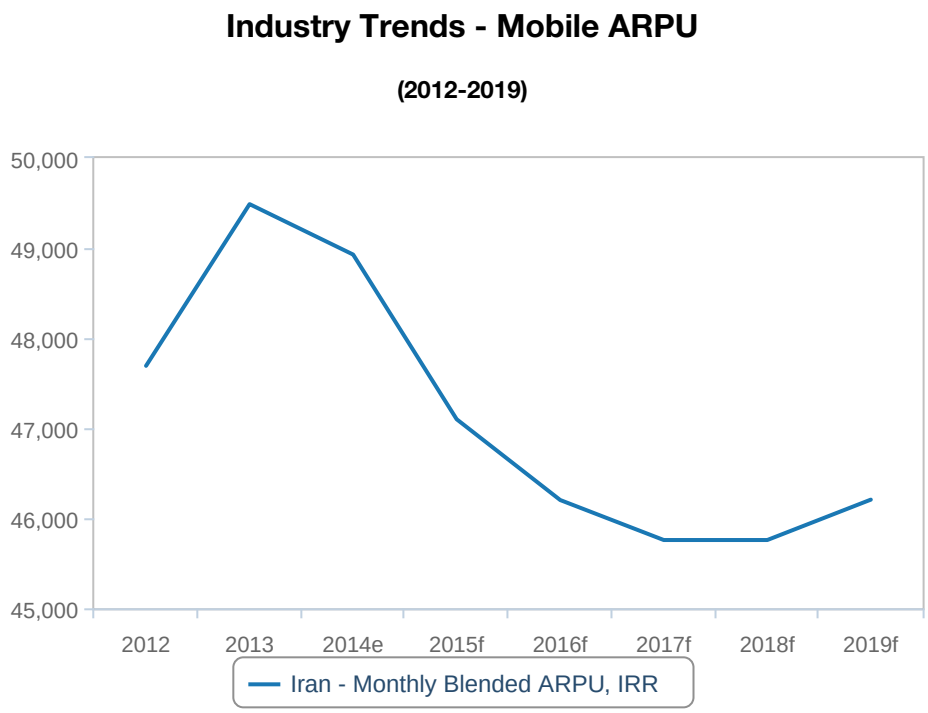
the end of 2014, which will grow to 18.9mn by the end of 2015. We still expect **MCI** to launch 3G services during 2015, while future launches of 4G services will also help the mobile broadband market.

By the end of our forecast 3G/4G subscriptions would have risen to 41.53mn growing at the rate of 36.2% CAGR over 2015-2019. **BMI** believes that in 2019 3G/4G subscriptions will account for 30.4% of the whole market.

ARPU

We believe economic sanctions on Iran are likely also to have a positive effect on USD ARPUs. MTN's ARPU stabilised at just around USD4 since Q412 a figure that increased in Q314 to USD4.11. However, in Iranian rials MTN has reported rising ARPUs in every quarter in 2014, clearly demonstrating the impact of currency depreciation on USD reported ARPU figures.

We expect ARPU levels in Iran's mobile sector will come under increasing downward pressure because of fierce price competition, even though we do not expect MTN to decline by much, because of its experience in launching advanced mobile data services. On the downside, the Iranian government has imposed maximum limits on how much the operators can charge for their data. The regulator set a maximum tariff of IRR0.5 per KB for post-paid data and IRR0.75 per KB on pre-paid price plans in December 2015.



e/f = BMI estimate/forecast. Source: BMI, operators

By 2019, we forecast the operator's average monthly ARPU should drop to about USD1. However, the launch of 3G services, first exclusively by RighTel and then by MTN, alongside MTN's launch of 4G poses an important upside risk to our forecast, as we expect there is significant pent-up demand for more advanced data services.

Industry Risk Reward Ratings

Industry Risk Reward Index

BMI View: *While external factors continue to have an impact on the region, operators must also adapt to a changing market environment, from prepaid to postpaid and from voice to data. Successful operators will be the ones offering relevant value-added services to their customers, as that would have a positive impact on both profitability and customer retention.*

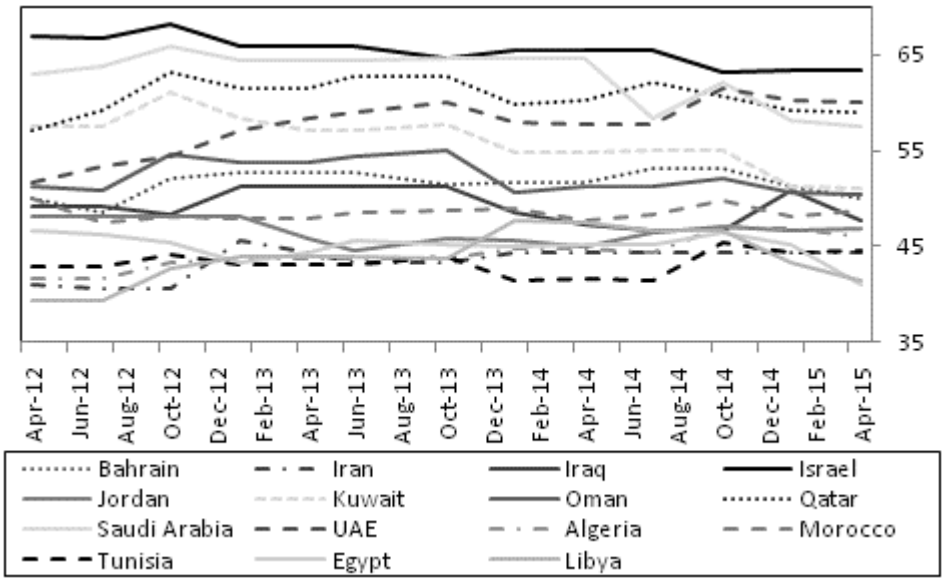
Despite a drop of 0.6pp in the quarter, bringing the overall telecoms rating score to 47.7, there have not been any drastic changes in our rankings during the quarter. The top remains the same, with Israel leading and followed by UAE, Qatar and Saudi Arabia, while Yemen, Lebanon and Syria remain at the foot of the table. Various external factors have negatively affected our rating across the region, from the drop in oil prices and its impact on public consumption in oil-exporting markets, and increased vulnerability through conflicts in Yemen, Syria and Iraq. But specific industry factors have also had an impact, as many operators in the region must deal with saturation, the move from prepaid to postpaid connections and the need to offer extra value-added services beyond simple voice and data to increase profitability and retain customers.

Israel, UAE, Qatar and Saudi Arabia continue to lead the region, all benefitting from stable governments and high disposable incomes that support spending on telecoms services. Operators in these markets continue to be the best-placed to take advantage of the switch towards greater data usage by introducing more services, such as connected objects. However, saturation and greater competition are also present in each market, and this could have a negative impact on improved profitability. Unsurprisingly, Yemen, Lebanon and Syria remain at the bottom, with Yemen and Syria impacted by the conflicts in their respective countries, whereas Lebanon's make-up is always dependent on events in the greater region. Lebanon's low score also reflects the structure of its telecoms market, where operators are state-owned and whose high prices do not encourage adoption of new services. Greater liberalisation would improve the market's prospects, but **BMI** is sceptical about the implementation of proposed regulations in this direction. By contrast, long-term prospects for Syria and Yemen, once conflicts end, will be boosted by a young population in each market.

Looking at the long-term trends, **BMI** highlights five countries which have either over- or under-performed in the last three years based on their telecoms ratings. These are UAE, Algeria, Kuwait, Egypt and Saudi Arabia.

Some Core Over- And Under-Performers In The Region

MENA Telecoms Rating Scores, April 2012-April 2015



Source: BMI

UAE had the best performance, improving its telecoms ratings score by 8.3 points to 59.9. The main positive impact has come from the industry-specific indices, with the rewards score up by 16.5p and the risk score up by 20p. Greater regulator independence obviously helps the country's outlook, but the continuous uptake of subscriptions, despite a high penetration rate, has separated the UAE from other GCC markets. Even though net additions have declined in 2014, we believe it is best placed to continue growing through data uptake, with 4G becoming ubiquitous in the market and operators launching innovative plans such as shared data. More connected devices and objects will improve profitability going forward, as well as greater usage through smartphone and tablets as more services are developed.

Algeria also outperformed its peers, seeing its telecoms rating score increase by 4.4p to 46.1. An average real GDP growth rate of around 3% has helped with increased private consumption, of which telecoms has taken a share. Algerian consumers have been very quick to adopt data services, with 3G having launched in late 2013, but already representing an 18% share of mobile subscriptions at the end of 2014, or 8.3mn subscribers. This has driven double-digit subscriptions growth over the year, and we expect lower but still strong growth over 2015 as uptake continues.

Kuwait has been the top underperformer, seeing its telecoms rating score decreased by 6.5p to 51. The main indices responsible were country risks, which dropped 5.5p, and industry rewards, dropping 11p over the three-year period. Very high penetration (above 200%) means the market is approaching saturation, especially as operators continue to compete on low-end prepaid subscribers, which generate lower profitability. These are likely to decrease because of a clamp down on expatriate workers, which make up an important share of prepaid subscriptions, and growing competition from **Viva** has also hit profitability for the two established operators.

Saudi Arabia has had very similar problems to Kuwait's. Its telecoms rating score has decreased 5.5p to 57.5, with the main impact coming from a drop in its industry rewards score, which dropped 13.7p. Saudi Arabia also suffers from high penetration, and a high prepaid share underpinned by migrant workers. The launch of MVNOs targeting specifically that segment will put further pressure on the established operators, but it will also allow them to target profitable segments with high-value services for consumers and enterprises.

Egypt saw its telecoms rating score decreased by 5.7p to 40.9, with a strong drop of 4.3p this quarter. Despite significant improvement in its country risks score, which grew by 10.2p following the uncertainty of the Arab Spring, the country has been impaired by its industry rewards score, which declined by 17.5p. Egypt has suffered many quarters of instability in terms of net additions, with its end-2014 subscriptions figure equal to the one in June 2012. Almost 7mn subscriptions were lost in 2014, as many prepaid lines were disconnected because of unpaid bills or a lack of usage, but this has not been offset by greater revenues from their current base. **Orange**'s control of **Mobinil** and some liberalisation of the fixed market may help with growth, but we remain concerned by the overall market structure in Egypt as infrastructure may not match increased data demand.

Table: MENA Q215 Risk/Reward Index

	Industry Rewards	Country Rewards	Industry Risk	Country Risk	Telecoms Rating	Rank	Previous Rank
Israel	42.5	90	80	67	63.4	1	1
UAE	57.8	66	50	66.4	59.9	2	2
Qatar	49.5	72	50	75.5	59	3	3
Saudi Arabia	46.8	69	60	68.5	57.5	4	4
Kuwait	38.5	78	30	65.9	51	5	6
Oman	38.8	60	60	60.7	50.4	6	8
Bahrain	35.8	69	50	62.9	50.1	7	5
Morocco	35	56.7	70	55.9	48.7	8	9
Iraq	47.5	57	40	41.4	47.8	9	7
Jordan	37.5	60	50	51.4	47	10	11
Algeria	40	53	40	59.2	46.1	11	10
Tunisia	32.5	53.3	60	51.1	44.5	12	13
Iran	45	49.7	20	57.7	44.3	13	14
Libya	40	70	10	30.5	41.4	14	15
Egypt	30	43.7	55	55.6	40.9	15	12
Yemen	34.4	58.7	20	32.3	37.9	16	17
Lebanon	26.3	63.3	25	44	37.8	17	16
Syria	27.5	48	20	25.4	31.1	18	18
Average	39.2	62.1	43.9	54	47.7		

Scores are weighted as follows: 'Rewards': 70%, of which Industry Rewards 65% and Country Rewards 35%; 'Risks': 30%, of which Industry Risks 40% and Country Risks 60%. The 'Rewards' score evaluates the size and growth potential of a telecoms market in any given state, and country's broader economic/socio-demographic characteristics that impact the industry's development; the 'Risks' score evaluates industry specific dangers and those emanating from the state's political/economic profile, based on BMI's proprietary Country Risk Index that could affect the realisation of anticipated returns. Source: BMI

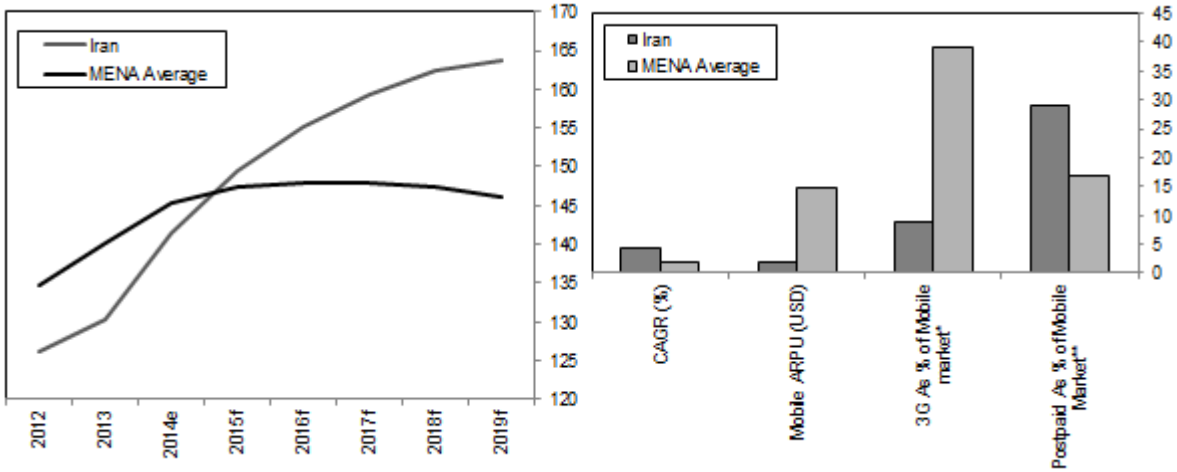
Market Overview

Mobile

Regional Perspective

Regional Perspective Data

2012-2019



e/f = BMI estimate/forecast. Source: BMI, Operators, Regulators

Table: Iran's Mobile Market Regional Comparison, 2013

	Iran	Middle East & North Africa	Rank (Out of 16)
CAGR 2015-2019 (%)	4.2	1.8	1
Mobile Penetration (%)	141.5	145.4	8
Postpaid as % of entire market	28.9	16.7	2
ARPU (USD)	1.9	14.9	16

Source: BMI

Key Developments

- **MTN Irancell** claims that the number of data subscribers on its network has increased to more than 21mn, including 7mn on its 3G and 4G networks. The rise was supported by the expansion of its 3G and 4G networks, providing speeds of up to 150Mbps. The operator offers 3G services in more than 200 cities and has introduced its 4G network in more than 50 cities throughout the country.
- The Iranian government has imposed maximum limits on how much the operators can charge for their data. MTN reported in its annual report that on 22 December 2014, the regulator set a maximum tariff of IRR0.5 per KB for post-paid data and IRR0.75 per KB on pre-paid price plans.
- In December 2014, MTN Irancell launched the first 4G networks in the country, using its 1,800MHz frequencies. The network was available in nine cities, with the operator stating that 3G services were available in 75 cities. Report suggests that the Ministry will auction LTE licences in the first half of 2015.
- In early August 2014 MTN Irancell received permission from the Ministry of Information and Communications Technology to begin piloting 3G services in some university campuses and government buildings in Tehran. Following technical and financial reviews of the pilot, MTN will be authorised to begin offering commercial 3G services from August 23 2014, marking the end of mobile operator **RighTel**'s period of exclusivity for advanced mobile data services.
- On August 20 2013 the mobile arm of **Telecommunication Company of Iran**, MCI, listed on the Tehran Stock Exchange. There were no financial details of the event, however. This development was the follow-up to an initial offering of 5.5% of MCI's shares on Iran's Over-The-Counter market for USD396mn in December 2010.
- After four years of censorship, internet users in Iran were allowed to access social networking sites **Twitter** and **Facebook** on September 16 2013, but access to the sites was promptly blocked again on September 17 2013. The secretary of the Iranian state committee responsible for filtering web content wrote the incident was written off as a technical problem and denied any government intention to lift the ban on the social networking sites.

Market Growth

Iran has two leading mobile operators, MTN Irancell and **Mobile Communications Company of Iran**. The latter is a state-owned entity, owned by fixed-line incumbent TCI. Irancell is 49% owned by South Africa's MTN. A third operator, **RighTel**, launched in 2011 and had 3G exclusivity until mid-2014. Although Iran has been opened for foreign players to enter the market, the ongoing sanctions on Iran have made it a rather difficult environment to operate in, especially when it comes to paying out dividend. South African MTN Group has stated that easing of sanctions against Iran would enable it to transfer around USD1bn accumulated dividends and a loan repayment from its Iranian subsidiary, this has thus far been almost impossible.

There are positive signs indicating that the sanctions could be lifted soon, which would be encouraging for the mobile market and would incentivise more foreign players to enter Iran.

The Newest Player

Data from RighTel is scarce, with no definite subscriber data released on a quarterly or even annual basis. The company states it is the third largest operator in the market, which **BMI** believes is easily achievable as the only other operators aside from Irancell and MCI are regional with limited scope. **BMI** estimates data for **Taliya**, **MTCE** and **Kish Free Zone Organisation**, with the operators controlling less than 1mn subscribers between them. If RighTel has achieved third place in the market - a remarkable feat given its recent launch - **BMI** estimates it must have over 1mn subscribers.

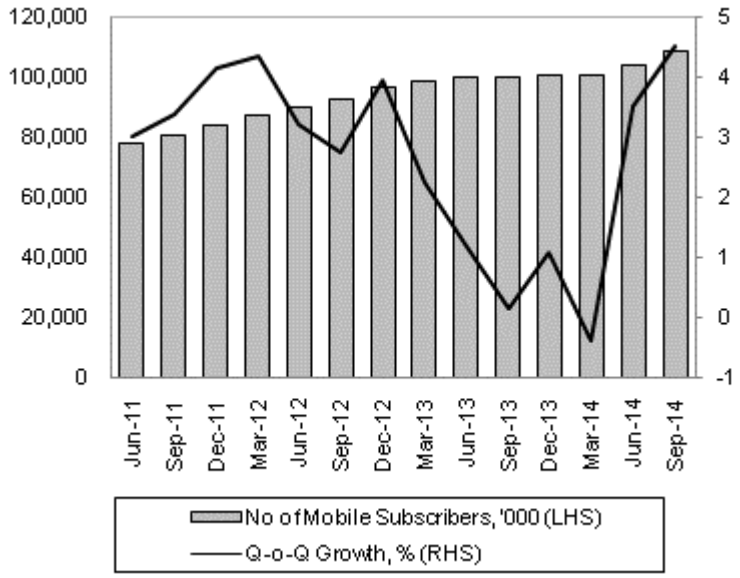
RighTel's position in the market is difficult to ascertain as the company does not release any subscriber figures. However, **BMI** has said several times it believed there was pent-up demand for 3G services, which suggests take-up could easily have been very fast. **Tamin Telecom** was authorised to provide 2G and 3G services in April 2010, the first 3G licence to be granted in the country. However, it was not until late November 2011 that services were launched, under the RighTel brand. In February 2013, Tamin was granted an extension of its exclusive rights to the 3G network for another year - to September 2014. In the absence of data from the operator, we estimate RighTel to have had around 3.45mn subscribers by the end of June 2013. The news surrounding RighTel remains confused and conflicting. In March 2013 the Tehran Chronicle quoted local SIM card sellers saying that RighTel had a strong subscribership among students. The news agency also reported that the cheapest plan is a data-only plan retailing for IRR200,000 (USD6) while a postpaid contract costs IRR2mn (USD60). The company is currently offering nine different price plans ranging from family plans to plans for under eighteens. Packages are mixed, offering both voice as well as data services. TeleGeography referred to local press reports stating that RighTel only began selling 3G SIMs in February 2012 but has faced criticism from the authorities. The Iran Project reported four grand ayatollahs had condemned the company's video calling services in February 2013 saying it would 'jeopardise the public chastity' and inflict damage on the country's religion and political system. With the operator not currently publishing financial or operating performance and no suggestions in local press or from the regulator, our data for RighTel remains estimated for the foreseeable future.

RighTel's position at the end of 2013 is still impressive, if any of the above stories are true. To reach third position in the market with more limited network coverage than the two leading operators in the market highlights **BMI**'s view of pent-up demand for 3G. Objections to video calling or media messaging could put downside risks on the company's continued growth, but negative press on the subject appears to have subsided for the time being. If criticism resurfaces, however, **BMI** believes the company could mitigate the negative impact with its wide range of new products. The company emphasises on its website that it offers

mobile TV, location-based services and mobile internet. The company also indicates it will soon offer mobile banking services.

Mobile Market Growth

2011-2014



Source: BMI, operators

MTN Irancell publishes data most frequently. Data from MTN Irancell show 43,940mn subscribers at the end of Q414, up 6.2% year-on-year (y-o-y). According to its half-year results, Irancell holds second place in Iran's mobile market with a share of 41.8%. The company is successfully increasing its subscriber base in Iran, having added 2.56mn new customers in 2014. This was due to targeted product offerings; successful subscriber acquisition campaigns and churn management, according to Irancell. Over the last three years Irancell has added a total of 9.23mn new customers. BMI believes that Irancell's data is a good proxy for the Iranian mobile market performance.

New figures from MCI leads us to believe that it had over 60mn mobile subscribers at the end of September, for a market share of 56.8%, while RighTel stays stagnant at 1.3% as it loses its 3G exclusivity. MTN had taken advantage of having launched 3G and 4G services in the market, as the incumbent still awaits authorisation to do so despite its plans to migrate customers onto more advanced networks.

Table: Mobile Market, September 2014		
Operator	**No. of subscribers ('000)**	**Market share (%)**
MCI	61,812	56.8
MTN Irancell	45,533	41.8
Taliya (e)	1,400	1.3
MTCE (e)	70	0.1
TKC (e)	19	0
Total	**108,834**	**100**

e = estimate. Source: BMI, operators

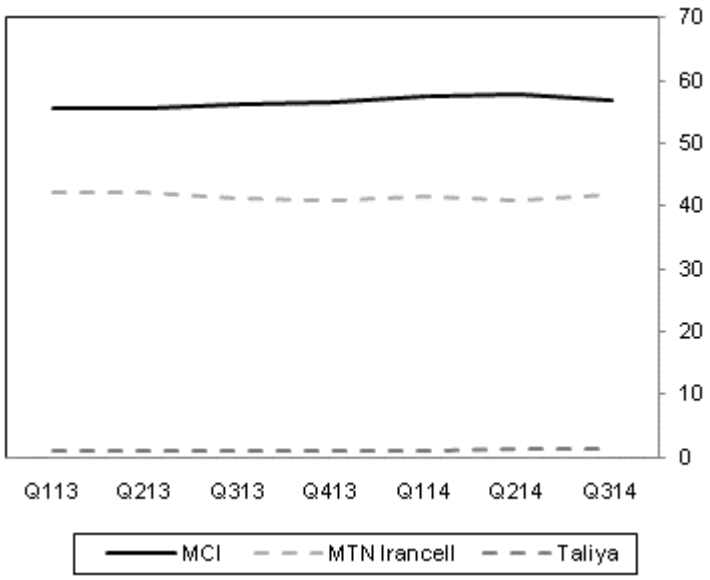
Market Shares

MCI continues to lead the mobile market with an estimated market share of subscriptions at 56.8% at the end of Q314, up from over 56.3% a year ago. **BMI** believes the company added over 5mn new subscribers in the past year, but the greater share of prepaid users also leads us to believe that some of these customers may be inactive.

As for MTN Irancell, it ended 2014 with 43,940mn subscribers, a y-o-y growth of 9.2%. **BMI** believes the launch of the operator's 3G network added to the growth of Irancell and that it should accelerate in the next few quarters through the development of its network and the launch of 4G. This should help increase the operator's market share, which stood at 41.8% in September 2014.

Market Shares

2013-2014 (%)



Source: BMI, operators

BMI revised its assessment of the number of mobile subscribers served by fourth-ranked operator Taliya in early 2011. The operator provides prepaid services only and we believe this included a significant number of inactive subscribers. This led us to make substantial downward revisions to our estimate for the number of Taliya mobile subscribers. We believe the operator's subscriber base was largely flat during 2012 and 2013, resulting in a contraction in its market share to 1% because of the strong growth recorded by its bigger rivals. However, considering that Iran is a growing mobile market, **BMI** has factored in some growth in 2014 and believes that Taliya had around 1.4mn subscribers at the end of Q314.

Based on market share data provided by MTN and old operating data provided by Axiata, we estimate MTCE had some 30,000 subscribers by the end of 2013, up from 26,000 at the end of 2012 and 18,000 in 2011, but still an insignificant share of the overall mobile market. There is little change on a quarterly basis.

TKC is owned by the Kish Free Zone Organization and operates solely on the island of Kish. We estimate its subscriber base to be just over 10,000.

Usage

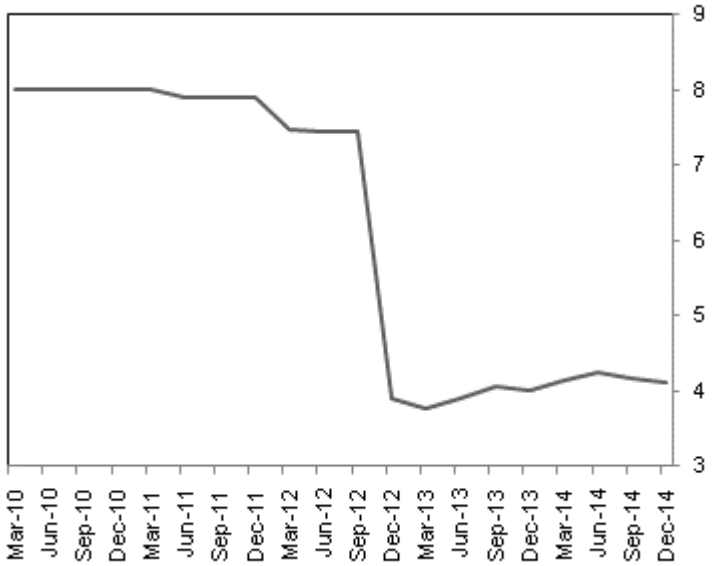
Irancell is the only operator for which ARPU figures are available. After staying above USD8 for most of 2009, 2010 and the early part of 2011, MTN's ARPU slipped to USD7.9 in Q211 and remained at that level for the remainder of the year. In 2012 it plummeted to USD3.91 - partly a reflection of exchange rate discrepancies and partly because of Iranians' low purchasing power. This low rate remained in 2013, rising only slightly to USD4.11 in Q414.

The downtrend in MTN's ARPU in USD is due to the depreciation of the local currency following a raft of international sanctions against Iran, as the operator reported increasing ARPU in local currency in every quarter in 2014. Headway has been made in negotiations about lifting the sanctions. In April 2015, members of the P5+1 - the US, the UK, France, Russia, China plus Germany - agreed to lift sanctions against the Islamic Republic once a final deal on its nuclear programme is reached. The deadline for negotiations is end of H115. This is likely to bode well for Iran's economy and could also have a positive impact on operator revenues.

It remains unclear whether ARPU will increase with the launch of 3G, as MTN uses promotions to attract customers and it is likely to face continuous price competition from RighTel and MCI when it launches services. End of year data from Irancell showed that thus far the launch of 4G has had little impact on ARPU levels in 2014.

MTN Irancell ARPU (USD)

2010-2014



Source: BMI, MTN

Networks

3G

Tamin Telecom was the first operator awarded the right to offer 2G and 3G services in April 2010. The company was granted the exclusive right to provide 3G services for a two-year period and in February 2013, this was extended by a third year - to September 2014. It was not until November 2011 that services were launched, under the RighTel brand.

In early August 2014 MTN Irancell received permission from the Ministry of Information and Communications Technology to begin piloting 3G services in some university campuses and government buildings in Tehran. Following technical and financial reviews of the pilot, MTN was authorised to begin offering commercial 3G services from August 23 2014, marking the end of mobile operator RighTel's period of exclusivity for advanced mobile data services. MCI was also expected to receive a 3G licence and launch services during H214, but that seems to have been delayed.

In November 2013 RighTel's managing director stated that nearly two years after launching services the operator had around 1.5mn subscriptions on its network. **BMI** believes weak take-up of 3G is due to RighTel's limited network coverage as well as its hostile relationship with the country's religious leaders, resulting in several of its services being banned.

BMI believes MTN is in a much better position to capture growth in the 3G market, owing to strong financial backing and the vast experience of MTN Group, as well as the ability to rely on existing customers upgrading to 3G services. In its latest results announcement, relating to the time period up to April 2015, MTN Irancell claims that the number of data subscribers on its network has increased to more than 21mn, including 7mn on its 3G and 4G networks. The rise was supported by the expansion of its 3G and 4G networks, providing speeds of up to 150Mbps. The operator now offers 3G services in more than 200 cities and has introduced its 4G network in more than 50 cities throughout the country. **BMI** has adjusted its 3G historical data and forecasts in order to reflect RighTel's weaker than expected performance and the launch of 3G services by MTN in August 2014. We estimate there were around 9.9mn 3G subscriptions in Iran at the end of 2014 and we forecast this to rise to 18.9mn by the end of 2015, as MCI looks likely to offer services as well

That said, there remains important political opposition to the proliferation of advanced mobile data services. In 2013 RighTel's video calling service faced strong criticism from the country's clerical elite, who argued that it conflicted with traditional values. Iran's Ayatollahs issued a fatwa against video calling in February 2013 and RighTel was forced to suspend the service. MTN may face similar challenges, but **BMI** believes its strong position in the Iranian mobile market and vast experience launching 3G networks in other countries will allow it to overcome them more easily than its newer competitor.

4G

MTN Irancell launched the country's first 4G network in December 2014, using its frequencies in the 1,800MHz band and the regulator is expected to auction further LTE licences in the first half of 2015. MTN launched in nine cities and had promised that all provincial centres will be covered by the end of 2014.

If the sanctions are lifted, Iran would have access to technology and systems used in more developed countries in the world. Additionally, it would enable Iran to import consumer electronics, such as smartphones, which would increase data usage.

On the downside, the Iranian government has imposed maximum limits on how much the operators can charge for their data. MTN reported in its annual report that on 22 December 2014, the regulator set a maximum tariff of IRR0.5 per KB for post-paid data and IRR0.75 per KB on pre-paid price plans.

Mobile Content

Compared with other regional mobile markets, Iran can be considered to be at an early stage in the deployment of mobile VAS. Although all of the country's mobile operators offer basic voice-based VAS such as call forwarding, call barring, caller ID (call line identification presentation, or CLIP) conference calling and voicemail, the market for data services has, until recently, been limited to SMS.

SMS

All of Iran's mobile operators, including the smaller regional operators MTCE and TKC, offer SMS services. So-called 'value-added SMS services' offered by MTCE include a mobile dictionary service, which enables customers to translate words in Farsi into English and vice versa and a 'Mobile Qur'an' service, which enables users to receive verses from the Qur'an in English and Persian by entering the verse and Surah Number.

Mobile Operator Data

Table: Iran Mobile Market Overview

	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14
Total Mobile Subscribers	90,243	92,734	96,396	98,562	99,741	99,885	100,966	100,582	104,120	108,834
Q-o-Q Growth (%)	3.2	2.8	3.9	2.2	1.2	0.1	1.1	-0.4	3.5	4.5
No of Net Additions	2,814	2,491	3,662	2,166	1,179	144	1,081	-384	3,538	4,714
Penetration (%)	118.1	121.3	126.1	127.3	128.8	129.0	130.4	128.2	132.7	138.7

Source: BMI, operators

Table: MTN Irancell

	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14
Subscribers	38,296	39,382	40,502	41,542	42,025	41,295	41,374	41,783	42,697	45,533
Market Share (%)	42.4	42.5	42.0	42.1	42.1	41.3	41.0	41.5	41.0	41.8
No of Net Additions	1,465	1,086	1,120	1,040	483	- 730	79	409	914	2,836
Market Share of Net Additions (%)	52.1	43.6	30.6	48.0	41.0	-507.3	7.3	33.6	25.8	60.2
Minutes of Use/ Subscriber	65	64	65	N/A	N/A	N/A	80	N/A	84	N/A
ARPU (USD)	7.44	7.44	3.91	3.76	3.9	4.06	4	4.13	4.26	4.18
Operating Revenue (IRRbn)	20,125	N/A	21,885	N/A	23,945	N/A	25,599	N/A	27,260	N/A

Source: BMI, MTN

Table: Hamrahe Aval (Mobile Communications Company of Iran)

	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14
Subscribers	51,065	52,465	53,897	54,897	55,467	56,217	57,037	57,692	60,151	61,812
Market Share (%)	56.6	56.6	55.9	55.7	55.6	56.3	56.5	57.4	57.8	56.8
No of Net Additions	1,332	1,400	1,432	1,000	570	750	820	655	2,459	1,661
Market Share of Net Additions (%)	47.3	56.2	39.1	46.2	48.4	521.1	75.8	53.9	69.5	35.2

Source: BMI, Hamrahe Aval

Table: Taliya (Rafsanjan Industrial Complex)

	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14
Subscribers	850	852	861	875	890	899	910	1,050	1,200	1,400
Market Share (%)	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.2	1.3
No of Net Additions	12	2	9	14	15	9	11	140	150	200
Market Share of Net Additions (%)	0.4	0.1	0.2	0.6	1.3	6.3	1.0	11.5	4.2	4.2

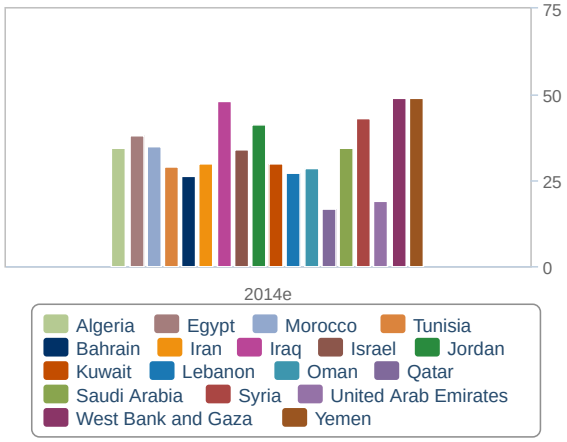
Source: BMI, Taliya

Middle East And North Africa Mobile Content - Q2 2015

BMI View: *Mobile content continues to grow in the region, as more advanced networks and affordable devices are introduced. m-learning and m-education have strong potential for stakeholders because of low public spending and a young population, but these projects must remain in the public interest.*

A Young Population

Population, 0-18 Years (%) 2014



e = BMI estimate. Source: BMI, national sources

In 2014, operators in the Middle East and North Africa have continued to invest in rolling out mobile data networks, as they look to further monetisation outside of voice services. Disparities exist within the region in terms of which type of networks are launched, with **Ooredoo** rolling out commercial LTE-Advanced services (under the banner of 4G+), and Iraq seeing its first 3G networks with **Zain** and **Asiacell**. But in all cases, the uptake of 3G or 4G services has been successful, none more so than in Algeria where the regulator reported 8.23mn 3G subscribers in November 2014, more than an 18% share of all mobile subscriptions, less than a year after launch.

Growth has been driven by operators offering a number of promotions to introduce and attract new customers to data services, looking to improve loyalty and upsell higher-value services in the future. Promotions can include basic time-limited price cuts, introduced by **MTN Irancell** or **Mobily** in Saudi Arabia, shared data accounts, where several SIMs can be bundled into a single account, also introduced by MTN Irancell, or the continuing development of Direct Carrier Billing, where a customer can but a range of services and apps through its mobile phone account without the need for a third party; **Etisalat** and **du** have both introduced Windows Phone carrier billing in the UAE.

Another trend has been the rise of zero-rated plans, where a customer can access a range of services without the need for a data plan. du has launched such a plan in the UAE for prepaid customers, where they can access **Facebook**, **WhatsApp**, **Twitter** and **LinkedIn** for free. Large multinationals have been at the forefront of this development, with programs such as **Facebook Zero**, **Google Free Zone** or **Wikipedia Zero**, as well as more collaborative initiatives such as the **Alliance for Affordable Internet** or

Internet.org. These do however raise the question of what type of internet is being offered in developing markets, and whether walled gardens are the necessary way forward for operators.

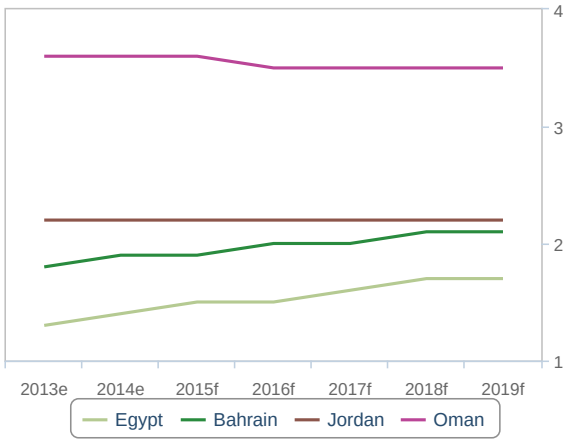
Greater Arabic content will fuel growth going forward, as well as the continuous development of networks and smartphones becoming cheaper and more affordable for low-value customers. But while commercial content, such as video, music or social media, is likely to stay the biggest driver, other type of mobile content, with a greater public service implication, can also make an impact. m-education and m-learning are two potential examples.

m-Education and m-Learning

The use of electronic means to improve access to education and learning is not a new trend, with several global initiatives having been launched by different UN agencies. Commercial stakeholders are usually involved in the provision of services, but success has been difficult to gauge so far. This is why Ooredoo's decision to launch its **Mobile Academy**, which it markets as being the first subscription-based m-learning service, could have a greater impact as it puts the operator at the centre of the scheme.

Low Spending On Education

Education Nominal GVA (%) 2013-2019



e/f = BMI estimate/forecast. Source: BMI, national sources

Ooredoo's Mobile Academy will allow subscribers to access up to 50 courses and lectures online, with total flexibility as to when and how they access the service. The company has yet to announce pricing or exact details of the courses, though they will include language courses as well as teaching vocational skills. Ooredoo will leverage its advanced mobile networks to monetise the program, and in the hopes of attracting further content.

The company has been very active in terms of m-Learning initiatives, with its Tunisian subsidiary (recently rebranded from **Tunisiana** to Ooredoo Tunisia) having launched **Najja7ni** in 2010, with a clear focus on education, English language and employability services. It had attracted over 300,000 customers a month after launch, and is still successful thanks to its mobile revisions services prepared with the Ministry of Education, and the ability to use the service on basic 2G phones. But Ooredoo has also launched less

successful services, with its joint-initiative with **Microsoft** in 2010 not appearing to have made much progress.

Other operators are also looking at m-learning and m-education, with Etisalat looking to combine augmented reality with education through its Smart Education initiative, but opportunities are set to grow. **Docebo**, a Cloud Learning Management System, reports that the Middle East has strong potential in terms of mobile thanks to the growing digitisation of relevant content, the growth of local content as well as improved English language skills within the region. The company also expects m-learning to overtake e-learning as a preferred method, a trend not surprising because of the greater penetration and lower costs for smartphones and tablets compared to PCs.

m-learning initiatives have to involve the entire mobile ecosystem (networks, devices, content) to ensure their success, and **BMI** expects more companies to enter the fray. **Qualcomm** has made public its intention to work with different stakeholders in the region in order to develop m-education applications, alongside **Ericsson**, Facebook, **Samsung** and others in Internet.org. The private sector will be involved in the different projects because of the low public spending on education by governments across the region, and there is strong potential as the population remains young. However, it must also be ensured these schemes remain to the public interest and not to the ones of a few companies.

Wireline

Wireline services in Iran are limited to major cities with rural networks undeveloped. Incumbent **Telecommunications Company of Iran** (TCI) remains in state hands, with no competition, limiting incentives for investment and service development. This has been detrimental to the interests of consumers, as well as wider state development goals.

While both TCI and the **Telecommunications Infrastructure Company of Iran** (TIC) continue to invest in networks, long-term demand potential is limited by the government's decision to build out its own internet network, with restricted access to content it deems unsuitable. In addition, wireline broadband faces the threat of dedicated mobile broadband with the expansion of 3G services and the launch of 4G networks.

Fixed-Line

The main drag on the development of Iran's fixed-line market is the comparatively high price of products offered by monopoly provider TCI. There were 27.478mn lines in service at the end of 2012, a figure **BMI** believes grew by 3.6% to reach 28.462mn at the end of 2013. We believe growth will slow as mobile voice

continues to become more attractively priced, which will result in fixed-to-mobile substitution as witnessed in other regional markets and indeed globally. The addition of a new operator to the mobile sector could encourage competition and competitive pricing.

Broadband

Iranian incumbent operator TCI also dominates the internet market through its subsidiary **Data Communication Company of Iran** (DCI). TCI has announced ambitious plans to expand its internet user base but **BMI** believes the market's long-term growth will be held back by the heavy interference from the government on what Iranians are allowed to access. This threat has not diminished and in January 2014 it was reported Iran was seeking help from China to build its National Information Network (NIN).

BMI estimates there were just under 4.5mn broadband subscriptions in Iran at the end of 2014, a growth of 22.7% for the country's market. However, we note there is considerable downside potential to our forecast outlook as the government adds more restrictions to what consumers can and cannot access. Iranian data for end-March 2013 claim around 6mn people access the internet using fibre-optic connections; **BMI**'s estimates that the actual number of broadband connections stood at about half this figure. The Islamic Republic News Agency also claims that there were 867,000 people using high-speed internet access in Q113.

The launch of 3G operator **RighTel** in 2011 has the potential to bring dedicated mobile broadband options to a wider number of Iranians and catalyse a dynamic of competition that should incentivise the incumbent to improve quality of service. However, RighTel's network is only covering a handful of cities and the company has given little indication of its plans regarding dedicated mobile broadband options. RighTel's website states its dedicated mobile broadband service offers connections up to 21Mbps and 42Mbps, with prices ranging from IRR20,000 to IRR100,000. At these prices, accessing internet services will remain out of reach for many.

BMI believes that Iran's internet market has the potential to follow global emerging market trends whereby mobile internet services drive market growth. The launch of 3G services by **MTN Irancell** in August 2014, expected to be followed by MCI in 2015, alongside the launch of 4G services will drive mobile broadband growth in the market, as internet access will predominantly be on mobile networks. However, political issues may arise as many conservative leaders have argued that new video services were against Islamic values and could lead to profanity.

Infrastructure

Ongoing investments by TCI in the expansion of optical fibre and international bandwidth capacity should go some way towards improving internet service quality. According to a report in March 2010 by news agency Zawya, TCI had announced plans to extend the National Internet Network (NIN) to achieve true national coverage over the next 12 months. It is understood that the expansion project would also increase network capacity fourfold. Mohammad Ali Aryanian, TCI's deputy director of IT, is reported as saying that contractors were in the process of setting up facilities and equipment for the upgrade, which was to come on stream within six months. The national internet network is scheduled to come online during 2013 and could potentially permit the authorities to cut off the entire country from the World Wide Web.

Meanwhile, several Iranian companies, including TCI, have been involved in different initiatives aimed at expanding the amount of international bandwidth capacity. In November 2009, it was reported that privately owned Iranian company **Iran Mobin** had formed a 50/50 equity joint venture with **C-Ring Telecom**, itself a venture of Russian long-distance operator **Synterra** and Azerbaijan's **AzTelekom**. The project aimed to collaborate on the planned roll-out of a new fibre-optic ring around the Caspian Sea to handle Europe-Asia voice and data transmission and improve internet service delivery in the Caspian region. Iran Mobin will connect to the C-Ring network through the backbone of state-owned Telecommunication Infrastructure Company (TIC) the only backbone infrastructure operator in Iran.

For its part, TIC has signed an agreement with another Russian carrier, **Rostelecom**, to share international transmission links. The two companies were reported in April 2010 to have signed a signed a joint memorandum of understanding to act as strategic partners to create a North-South telecommunications transit corridor. The project reportedly aimed to meet growing demand for telecommunications services in the Caspian and Middle East region and would increase the capacity of international backbone links to transit voice traffic and internet access. As the first step the memorandum included the joint modernisation of national networks and relevant international border crossings through installation of DWDM, increasing total capacity of the transit corridor to 100Gbps. TIC is also involved in two new cable systems providing regional and international capacity.

One of them, the Europe-Persia Express Gateway (EPEG) fibre optic cable system, is a 10,000km cable running from Frankfurt, Germany, through eastern Europe, Russia, Azerbaijan, Iran, the Persian Gulf and finishing in Oman, which went live in September 2013. TIC was one of the major investors in the cable system, along with Russian operator Rostelcom, **Omantel** and UK-based **Cable and Wireless Company** (CWC). At launch, the cable reportedly brought Iran's international bandwidth capacity up from 72Gbps to

82Gbps, which Iran's Communications Minister announced plans to increase to 100Gbps by December 4 2013.

WiMAX licences were awarded to four companies in March 2009, with specific provinces per licensee. **MTN Irancell** was licensed to provide WiMAX services in Tehran, East Azarbaijan, Isfahan, Razavi Khorasan, Fars and Khuzestan, however, it has stated that take-up remains slow on account of bandwidth and content limitations. In its H113 results, **MTN** claimed its Iranian subsidiary, Irancell, had 307,000 WiMAX subscribers as of June 2013, up by almost 33% year-on-year (y-o-y) from 231,000 subscribers in June 2012. In December 2013 MTN Irancell extended its WiMAX network to the city of Khorramshahr. The extension has helped the operator expand its WiMAX service to a total of 38 towns, compared with seven cities at the time of the launch of the service in January 2010.

Two other companies, **Espadan** and **Rayaneh Danesh Golestan**, were respectively permitted to offer WiMAX services in Esfahan Province and Golestan Province, while **MobinNet Telecom** was the fourth company to be awarded a nationwide WiMAX licence to offer services in all 31 provinces. The company paid USD107mn for the licence in 2008, launching services in 35 major cities the following year.

In June 2013, **ISP Iranian Net Communication and Electronic Services** (Iranian Net) announced plans to begin deploying a fibre-to-the-x (FTTx) network by the end of August, according to Iran's telecoms watchdog, the Communications Regulatory Authority. Iranian Net has been granted a licence to deploy the FTTx network in Mashhad, Tehran, Shiraz, Karaj, Qom, Isfahan and Tabriz. The company announced its intention to provide services to 400,000 subscribers by the end of August 2013 and gradually increase its subscriber base to a total of 1mn over the next two years.

Iran National Internet Network

The continued concern by the Iranian government relating to the spread of outside information within the country remains at the fore and the regime has pressed ahead with the creation of a separate internet network for domestic use only. Plans for the National Internet Network (NIN) were approved by the Iranian cabinet in May 2007 and the June 2009 presidential election, in which the internet disseminated news and images, convinced the authorities that they urgently needed their own, controllable version of the web. The government also argues the NIN is a matter of national security.

In Q212, Ali Aghamohammadi, the Iranian deputy vice president of economic affairs, announced that the country will be launching a new 'halal' internet that will aim to rid the web of Western influences. 'Iran will soon create an internet that conforms to Islamic principles,' he said, 'to improve its communication and trade

links with the world.' The network would bypass international gateway connections. In early 2014, TIC deputy head Hassan Karimi said that 35% of domestic data consumption in Iran was hosted by Iranian companies.

According to a 410-page report examining freedom on the internet and published by Freedom House, an American NGO, Iran was the least free country, as it has high levels of oppressive policies, such as intimidating and even in some cases jailing people for what they write online.

In September 2012, the halal network was launched, with government agencies and the military initially being migrated to the closed network. The civilian population will be switched to the new network in due course, which banned Google and Gmail at the end of September 2012. Iran has one of the biggest Internet filters of any country in the world, preventing normal Iranians from accessing countless sites on the official grounds they are offensive or criminal.

In January 2014, it was announced that China would provide the Iranian government with support to build the NIN with the aim of controlling content online and building a 'clean' internet. Details of what support China would offer was not divulged but both governments are known to cut access to content they believe to be unsuitable.

Incumbent Investment

TCI announced planned investments in May 2013 amounting to IRR25trn for the current Iranian year (beginning March 21 2013). Head of the board of directors, Mostafa Seyyed-Hashemi, also reported TCI's investment reached IRR17trn (USD1.4bn) in the previous Iranian year, following the privatisation process in 2009. **BMI** believes this large sum may have been provided by the government to be used to expand the country's National Internet Network.

The quoted figure of USD25trn also appears to be a large amount, potentially more than TCI could afford, despite its operations in mobile and broadband services. It is therefore possible that some of the funding for its investment is coming directly from the government. This would allow Iran to increase the number of internet users in the country, while restricting their access. **BMI** estimates that the number of internet users reached 21.528mn at end-2012 and forecasts this total to reach 37.841mn at the end of our five-year forecast period in 2017. This could result in a boost to our forecasts if the investment is confirmed to be for the NIN as we believe.

TCI has not provided any more detailed information regarding the development of its national fibre-optic network, which we believe the operator continues to steadily expand. This was supported by the operator's announcement in May 2013 of plans to invest IRR25trn (USD20.34mn) in its network before the end of the Iranian year, ending March 2014. According to the head of the Board of Directors, Mostafa Seyyed-Hashemi, investment during the Iranian year ended March 2012 was IRR17trn. However, he also stated that the majority of the investment over the last two years has been on revitalising the company's mobile phone network. This is in line with **BMI**'s view of a slowdown in the fixed-line sector, as consumers increasingly favour mobile phone services.

Pay-TV

Iran's ministry of ICT announced in December 2013 that it had launched the first phase of its IPTV project. Six provinces are to be reached, covering 140,000 households. The ministry expects 7mn subscribers to the service over the long-term, but details on the project remain scarce. **BMI** believes there will be considerable restrictions on content, in the same way the wider internet is restricted in Iran. This may dampen demand for the service in the longterm and the government's involvement with the network may also put off some potential subscribers.

In April 2013, Iran's government announced that it plans to launch its own communications satellite into space within five years, which will broadcast five local channels. Demand for Pay-TV services is minimal in Iran currently.

Industry Trends And Developments

3G And 4G Launch

The regulator ended **RighTel**'s exclusivity offer period for 3G services, allowing MTN Irancell to offer its first service in August 2014. The operator followed suit by offering 4G services in December 2014 using its spectrum in the 1,800MHz band, with the regulator planning to auction further LTE licences in the first half of 2015.

State Launches First Phase Of IPTV Project

In December 2013 the Ministry of Information & Communication Technology (MICT) in collaboration with national broadcasting and telecoms firms in Iran, is understood to have launched the first phase of an IPTV project. About 140,000 households in six provinces - Tehran, Isfahan, Khorasan Razavi, East Azarbaijan, Yazd and Qazvin - are due to be covered in the first stage of the deployment. MICT expects the service to attract around 7mn domestic subscribers.

MCI Listed On TSE

In January 2014, it was announced that China would provide Iran with help to build the country's long-planned National Information Network (NIN). China will help Iran to control content online and build a 'clean' internet. The policy of internet control is hardly surprising as the NIN was planned as a means of bypassing the worldwide web.

BMI notes that China's restricted internet access and blocking of content deemed unsuitable has not stopped consumers in that country getting online and developing a number of home-grown social networking services and platforms. However, the the size of the population does make a difference for China so we do not expect Iran to follow directly in its footsteps. It is also important to highlight that tech-savvy consumers will find ways around national internet restrictions; setting up their own virtual private networks (VPNs) to connect to sites they want to access.

Improving Networks

The Europe-Persia Express Gateway (EPEG) fibre optic cable system, a 10,000km cable running from Frankfurt, Germany, through eastern Europe, Russia, Azerbaijan, Iran, the Persian Gulf and finishing in Oman, finally went live in September 2013. The cable system, which was originally meant to be launched

in March 2013, brought Iran's international bandwidth capacity up from 72Gbps to 82Gbps. In October 2013, Iran's Communications Minister announced the country's goal to further increase its international bandwidth capacity to 100Gbps by December 4 2013.

According to Infrastructure Communications Company deputy head, Mehdi Karimi Neyestani, connection to the EPEG will allow Iran to become an internet service provider to other countries. In March 2013, Neyestani stated that Iran would be upgraded from the Tier3 level (Internet service consumer) to Tier2 level (Internet service provider) after the official inauguration of this project.

Table: Industry Trends And Developments

Date	Details
Jan-15	MTN Irancell has launched a Shared Account service in Iran, which allows prepaid subscribers with multiple Irancell SIM cards to create a single account for all their devices. The service is available in 2GB, 5GB and 20GB packs.
Dec-14	MTN Irancell has reduced its mobile internet costs from IRR5 (USD0.00018) to IRR0.5 (USD0.000018) per KB and IRR0.75 (USD0.000028) per KB for postpaid and prepaid connections. The reductions apply to 2G, 3G and 4G services.
Jun-14	MTN Irancell announced that it would reduce the tariffs on voice calls for postpaid SIM cards. The operator stated that prepaid subscribers could opt for changing their SIM card to a postpaid plan. The tariffs were revised from IRR625 (USD0.024) per minute for off-net calls to IRR499 (USD0.019) for all off-net, on-net and calls to landlines. All postpaid subscribers would receive a detailed copy of their bill every two months.
Dec-13	MTN Irancell extended its WiMAX network to the city of Khorramshahr. The extension has helped the operator expand its WiMAX service to a total of 38 towns, compared with seven cities at the time of the launch of the service in January 2010. The prepaid and postpaid packages, offering maximum download speeds up to 2Mbps, will be available for business and residential users in Khorramshahr.
Nov-13	Telecommunication Company of Iran reported that the third auction to provide voice-over-internet protocol services will take place, although dates were not announced. Over 100 VoIP service providers in the country were previously deemed illegal, following loss of fixed telephony revenues complaints by TCI. The country will make several investments to improve the Information and Communications Technology (ICT) infrastructure and establish a communication corridor linking the whole of Asia, according to Minister of ICT Mahmoud Vaezi.
Sep-13	Internet users were allowed to access social networking sites Twitter and Facebook on September 16 2013. However, access to Facebook and Twitter was promptly blocked again by September 17 2013. The secretary of the Iranian state committee responsible for filtering web content wrote the incident was written off as a technical problem and denied any government intention to lift the ban on the social networking sites.
Aug-13	MCI, the mobile arm of Telecommunication Company of Iran, listed on the Tehran Stock Exchange. There were no financial details of the event, however. This development was the follow-up to an initial offering of 5.5% of MCI's shares on Iran's Over-The-Counter market for USD396mn in December 2010.
Jul-13	The Iranian government announced citizens that require an email address will have accounts designated to them by the Communications Ministry. Iranian state television reported the country now has its own domestic email service. The government said that the national system would aid interaction between the state and the people.
Jun-13	Iranian Net Communication and Electronic Services (Iranian Net) will begin deploying a fibre-to-the-x (FTTx) network by end-August, according to Iran's telecoms watchdog, the Communications Regulatory Authority. Iranian Net has been granted a licence to deploy the FTTx network in Mashhad, Tehran, Shiraz, Karaj, Qom, Isfahan and Tabriz. The firm will provide services to 400,000 subscribers by end-August, gradually increasing this to a total of 1mn subscribers over the next two years.

Industry Trends And Developments - Continued	
Date	**Details**
May-13	TCI announced planned investments amounting to IRR25trn (USD2bn) for the current Iranian year (beginning March 21 2013). Head of the Board of Directors, Mostafa Seyyed-Hashemi, also reported that TCI's investment had reached IRR17trn (USD1.4bn) in the past Iranian year, following the privatisation process in 2009.
May-13	The Iranian Net Optic Fiber Operator said the operator plans to offer services to 400,000 people by August and 1mn subscribers within the next two years. The operator aims to attract 8mn subscribers within eight years. In addition, a memorandum of understanding between the Aras Free Trade Zone Organization and Iranian Net Optic Fiber Operator was signed on the launch of the pilot plan of a optic fibre network in Aras Free Zone, East Azarbaijan province.
Feb-13	MTN Group said it has been cleared of accusations that it bribed Iranian officials in a bid to gain a mobile licence for operations in the country. The proceedings against MTN were initiated by Turkish mobile operator Turkcell after a subsidiary of Turkcell failed to obtain Iran's second GSM licence in 2005. The allegations were investigated by a committee, which was led by retired British judge Lord Hoffmann, for more than a year.

Source: BMI

Regulatory Development

Table: Iran's Regulatory Bodies And Their Responsibilities

Regulatory Body	Responsibilities
Ministry of ICT Dr Ali Shariati Avenue Tehran Iran 1631713461 Tel: 9821 811 3355 Fax: 9821 811 3926	▪ Overseeing the implementation of the information and communication technology (ICT) national development plan. ▪ Drafting national telecommunications policy. ▪ Drafting and implementing amendments to existing legislation or new laws, as necessary. ▪ Issuing licences, concessions and general authorisations. ▪ Mediating interconnection agreements between operators, where relevant. ▪ Regulating tariffs for dominant operators and establishment of calculations for setting prices for other operators. ▪ Monitoring of frequencies and interference with use of the frequency spectrum.

Source: BMI

Legislation And Market Liberalisation

Iran has partially liberalised its telecoms sector by allowing competition and numerous private sector operators in the mobile telephony, data services and internet sectors. In contrast, the fixed-line market remains a monopoly under the control of the Ministry of Communications and Information Technology (MICT).

In December 1999, Iran's *majlis*, or parliament, approved Article 122 of the 'third five-year economic plan,' which gave wider powers to the MICT (which at the time was called the Ministry of Post Telegraph and Telephone). In accordance with Article 122, the ministry was granted powers to authorise private sector companies looking to establish communications networks in Iran. These included companies seeking to set up mobile phone networks, low capacity telephone exchanges (with up to 5,000 numbers) data transfer networks, value-added service networks, rural communication networks, postal networks and postal transport networks. Article 122 further allowed the MICT to license private and co-operative telecoms companies to set up communications networks in areas in which no such networks were offered by government-owned companies.

In addition to removing government monopoly control over the provision of telecoms services, Article 122 of Iran's Third Five-Year Plan established the foundations for increased public participation and foreign investment in the country's telecoms sector and for the eventual creation of an independent regulatory body. In 2003, the ministry established the Communications Regulatory Authority (CRA) as a body to supervise

and promote healthy competition in the telecoms sector. However, the CRA remains under the umbrella of the MCIT, which has retained ultimate control over the sensitive telecoms sector.

In 2007, Supreme Leader Ayatollah Khamenei requested that government officials speed up implementation of the policies outlined in the amendment of Article 44 of the country's constitution and move towards further economic privatisation (the pre-amended Article 44 of the constitution had decreed that core infrastructure should remain state run). Khamenei also suggested that ownership rights should be protected in courts set up by the justice ministry in the hope that this new protection would give an additional measure of security and encourage private investment.

Privatisation Of TCI

Iran's privatisation programme was launched during the government of Mohammed Khatami in the late 1990s. One of the objectives behind selling shares in key state enterprises was the desire to attract greater foreign investment. The government's privatisation programme also forms part of a wide-ranging economic liberalisation programme. Under Iran's Fourth Five-Year Economic Development Plan (2005-2010) the Iranian Privatization Organization, which is affiliated with the Ministry of Economic Affairs and Finance, was charged with the responsibility for setting prices, ceding shares to the general public and listing shares on the stock market of incumbent operator **TCI**.

Repeated preparations to privatise Iran's fixed-line incumbent have been characterised by a mixture of high expectations, disappointment and controversy. In May 2007, a representative from the Iranian Privatization Organization announced that a majority stake in monopoly provider TCI would be sold by the end of September 2007. In mid-June 2007, Supreme Leader Ayatollah Ali Khamenei urged the government and officials to speed up moves to reduce the government's economic role by reviving the privatisation process. TCI's managing director, Saber Feizi, said in late July 2007 that three foreign companies from Asia, Europe and the Middle East had already submitted official requests to buy a stake in the company. One of these companies was reported to be the Russian operator **Altimo**.

Despite the early optimism surrounding the privatisation of TCI, by end-2007, no visible progress had been made towards achieving this goal. In September 2007, Deputy Communications and Information technology minister, Vafa Ghaffarian, announced 51% of TCI would be privatised before the end of the Iranian calendar year on March 20 2008. Although the privatisation of TCI did not take place by the date set, reports suggested that the Iranian government was still committed to selling the operator.

As a forerunner to the sale of a controlling stake in TCI, a 5% stake in the operator was scheduled to be floated on the Tehran Stock Exchange before the end of December 2007. The floatation finally took place in August 2008.

Meanwhile, in April 2008 TCI Chairman Saber Feizi reportedly suggested that the 31 companies belonging to TCI should be interconnected in such a way as to make it impossible to separate them when the company was eventually privatised. Feizi therefore stressed that TCI would be sold along with all its subsidiaries. However, he also suggested that this would not happen in 2008, as the necessary amendments had been made to TCI's budget.

In November 2008, the government announced that the part-privatisation of TCI would take place before the end of the Iranian calendar year on March 20 2009. However, in January 2009, it was reported that the government had once again delayed the planned sale. Feizi was reported as saying that the documents for the tender would not be available to interested parties until mid-March 2009 at the earliest. According to media reports, the state was expected to offload up to 49% of TCI's shares, with foreign telecoms companies able to hold up to 35%, and local partners the remainder. Another 5% is held by employees and 20% was reserved for poor Iranian families. Local press reports in December 2008 suggested that firms from Russia, Turkey, China and Indonesia were chasing a stake in TCI. The press reports did not name the potential investors. However, in October 2008, **PT Telekomunikasi Indonesia** (Telkom) stated that it was looking to acquire a stake in the company.

In late September 2009, it was reported that local consortium **Etemad Mobin** paid more than USD7.8bn to secure a 50% plus one share stake in TCI. Etemad Mobin comprises three companies, two of which are reportedly controlled by the Iranian Revolutionary Guard. A few weeks after the announcement, it was reported that Iran's General Inspections Organisation (GIO) had launched a probe into the connections between Etemad-e-Mobin and the Iranian Revolutionary Guard.

In November 2009, it was announced by the Mehr News Agency that 50% plus one share of TCI had been offered over the stock market to Tose'e Etemad Mobin consortium for IRR77.985trn.

Competition

In contrast to the monopoly in the fixed-line sector, mobile phone services, based on GSM standard, are offered by TCI and by four private sector companies: **MTN Irancell**, **Taliya**, **MTCE** and **TKC**. A third national operator was licensed in April 2010 but it was not until late November 2011 that **Rightel**, reportedly owned by Iran's Social Security Organization, launched limited services. Iran also has a large

number of privately owned ISPs operating within the country; this is in spite of the high levels of government control over the sector. Iran is also one of the few countries in the Middle East in which development of VoIP has been legalised.

Licensing And Spectrum

The usage and allocation of communications spectrum in Iran is supervised by the country's Radio Communications Administration (Radtel) which is part of the MICT. The MICT has licensed six operators to provide mobile telephony services in the GSM standard. Two of those operators - **MCI**, which is the mobile unit of fixed-line incumbent TCI and MTN Irancell - offer services using the GSM 900 and GSM 1800 spectrum bands. Three companies - Taliya, MTCE and **Kish Free Zone Organization** (KFZO) - offer services using GSM 900 spectrum only.

In July 2007, the Iranian government revealed plans to offer another national cellular licence sometime in 2008. It was not until 2010 that a third national operator received a mobile licence. Rightel, reportedly owned by Iran's Social Security Organization, launched limited services in late November 2011. It is believed that the Rightel licence contains a provision allowing it to provide the country's only 3G services for a period of two years - an agreement that was extended for a further year in early 2013. However, given the time taken between the award of the licence and the launch of initial services, it is unlikely the company will benefit from being the first to market and it is unlikely to have the necessary resources to swiftly roll-out services.

In January 2007, it was reported that **Laser Company** had become the first privately owned operator to launch a WiMAX wireless network in Iran, based on 802.16 standards. At launch, the WiMAX network provided wireless internet access to the capital Tehran and it was believed that Laser Company would extend its WiMAX network services to other Iranian provincial capitals. Other companies that have been licensed to provide WiMAX internet access services include **Pars Online** and **Datak Telecom**. However, in June 2013, the CRA announced that Datak Telecom failed to get authorisation for continuation of its WiMAX, as the one year deadline to finalise a licence agreement with the regulator had passed. At the time of writing, Laser's service was no longer operational either.

Iran's first wireless internet project, based on 802.11 (WLAN) standards, was reportedly implemented in March 2006. The country's first Wi-Fi project ensured the provision of internet services to large areas of the islands of Qeshm, Hengam, Lark and Hormuz.

The regulator is due to auction LTE licences in the first half of 2015 after giving MTN Irancell authorisation to launch 3G and 4G services using its 1,800MHz spectrum.

Regulatory Developments

In January 2013, the government of Iran confirmed it was developing new smart filtering software which would allow Iranians to gain limited access to social networking sites such as **Facebook** and **Twitter**. The government has introduced a national intranet service which contains only approved content, while the conventional worldwide web remains subject to heavy restrictions.

The telecoms industry in Iran is regulated by the Ministry of Communications and Information Technology (MICT, formerly the Ministry of Post, Telegraph and Telephones). The MICT is responsible for all aspects of telecoms sector regulation and for the adjudication of disputes that arise among service providers. Despite long-term plans to establish an independent regulatory body, there appears to have been little progress towards this accomplishment.

Although Iran's telecoms market has been partially liberalised and opened to competition in the mobile, data and internet sectors, the state retains high levels of control over online content and telecoms service usage. Internet usage in particular is subject to strict controls; in October 2006, it was reported that Iran's government had opened a new front in its drive to stifle domestic political dissent and combat the influence of Western culture by banning high-speed internet links. The country's numerous ISPs were ordered to restrict online speeds to 128Kbps and forbidden from offering fast broadband packages. The move by Iran's authorities would make it more difficult for internet users to download foreign music, films and television programmes, which the authorities blame for undermining Islamic culture among the younger generation. It would also impede efforts by political opposition groups to organise by uploading information on to the net. In November 2006, Mahmoud Khosravi, the head of Iran's Radio Communications and Regulations Organization (RCRO) was reported as saying that universities and other academic centres, research institutes, business companies, industrial townships, public libraries and culture houses were exempt from the 128Kbps restriction on the condition that they install the required content filters.

In September 2007, it was reported that Iran would begin regulating and filtering multimedia messaging services (MMS) in order to prevent 'immoral' video and audio messages being sent through mobile phones. Iran's Supreme Council of the Cultural Revolution is understood to have instructed the MICT to acquire equipment that will enable it to filter MMS.

Data Market Held Back By 3G Exclusivity

Tamin Telecom's exclusive rights to 3G network services ended in August 2014, with MTN Irancell being granted the right to offer 3G services. The operator was also the first in the market to launch 4G services in December 2014, with the regulator planning to auction LTE licences in early 2015.

Iranian Internet Controls Grow

Iran would serve as an internet service provider to other countries by March 2013, revealed Infrastructure Communications Company deputy head Mehdi Karimi Neyestani. This development took place after the first phase of the Europe-Persia Express Gateway (EPEG) which is a communications highway connecting Europe with Eastern Asia, that started operations in September 2013. Iran would be upgraded from the current Tier3 level (Internet service consumer) to Tier2 level (Internet service provider) after the official inauguration of this project, Neyestani added.

In January 2014 it was reported that Iran was seeking help from China to build its National Information Network (NIN). While cooperation would usually indicate the presence of Chinese equipment manufacturers to aid build-out, on this occasion the help on offer to Iran is to control content online and build a 'clean' internet. The policy of internet control is hardly surprising as the NIN was planned as a means of bypassing the World Wide Web.

The NIN was first mooted in 2005, creating a network separate from the global internet containing content that is 'compatible with religious and revolutionary values'. It is feared that Iran will have the power to cut off all access to the global internet, with many reports of slowing or declined access to international social media sites and a long history of blocking sites as the government sees fit.

In September 2014, it was reported that Iran's Prosecutor General was looking to ban applications such as **WhatsApp**, **Tango** and **Viber** because of its 'criminal content' and this followed criticism from a number of conservative leaders of the decision to expand the 3G market as the use of social media and other advanced platforms can be seen to promote political unrest and challenge Islamic beliefs.

Competitive Landscape

Table: Key Players: Iranian Telecoms Market

Company name	Ownership	Market
Telecommunications Company of Iran (TCI)	Etemad Mobin (50% plus one share), Equity Shares Brokerage Companies (20%), Government (19.9%), TCI staff (5.09%), other entities (5%)	Fixed-line (local, domestic long distance, international), mobile, data operations
Taliya	Rafsanjani Industrial Complex (RIC)	Mobile
MTN Irancell	MTN (49%), Iran Electronic Development Company (51%)	Mobile
Mobile Telecommunications Company of Esfahan (MTCE)	Telecommunication Company of Esfahan Province (100%)	Mobile
Telecommunication Kish Co. (TKC)	LibanCell (100%)	Mobile Internet (dial-up, WLAN)
Pars Online	Private (100%)	Internet (dial-up, ADSL, WiMAX)
Datak Telecom	Private (100%)	Internet (dial-up, ADSL, Wi-Fi, direct fibre), Residential VoIP

Source: BMI

Company Profile

Telecommunications Company Of Iran (TCI)

Strengths	▪ Remains the only fixed-line operator in Iran.
	▪ Investing in fixed-line operations to the country's rural areas.
	▪ Continuing to record steady growth within mobile market.
Weaknesses	▪ Poor growth within its internet sectors, especially broadband, further hindered by governmental control on data access.
	▪ Growing number of ISPs competing for market share in internet sector.
	▪ Delays to privatisation may have limited the scope of expansion and introduction of new services.
	▪ Privatisation failed to bring an international strategic partner with telecoms experience and financial backing.
	▪ Lack of advanced mobile data services through 3G or 4G.
Opportunities	▪ Higher import tax could provide fledgling domestic handset manufacturers with opportunity to grow.
	▪ Looking to converge its fixed and mobile assets into a compelling offer.
Threats	▪ Award of country's second national GSM licence to MTN Irancell coupled with Taliya's growth into a national operator has resulted in loss of mobile market share.
	▪ Possible liberalisation of fixed-line sector following TCI's part privatisation.
	▪ Unstable political and security environment could hinder investment in the sector from equipment manufacturers and content providers.

Company Overview

Telecommunications Company of Iran (TCI) was formed in 1972 out of its predecessor, the Telephone Company of Iran. After restructuring during July 2005, TCI announced it had reformed into a parent company overseeing 33 subsidiaries including data communications, mobile communications and backbone communications.

In early 2007, the Iranian Privatization Organization announced that a majority (51%) stake in TCI was due to be sold by the end of September 2007. However, it was not until September 2009 that privatisation finally took place. It was reported that local consortium Etemad Mobin paid more than USD7.8bn to secure a 50% plus one share stake in TCI. Etemad-e-Mobin comprises three companies, two of which are reportedly controlled by the Iranian Revolutionary Guard. Shares were exchanged through the Tehran Stock Exchange in November 2009.

A few weeks after the announcement, it was reported that Iran's General Inspections Organisation (GIO) had launched a probe into the connections between Etemad-e-Mobin and the Iranian Revolutionary Guard (*see Regulatory Developments*).

On August 20 2013, the mobile arm of TCI, Mobile Company of Iran (MCI) listed on the Tehran Stock Exchange's Second Market. MCI had previously offered 5.5% of its shares on the Iranian Over-The-Counter (OTC) market, for a combined value of USD396mn.

Strategy

As a state-owned operator, TCI's strategy is strongly influenced by the priorities of Iran's governing authorities. Central to the government's telecommunications strategy has been the expansion of the country's national communications infrastructure. Priority areas include the development of the national fibre-optic network and the development of rural communications infrastructures. Within the field of mobile communications, TCI has pursued the deployment of new technologies, such as GRPS, as well as a range of new data-based value-added services.

In March 2014 TCI reviewed its strategic objective of achieving full convergence of fixed and mobile services. Mr. Jurki Markku Runola, TCI Transformation Plan Advisor, stated that 2013 saw TCI focus on the basics and 2014 will see TCI produce practical outcomes, before growth in 2015 and full convergence of fixed and mobile services in 2016.

Financial Results

At the end of 2013, TCI reported total revenue for the year of IRR115,666bn (USD4.2bn) net profit of IRR23,094bn (USD838mn) operating profit of IRR20,480bn (USD743mn) and total investments of IRR39,827bn (USD1.45bn).

Operational Developments

Fixed-Line Network

In a bid to find new avenues for growth, TCI has focused on increasing its rural network coverage. At the end of 2005, a total of 46,764 villages were connected to TCI's fixed-

line infrastructure. The MICT claimed that this figure had risen to 50,173 by December 2006 and 52,522 by December 2007. In December 2008, the figure stood at 53,845. According to the ministry, at the time of the Islamic Revolution in 1978, just 312 of Iran's 100,000 villages had telecoms services.

As well as purchasing capacity on four international submarine cables (FOG, FLAG, SEA-Me-We and ITUR) TCI has also issued a tender for SDH equipment on all main national routes. By the end of 2008, TCI's national backbone comprised 121,000km of fibre-optic cable, of which 44,000km had been installed during the course of the year. A further 6,000km were installed in the first nine months of 2009, raising the total amount of optical fibre to 127,000km. The TAE (Asia-Europe) cable system was just one of the projects completed during 2007, connecting Iran to Asia and Europe through a 2,200km optical fibre cable. Other accomplishments in 2007 included the construction of a 150km fibre-optic cable connecting Iran and Afghanistan.

Broadband Network

TCI began offering ADSL-based broadband internet access services early in 2004, but deployment has so far been confined to the larger cities and business centres. By the end of 2005, a total of 514 cities had been covered with a total of 14,270 leased access ports. By the end of September 2009, the number of cities covered had risen to 1,223. There were a total of 60,718 national data access ports at the end of September 2009, supporting a data transmission capacity of 26,728Mbps.

Iran's internet market suffered from poor connectivity during 2006, which led to loss of service occurring on average once a month. This was blamed by some in the industry on a failure to provide back-up capacity, which supports network traffic when the main fibre network fails. While technologically advanced countries have several optical fibre networks around which traffic is directed, in Iran's case, incumbent operator TCI is left to compensate for the failings across other ISP networks. Further, in October 2006, the Ministry of Telecommunications announced that high-speed internet access would no longer be made available to residential users, in an attempt to curb Western media influences, which led to the banning of websites such as the BBC's Persian-language site.

Mobile Network

In April 2008 MCI's chairman, Vahid Sadoughi, reportedly announced that the company planned to increase the capacity of its intelligent network (IN) to double its prepaid SIM card network capacity. Sadoughi is reported as saying that, once the operator's network capacity had been expanded, MCI's prepaid customer base was expected to increase to 10mn by the end of April. Lack of network capacity was reported to have caused a delay in the delivery of prepaid SIM cards and resulted in widespread disapproval among 2.558mn waiting applicants.

According to a May 2011 report by the Fars News Agency, which cites comments from MCI's managing director, Vahid Sadouqi, MCI provides services to all of Iran's cities and 57% of the country's villages. The operator's network also covers 97% of all main

roads in the country and 68% of secondary roads. It also provides rural roaming services in 35,000 villages in 20 provinces. The carrier was looking to migrate customers onto 3G and 4G networks as of August 2014, but has yet to launch either service at the time of writing.

Financial Data

- Revenue (2013): IRR115,666bn
- Net profit: IRR23,094bn

Operational Data

Fixed lines

- 2009: 25.410mn
- 2010: 25.584mn
- 2011: 26.540mn
- 2012: 27,478mn
- 2013: 28.462mn

Mobile subscribers

- 2009: 35.427mn
- 2010: 41.297mn
- 2011: 48.233mn
- 2012: 53.897mn
- 2013: 57.037mn

2014: 61.811mn

Company Details

- Telecommunications Company Of Iran (TCI)
- Shariati Avenue
  Tehran

  Iran
- www.tci.ir

MTN Irancell

Strengths	▪ Iran's second largest mobile operator, with an estimated market share of over 40%. ▪ Has a major strategic backer in the form of South Africa's MTN Group. ▪ First to market with GPRS and MMS services.
Weaknesses	▪ Subscriber base is understood to be highly dependent on prepaid customers. ▪ MMS business faces government censoring and filtering. ▪ Lacks presence in the wireline sector for converged services. ▪ US embargo puts limits on potential network equipment partners.
Opportunities	▪ Despite the lack of 3G services, smartphone adoption was strong in 2013, with penetration reaching almost 25% in MTN's subscription base. ▪ Although in the early stages, the market for mobile value-added and data services is expected to see strong growth; the youthful orientation of Iran's population should help to underpin future growth. ▪ Continuing network roll-out programme will have a positive effect on future growth. ▪ 3G licences become available in 2014 and the launch of 4G services in December 2014
Threats	▪ The privatisation of TCI could raise the level of competition for MTN Irancell. ▪ Underdeveloped legal and judicial environment could pose challenges.

Company Overview	In November 2003, the Ministry of Communications (now the MICT) issued a notice of its intention to issue a second GSM licence. In February 2004, Turkish operator Turkcell announced it won the tender, at a cost of USD385mn, over its closest rival South Africa's MTN Group. The Turkcell network was expected to launch within a year of licence issue, but by September 2004 the licence had yet to be formally awarded. The

ongoing licence issue culminated in Iranian authorities limiting foreign ownership in Irancell to 49%. Talks between Turkcell and the government eventually fell apart, leading the MICT to award the licence to MTN on November 21 2005. The remaining 51% stake is held by the Iran Electronic Development Company (IEDC). Irancell is currently managed through a shareholder agreement setting out operational management including key positions nominated by respective shareholders IEDC (chairman and managing director) and MTN (chief operating officer and chief financial officer).

Licence Conditions

Under MTN Group's licensing terms, the operator has a 15-year fixed term, followed by an option to renew its licence for an additional five years, which is allowed twice. Fees incurred by the operator, aside from the EUR300mn licence fee already paid to the Iranian authorities, include an annual fee set at 28.1% of the revenue share, based on gross revenue minus handset sales and net interconnection, with connection fees limited to USD150. Moreover, the operator must also pay a universal service fee of 3% of revenue. Other fees, such as numbering, frequency and regulation fees, are applicable, but altogether will not exceed 5% of revenue. In its 2011 annual report, MTN Irancell said it maintained 'active engagement' with the Iranian authorities as it seeks to clarify whether its licence permits the rollout of 3G services.

Strategy

MTN Irancell aims to drive mobile penetration and market share through the deployment of innovative products and services. It continues to emphasise the development of segmented prepaid and postpaid packages. The operator also aims to improve the level of customer service that is currently offered; the introduction of online registration and activation within 15 minutes was designed to further this goal. A central part of MTN Irancell's strategy is the implementation of a network that supports 3G services and, over the next five years, a network that covers more than 1,000 cities and comprises almost 6,000 BTSs. The operator aims to provide network coverage to 85.0% of the population by October 2020.

Financial Results

In 2013, MTN Irancell recorded revenue of IRR49.544trn, up 11% from 2012, but growth was stronger at 18.3% if the negative impact of hyperinflation is taken into account. MTN's revenue growth was driven by growth in data revenue, which increased 72.7% y-o-y, with SMS revenue up 18% and data 60.2%. Increased adoption of smartphones, which accounted for almost 25% of users at the end of 2013, has driven data revenues. Meanwhile, MTN's EBITDA margin declined 1.4pps to 42.8% in 2014, largely as a result of foreign currency denominated costs following rial depreciation. Finally, capex increased, rising to ZAR758mn. Investment for the period included an additional 746 2G sites and 415km of fibre.

Operational Developments

Irancell launched its network in October 2006, with sales and network coverage initially limited to the cities of Tehran, Mashhad and Tabriz. Further coverage was provided by means of interconnection agreements with Iran's other mobile operators.

In February 2007, Irancell launched Iran's first GPRS services, available to prepaid and postpaid subscribers. At the time of launch, Irancell announced that the service would be free for all subscribers until the end of March 2007.

In January 2011, MTN introduced a new location-based service which can be used in several major cities, including Tehran, Karaj, Tabriz, Esfahan, Shiraz and Mashhad. The new service can be used for identifying the geographical location of a friend and informing them of a subscriber's whereabouts. The friend's location is notified to the subscriber through SMS or MMS.

According to a report by Iran Daily in October 2011, the number of cities covered by MTN was 1,874 by 23 September 2011. This would mean that the telco's network covered 80% of the country's population by that date. MTN's network coverage also includes 22,000 villages and over 20,000km of roads. This exceeds the operator's previously-stated target of 9,000km. In June 2012, MTN revealed it had deployed a total of 7,889 2G and WiMAX sites in the country.

During the second half of the 2013 MTN Irancell began the roll-out of a 3G network with LTE-capable frequency, following approval by the Communications Regulatory Authority. During the period it invested ZAR1.818bn, representing 100 percent of the operation, and deployed 274 new 2G sites. The operator also launched 4G networks in nine cities in December 2014, whereas its 3G network covered 75 cities in all 31 provinces.

MTN Irancell claims that the number of data subscribers on its network has increased to more than 21mn, including 7mn on its 3G and 4G networks, up to April 2015. The rise was supported by the expansion of its 3G and 4G networks, providing speeds of up to 150Mbps. The operator offers 3G services in more than 200 cities and has introduced its 4G network in more than 50 cities throughout the country.

In April 2015, MTN Irancell launched a Wi-Fi service in Tochal. Irancell subscribers can receive 500MB of free high-speed internet for 60 hours by connecting to the operator's Wi-Fi network, called irancellWiFi and sending a blank SMS to 4031 to receive a username and password. Subscribers will be able to receive a username and password only once every 24 hours.

Financial Data

Revenue

- 2010: IRR26.294trn
- 2011: IRR33.352trn
- 2012: IRR41.980trn
- 2013: ZAR9.514trn
- 2014: ZAR11.631trn

Financial Data

Capital expenditure

- 2010: ZAR1.661bn
- 2011: ZAR1.168bn
- 2012: ZAR1.122mn
- 2013: ZAR1.758mn
- 2014: ZAR6.350mn

All financial data reflect MTN's 49% stake in MTN Irancell

Operational Data

Mobile subscribers

- December 2010: 29.743mn
- December 2011: 34.681mn
- December 2012: 40.502mn
- December 2013: 41.4mn

December 2014: 43.94mn

Company Details

- MTN Irancell
- 12 Anahita Alley
  Africa St

  Tehran

  Iran
- www.irancell.ir

Regional Overview

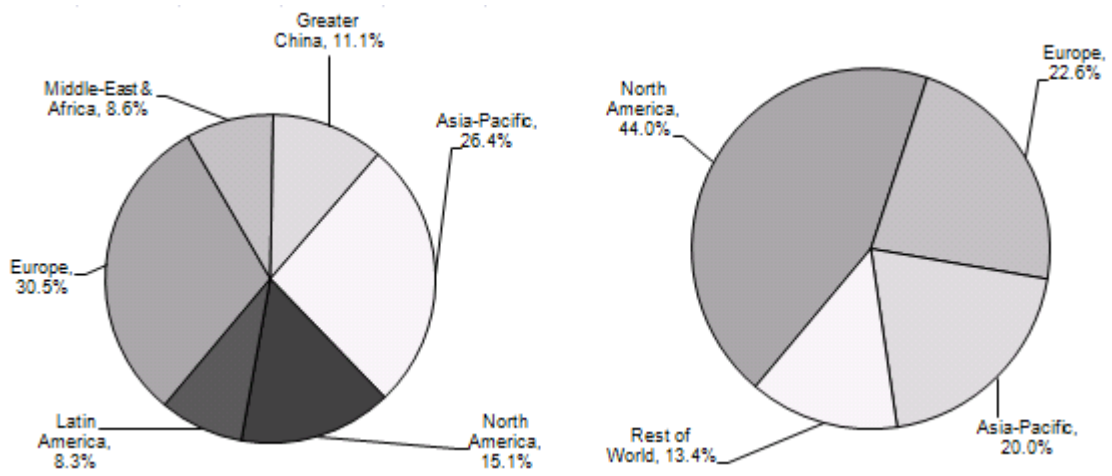
BMI View: *A merged Nokia will need to build a greater share in MENA than the sum of its parts, as the two legacy companies have been outperformed by Huawei and Ericsson. We believe that North Africa has the greatest potential, because of its move towards more advanced technologies, which should benefit Nokia's broader portfolio. However, it will continue to face strong competition and will need to move beyond hardware to gain a leadership position.*

The deal between **Nokia** and **Alcatel-Lucent**, announced in April 2015, has global implications, as it gives the merged company enough size and scale to compete with market leaders **Huawei** and **Ericsson**, but it will also have an impact regionally *(see 'Nokia/Alcatel-Lucent: A Difficult But Necessary Deal' April 15 2015)*. **BMI** has already written on what the deal means for Asia, as it will give the new entity more possibilities to compete against the Chinese vendors, Huawei and **ZTE**, specifically in their domestic market *(see 'Asia Will Be Nokia-Alcatel's Key Battleground' April 15 2015)*. We believe the new Nokia will also have more opportunities in MENA, a region where both vendors have lagged behind in recent years.

Both Nokia and Alcatel-Lucent's revenues have come from developed markets, as they have struggled to make inroads in developing regions. Alcatel-Lucent does not split MENA as a region, but instead bundles the region with Latin America; in 2014, this represented revenues of EUR1.77bn (USD2.15bn), its lowest generating geography. As for Nokia, the Middle East and Africa garnered EUR1.1bn (USD1.34bn) in 2014, its second lowest generating geography before Latin America and 8.6% of its total revenues. To put this into context, Ericsson reported revenues for the Middle East only of SEK21.28bn (USD2.72bn), representing a share of just under 10% of its overall yearly revenues.

Little MENA Impact

Nokia (LHS) And Alcatel-Lucent (RHS)'s Revenues By Region (EURbn), 2014



Source: Alcatel-Lucent, Nokia

As globally, both Ericsson and Huawei have taken the lead in MENA, the former leveraging its relationship with global operators and the latter its ability to produce innovative products at a cheaper price than the competition *(see 'Huawei Strengthens Its Position In The Middle East' October 17 2013 and 'Ericsson Diversifies To Maintain Impressive Growth' October 15 2014)*. The merged company will need to be more competitive across the globe if it wants to gain market share from its two competitors, and **BMI** believes a broader product portfolio will help.

The combination of Nokia and Alcatel-Lucent gives the new vendor a more diverse portfolio of hardware products, as it allies Nokia's traditional strength in the wireless segment with Alcatel-Lucent's strong position in wireline. As more and more operators in the region become converged, and offer both fixed and mobile services, the ability to offer both types of networks will become a core component of the new vendor, even though it may mean selling its products at a lower price through bundling than if they were stand-alone. Price competition will remain key in the region because of Huawei's influence, and vendors may need to focus on market share and forego revenues in the short-term so as to upsell their customers with new and more advanced services in the longer-term.

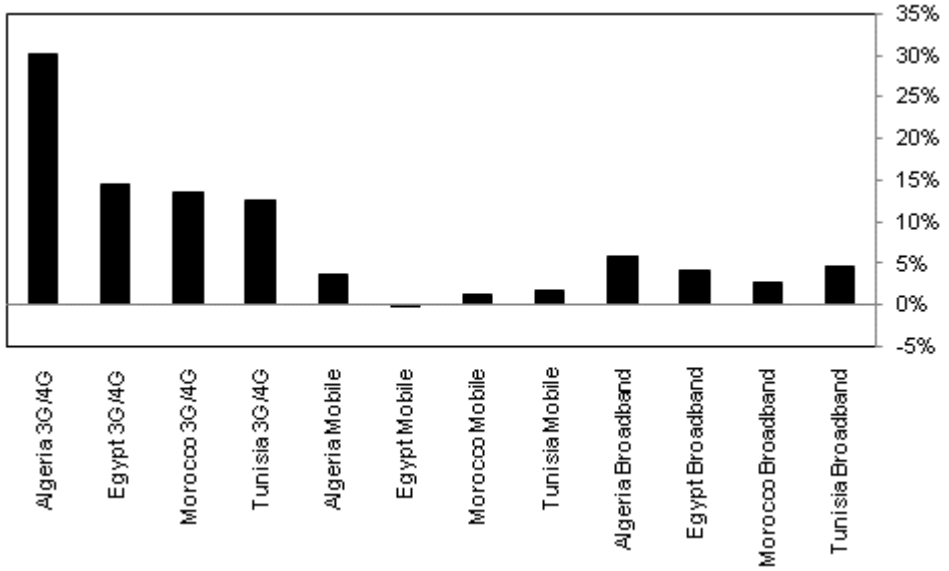
But hardware is only one side of the coin, and one area the new Nokia will need to develop quickly is software. Alcatel-Lucent has already some headway in terms of SDN (Self-Defined Network), NFV

(Network Functions Virtualization), SON (Self-Organizing Network), and cloud computing. Vendors have to face new competitors in those markets, such as **Cisco** and **Juniper**, and bundling hardware and software could be an opportunity. Huawei has pursued a very similar strategy and is ahead of Nokia in terms of its development, but some operators will also prefer to have contracts with multiple vendors as they believe it helps to encourage competition.

There may also be greater opportunities in terms of smart cities, which could leverage Alcatel-Lucent's experience in small cells and WiFi, but we do not expect the new company to make much more progress than its legacy components, as Huawei also has a strong position in that market. **BMI** believes it will be difficult for the new Nokia to gain market in the Middle East, especially in the GCC markets, which have recently upgraded their networks, usually with competitors, and will not look to award major contracts in the short-term (more minor deals may nevertheless become available). As we do not expect 5G to become commercially available in the next five years, even though it is an area that Nokia will need to develop, we believe the greatest opportunities for the vendor lie in North Africa.

Strong Potential For New Technologies Upgrades

CAGR Growth (%), North Africa, 2014-2019



Source: BMI, operators, regulators

We forecast strong growth in the region, with the exception of Libya because of its security situation, and that growth will be driven by new technologies, such as 4G in mobile and VDSL/FTTx on the fixed side. All markets have seen strong uptake of 3G services after launch, highlighting the strong demand for data services, and all plan to have 4G services commercially available soon; Egyptian operators have trialled the technology, Morocco awarded 4G licences and spectrum in March 2015, and Nokia has already partnered with **Algérie Télécom** to launch commercial services. The same is occurring with fixed networks, with operators looking to upgrade their legacy copper networks with fibre technology. Telecom Egypt is planning to spend on upgrading its fixed infrastructure in 2015, while Alcatel-Lucent has already partnered with **Tunisie Telecom**.

As in other regions, Nokia will face strong competition in those markets, but we believe operators' willingness to upgrade their networks, led as much by consumer demand as by operators' long term strategies, will lead to opportunities for vendors. Nokia's broader portfolio of products and services will be a positive, but the company will need to ensure it develops innovative services, especially on the software side, as well as making sure that integration is not a burden when it comes to promoting its products in a timely manner to its clients.

Table: Selected Deals And Announcements, 2014-2015

Date	Company	Country	Deal Details
Mar-15	Alcatel-Lucent	UAE	Alcatel-Lucent and Etisalat signed an agreement to deploy Alcatel-Lucent's Motive Customer Experience Management (CEM) portfolio for Etisalat's mobile and fixed-line customers in the UAE
Jan-15	Alcatel-Lucent	UAE	Alcatel-Lucent is to deploy its virtualized radio network controller in Etisalat Group's access network in both the United Arab Emirates and Sri Lanka.
Dec-14	Alcatel-Lucent	Algeria	Alcatel-Lucent and Ooredoo Algeria have built a high-capacity optical transport network to connect Algeria's mains cities with the vendor's 400G backbone.
Dec-14	Nokia	Qatar	Ooredoo Qatar launched its nationwide LTE-Advanced (LTE-A) services, with Nokia Networks upgrading the operator's LTE network with LTE-A Carrier Aggregation.
Nov-14	Nokia	Saudi Arabia	Mobily commissioned Nokia Networks for managing its network operations for five years. It will also expand the operator's 2G, 3G, and 4G (TD LTE, FDD LTE) mobile broadband networks, becoming the main radio network supplier for the operator.
Oct-14	Alcatel-Lucent	Algeria	Alcatel-Lucent is providing Djezzy with its 9500 Microwave Packet Radio solution, upgrading the operator's mobile backhaul architecture
Jul-14	Nokia	Algeria	Algérie Télécom appointed Nokia Networks to modernise its transport network sites with the highly flexible "Seamless MPLS" network
Jun-14	Nokia	Saudi Arabia	Nokia Networks signed a contract with Zain KSA to modernise and expand the operator's network in a program called RELOAD.
Jun-14	Nokia	UAE	du signed a contract with Nokia to deploy its IP Multimedia Subsystem.
Jun-14	Nokia	Kuwait	Zain commissioned Nokia to deploy its OSS portfolio.

Selected Deals And Announcements, 2014-2015 - Continued

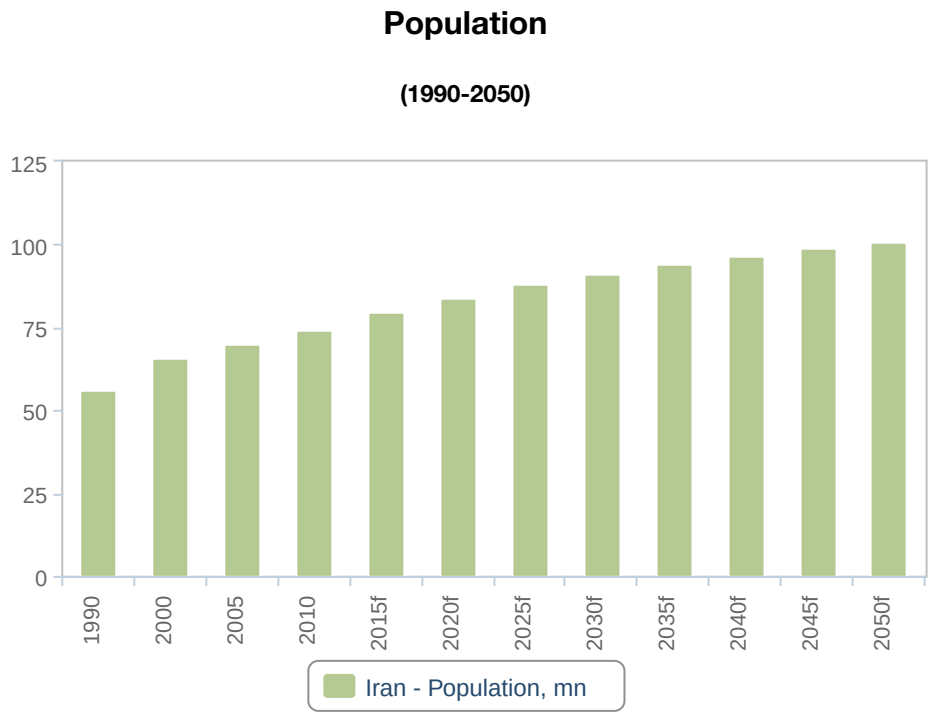
Date	Company	Country	Deal Details
May-14	Alcatel-Lucent	Saudi Arabia	Alcatel-Lucent and Mobily announced the deployment of virtualized RAN software from the vendor's NFV portfolio.
May-14	Nokia	Algeria	Nokia deployed North Africa's first commercial LTE network in Algeria for the state-owned operator, Algérie Télécom.
Feb-14	Alcatel-Lucent	Tunisia	Alcatel-Lucent and Tunisie Telecom announced a three-year agreement to transform the carrier's voice and data network, paving the way for ultra-broadband access services for residential and enterprise customers throughout Tunisia.

Source: Alcatel-Lucent, Nokia

Demographic Forecast

Demographic analysis is a key pillar of **BMI**'s macroeconomic and industry forecasting model. Not only is the total population of a country a key variable in consumer demand, but an understanding of the demographic profile is essential to understanding issues ranging from future population trends to productivity growth and government spending requirements.

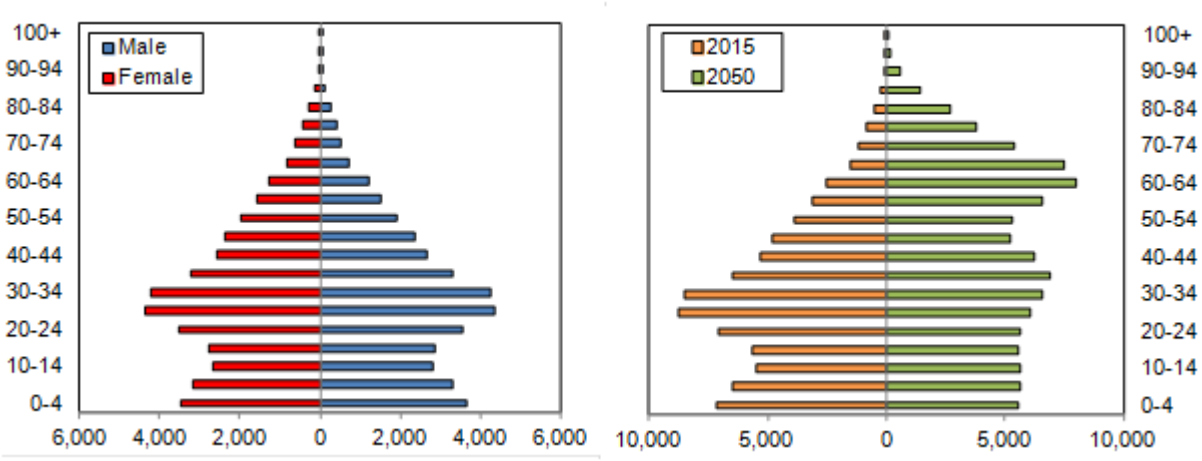
The accompanying charts detail the population pyramid for 2015, the change in the structure of the population between 2015 and 2050 and the total population between 1990 and 2050. The tables show indicators from all of these charts, in addition to key metrics such as population ratios, the urban/rural split and life expectancy.



f = BMI forecast. Source: World Bank, UN, BMI

Iran Population Pyramid

2015 (LHS) & 2015 Versus 2050 (RHS)



Source: World Bank, UN, BMI

Table: Population Headline Indicators (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, total, '000	56,361	65,911	70,152	74,462	79,476	84,148	88,064
Population, % change y-o-y	na	1.6	1.2	1.3	1.3	1.1	0.8
Population, total, male, '000	28,807	33,504	35,917	37,656	39,915	42,307	44,213
Population, total, female, '000	27,554	32,406	34,235	36,805	39,560	41,840	43,850
Population ratio, male/female	1.05	1.03	1.05	1.02	1.01	1.01	1.01

na = not available; f = BMI forecast. Source: World Bank, UN, BMI

Table: Key Population Ratios (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Active population, total, '000	28,945	40,290	48,583	53,034	55,945	58,184	60,945
Active population, % of total population	51.4	61.1	69.3	71.2	70.4	69.1	69.2
Dependent population, total, '000	27,415	25,620	21,569	21,427	23,530	25,964	27,118
Dependent ratio, % of total working age	94.7	63.6	44.4	40.4	42.1	44.6	44.5

Key Population Ratios (Iran 1990-2025) - Continued

	1990	2000	2005	2010	2015f	2020f	2025f
Youth population, total, '000	25,543	22,850	18,115	17,585	19,140	20,362	19,984
Youth population, % of total working age	88.2	56.7	37.3	33.2	34.2	35.0	32.8
Pensionable population, '000	1,872	2,770	3,453	3,841	4,389	5,601	7,134
Pensionable population, % of total working age	6.5	6.9	7.1	7.2	7.8	9.6	11.7

f = BMI forecast. Source: World Bank, UN, BMI

Table: Urban/Rural Population And Life Expectancy (Iran 1990-2025)

	1990	2000	2005	2010e	2015f	2020f	2025f
Urban population, '000	31,748.6	42,210.8	47,393.5	51,332.8	55,362.4	59,374.4	63,078.7
Urban population, % of total	56.3	64.0	67.6	68.9	69.7	70.6	71.6
Rural population, '000	24,613.2	23,700.3	22,758.8	23,129.5	24,113.9	24,774.2	24,985.6
Rural population, % of total	43.7	36.0	32.4	31.1	30.3	29.4	28.4
Life expectancy at birth, male, years	61.2	68.7	70.0	71.3	72.8	74.2	75.5
Life expectancy at birth, female, years	65.8	70.6	73.1	75.1	76.6	78.0	79.2
Life expectancy at birth, average, years	63.4	69.6	71.5	73.1	74.6	76.0	77.3

e/f = BMI estimate/forecast. Source: World Bank, UN, BMI

Table: Population By Age Group (Iran 1990-2025)

	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, total, '000	9,312	6,316	5,483	6,555	7,146	6,751	6,148
Population, 5-9 yrs, total, '000	8,905	7,552	5,476	5,416	6,507	7,116	6,729
Population, 10-14 yrs, total, '000	7,324	8,981	7,154	5,613	5,487	6,494	7,105
Population, 15-19 yrs, total, '000	5,822	8,800	9,247	7,215	5,643	5,466	6,474
Population, 20-24 yrs, total, '000	4,697	6,932	9,143	8,993	7,067	5,595	5,424
Population, 25-29 yrs, total, '000	4,054	5,315	6,859	8,704	8,726	6,997	5,541
Population, 30-34 yrs, total, '000	3,535	4,442	5,202	6,521	8,484	8,649	6,937
Population, 35-39 yrs, total, '000	3,030	3,886	4,693	5,210	6,497	8,410	8,579
Population, 40-44 yrs, total, '000	2,123	3,372	4,112	4,833	5,262	6,431	8,333
Population, 45-49 yrs, total, '000	1,620	2,857	3,421	4,032	4,757	5,193	6,353

Population By Age Group (Iran 1990-2025) - Continued							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 50-54 yrs, total, '000	1,526	1,929	2,800	3,244	3,895	4,665	5,101
Population, 55-59 yrs, total, '000	1,393	1,431	1,766	2,637	3,109	3,788	4,548
Population, 60-64 yrs, total, '000	1,140	1,322	1,336	1,639	2,500	2,985	3,652
Population, 65-69 yrs, total, '000	898	1,145	1,257	1,279	1,550	2,340	2,813
Population, 70-74 yrs, total, '000	507	825	1,055	1,129	1,143	1,369	2,090
Population, 75-79 yrs, total, '000	269	508	654	802	876	902	1,105
Population, 80-84 yrs, total, '000	135	203	347	413	528	598	637
Population, 85-89 yrs, total, '000	48	66	112	172	216	290	343
Population, 90-94 yrs, total, '000	10	17	21	38	63	84	119
Population, 95-99 yrs, total, '000	1	2	3	4	8	15	22
Population, 100+ yrs, total, '000	0	0	0	0	0	1	2

f = BMI forecast. Source: World Bank, UN, BMI

Table: Population By Age Group % (Iran 1990-2025)							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 0-4 yrs, % total	16.52	9.58	7.82	8.80	8.99	8.02	6.98
Population, 5-9 yrs, % total	15.80	11.46	7.81	7.27	8.19	8.46	7.64
Population, 10-14 yrs, % total	13.00	13.63	10.20	7.54	6.90	7.72	8.07
Population, 15-19 yrs, % total	10.33	13.35	13.18	9.69	7.10	6.50	7.35
Population, 20-24 yrs, % total	8.34	10.52	13.03	12.08	8.89	6.65	6.16
Population, 25-29 yrs, % total	7.19	8.06	9.78	11.69	10.98	8.32	6.29
Population, 30-34 yrs, % total	6.27	6.74	7.42	8.76	10.68	10.28	7.88
Population, 35-39 yrs, % total	5.38	5.90	6.69	7.00	8.18	9.99	9.74
Population, 40-44 yrs, % total	3.77	5.12	5.86	6.49	6.62	7.64	9.46
Population, 45-49 yrs, % total	2.88	4.33	4.88	5.42	5.99	6.17	7.22
Population, 50-54 yrs, % total	2.71	2.93	3.99	4.36	4.90	5.54	5.79
Population, 55-59 yrs, % total	2.47	2.17	2.52	3.54	3.91	4.50	5.17
Population, 60-64 yrs, % total	2.02	2.01	1.90	2.20	3.15	3.55	4.15
Population, 65-69 yrs, % total	1.59	1.74	1.79	1.72	1.95	2.78	3.19
Population, 70-74 yrs, % total	0.90	1.25	1.50	1.52	1.44	1.63	2.37
Population, 75-79 yrs, % total	0.48	0.77	0.93	1.08	1.10	1.07	1.26
Population, 80-84 yrs, % total	0.24	0.31	0.50	0.55	0.66	0.71	0.72

Population By Age Group % (Iran 1990-2025) - Continued							
	1990	2000	2005	2010	2015f	2020f	2025f
Population, 85-89 yrs, % total	0.09	0.10	0.16	0.23	0.27	0.34	0.39
Population, 90-94 yrs, % total	0.02	0.03	0.03	0.05	0.08	0.10	0.14
Population, 95-99 yrs, % total	0.00	0.00	0.00	0.01	0.01	0.02	0.03
Population, 100+ yrs, % total	0.00	0.00	0.00	0.00	0.00	0.00	0.00

f = BMI forecast. Source: World Bank, UN, BMI

Glossary

Table: Glossary Of Terms					
2G	second generation	GDP	gross domestic product	NGN	next generation network
3G	third generation	GPRS	global packet radio service	Mbps	megabits per second
ADSL	asymmetric digital subscriber line	GSM	global system for mobile communications	MHz	megahertz
ARPU	average revenue per user	HDSL	high-bit-rate digital subscriber line	MNP	mobile number portability
ASP	average selling price	HSDPA	high-speed downlink packet access	MoU	memorandum of understanding
BMI	Business Monitor International	HPSA	high-speed packet access	MOU	minutes of use
bn	billion	HSUPA	high-speed uplink packet access	MPLS	multiprotocol label switching
BTS	base transceiver stations	HTML	hypertext markup language	MSC	mobile switching centre
CDMA	code division multiple access	Hz	hertz	MVNO	mobile virtual network operator
CRM	customer relationship management	ICT	information and communication technology	-	not available
D-AMPS	digital-advanced mobile phone service	IDD	international direct dialling	OIBDA	operating income before depreciation and amortisation
DLD	domestic long-distance	ILD	international long-distance	POP	point of presence
DMB	digital multimedia broadcasting	IPO	initial public offering	R&D	research and development
DSL	digital subscriber line	IP	internet protocol	SaaS	software-as-a-service
DSLAM	digital subscriber line access multiplexer	IPTV	internet protocol TV	SDSL	symmetric digital subscriber line
DSU	digital subscriber unit	ISDN	integrated services digital networks	SIM	subscriber identity module
DTH	direct-to-home	ISP	internet service provider	SMS	short messaging service
DVB-H	digital video broadcasting-handheld	IT	information technology	TDMA	time division multiple access
DVB-SH	digital video broadcasting-satellite handheld	ITU	International Telecommunication Union	TD-SCDMA	time division-synchronous code division multiple access
e/f	estimate/forecast	JV	joint venture	trn	trillion
EBITDA	earnings before interest, taxes, depreciation and amortisation	Kbps	kilobits per second	UMTS	universal mobile telecommunications system
EC	European Commission	KHz	kilohertz	VOD	video on demand

Glossary Of Terms - Continued					
EMEA	Europe, Middle East and Africa	km	kilometres	VoIP	voice over internet protocol
EV-DO	evolution-data optimised	LANs	local area networks	VLAN	virtual local area network
FDI	foreign direct Investment	LEC	local exchange carrier	WAP	wireless application protocol
FTTB	fibre-to-the-building	LTE	long-term evolution	W-CDMA	wideband CDMA
FTTH	fibre-to-the-home	M2M	machine-to-machine	WiBro	wireless broadband
FTP	file transfer protocol	mn	million	WiMAX	worldwide interoperability for microwave access
Gbps	gigabits per second	MEA	Middle East and Africa	WLL	wireless local loop
GPON	gigabit passive optical network	MENA	Middle East and North Africa	WTO	World Trade Organization

Source: BMI

Methodology

Industry Forecast Methodology

BMI's industry forecasts are generated using the best-practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

Common to our analysis of every industry, is the use of vector autoregressions. Vector autoregressions allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historic data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

BMI mainly uses OLS estimators and in order to avoid relying on subjective views and encourage the use of objective views, we use a 'general-to-specific' method. We mainly use a linear model, but simple non-linear models, such as the log-linear model, are used when necessary. During periods of 'industry shock', for example poor weather conditions impeding agricultural output, dummy variables are used to determine the level of impact.

Effective forecasting depends on appropriately selected regression models. **BMI** selects the best model according to various different criteria and tests, including but not exclusive to:

- R^2 tests explanatory power; adjusted R^2 takes degree of freedom into account;
- Testing the directional movement and magnitude of coefficients;
- Hypothesis testing to ensure coefficients are significant (normally t-test and/or P-value);
- All results are assessed to alleviate issues related to auto-correlation and multi-collinearity.

We use the selected best model to perform forecasting.

It must be remembered that human intervention plays a necessary and desirable role in all our industry forecasting. Experience, expertise and knowledge of industry data and trends ensure that analysts spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Sector-Specific Methodology

Our Telecommunications industry forecasts are generated using a number of principal criteria, and differ from the regression and/or time-series modelling used in other industries.

- **Average Market Growth**

Indicator takes into consideration the historical growth patterns of the fixed-line, internet, broadband and mobile markets, providing a basis from which to forecast. Using historical data is often the most desirable method of analysis. In most cases, subscriber data are derived from individual operators and/or national regulators.

- **Subjective Indicators**

Indicators look at a number of factors, such as the following:

- Neighbouring/similar states. These types of markets often share similar telecoms markets. For example, Japan and South Korea are both highly developed technophile markets where growth prospects are high in 3G. Meanwhile, China and India both offer high growth in successfully emerging markets.
- Tracking growth. High growth may be more likely to be repeated in the near future, and is unlikely to turn into a significant decline in the short term, although there may be exceptions to this rule.
- Market maturity. Where markets have reached saturation, they are not likely to expand as fast as those that are less developed.
- Competition from alternative technologies, such as VoIP versus fixed-line, ADSL versus mobile broadband.
- Operator behaviour. Operators' corporate strategies and investment behaviour may dictate changes in the telecommunications market. This is similarly the case for regulatory developments, which have been accounted for in our integration of the Telecommunications Risk/Reward Index.

Sources

Sources used in telecoms reports include national ministries and media/telecoms regulatory bodies, officially released company results and figures, national and international industry organisations, such as the CTIA, the GSM Association and the International Telecommunication Union (ITU) and international and national news agencies.

Risk/Reward Index Methodology

BMI's Risk/Reward Index (RRI) provide a comparative regional ranking system evaluating the ease of doing business and the industry-specific opportunities and limitations for potential investors in a given market.

The RRI system divides into two distinct areas:

Rewards: Evaluation of sector's size and growth potential in each state, and also broader industry/state characteristics that may inhibit its development. This is further broken down into two sub categories:

- Industry Rewards. This is an industry specific category taking into account current industry size and growth forecasts, the openness of market to new entrants and foreign investors, to provide an overall score for potential returns for investors.
- Country Rewards. This is a country specific category, and the score factors in favourable political and economic conditions for the industry.

Risks: Evaluation of industry-specific dangers and those emanating from the state's political/economic profile that call into question the likelihood of anticipated returns being realised over the assessed time period. This is further broken down into two sub categories:

- Industry Risks. This is an industry specific category whose score covers potential operational risks to investors, regulatory issues inhibiting the industry, and the relative maturity of a market.
- Country Risks. This is a country specific category in which political and economic instability, unfavourable legislation and a poor overall business environment are evaluated to provide an overall score.

We take a weighted average, combining industry and country risks, or industry and country rewards. These two results in turn provide an overall Risk/Reward Index, which is used to create our regional ranking system for the risks and rewards of involvement in a specific industry in a particular country.

For each category and sub-category, each state is scored out of 100 (100 being the best), with the overall Risk/Reward Index a weighted average of the total score. Importantly, as most of the countries and

territories evaluated are considered by **BMI** to be 'emerging markets', our score is revised on a quarterly basis. This ensures that the score draws on the latest information and data across our broad range of sources, and the expertise of our analysts.

Indicators

The following indicators have been used. Overall, the index uses three subjectively measured indicators, and around 20 separate indicators/datasets.

Table: Risk/Reward Index Indicators

	Rationale
Rewards	
Industry Rewards	
- ARPU	Denotes depth of telecoms market. High-value markets score better than low-value ones.
- No. of subscribers	Denotes breadth of telecoms market. Large markets score higher than smaller ones.
- Subscriber growth, % y-o-y	Denotes sector dynamism. Scores based on annual average growth over our five-year forecast period and also take into account the penetration rate.
- No. of operators	Subjective evaluation against BMI-defined criteria. Evaluates market openness and competitiveness.
Country Rewards	
- Urban/rural split	A highly urbanised state facilitates network rollout and implies higher wealth. Predominantly rural states score lower, with overall score also affected by country size.
- Age range	Proportion of population under 24 years old. States with young populations tend to be more attractive markets.
- GDP per capita, USD	A proxy for wealth. High-income states receive better scores than low-income states.
Risks	
Industry Risks	
- Regulatory independence	Subjective evaluation against BMI-defined criteria. Evaluates predictability of operating environment.
Country Risks	
- Short-term external risk	Score from BMI's Country Risk Index(CRI). Denotes state's vulnerability to externally induced economic shock, which tend to be the principal triggers of economic crises.
- Policy continuity	From CRI. Evaluates the risk of a sharp change in the broad direction of government policy.
- Legal framework	From CRI. Denotes strength of legal institutions in each state - security of investment can be a key risk in some emerging markets.

Risk/Reward Index Indicators - Continued	
	Rationale
- Corruption	From CRI. Denotes risk of additional illegal costs/possibility of opacity in tendering/ business operations affecting companies' ability to compete.

Source: BMI

Weighting

Given the number of indicators/datasets used, it would be inappropriate to give all sub-components equal weight. Consequently, the following weighting has been adopted:

Table: Weighting Of Indicators	
Component	**Weighting, %**
Rewards	70, of which
- Industry Rewards	65
- Country Rewards	35
Risks	30, of which
- Industry Risks	40
- Country Risks	60

Source: BMI