mEducation

New Business Models: Innovation in Practice

Table of Contents

1. Executive summary

mEducation market opportunities

The education sector represents a new growth opportunity for companies across the mobile industry. By engaging directly with students, young and old, as well as with educational institutions and companies, mobile operators can increase their revenues, retain more customers and extend their brands beyond the boundaries of pure communications services.

McKinsey & Co. and the GSMA have estimated the worldwide mobile opportunity in the education sector will be worth USD 70 billion by 2020, of which USD 32 billion is attributable to hardware and equipment sales with the balance split across a range of products and services, such as eBooks, eCourses, game and simulation-based learning tools, and collaboration tools. However, there still remains considerable uncertainty about where the commercial opportunities lie and the business models necessary to monetise them.

The research conducted for this report highlighted that the transition from print to digital is a strategic market disruptor. For example, publishers are concerned about the availability of 'free' content. While this type of threat can be mitigated by customisation, there is also scope to create value by integrating 'free' content with assessment tools and games to motivate students to complete a course. Another way to add value is through full service offerings covering items, such as teacher training and syllabus structuring advice. Educational institutions will also need a range of mEducation software and services, including middleware and finance models for device purchase, leasing, insurance, security, maintenance, repair and connectivity.

Potential business models

This report explores how mobile operators are applying different business models to address the mEducation market and the needs of key user segments. It includes illustrative case studies on the different business models applied by Bharti Airtel, SFR and Tata DOCOMO. These each fall into one of three generic categories:

- **B2B (business-to-business) –** this involves the supply of an mEducation service to an organisation

- **B2C (business-to-consumer) –** the supply of an mEducation service directly to students.

- **B2B2X (the end-user 'X' can be a government-operated school, a corporation or a consumer) –** Within this generic framework, three alternatives are possible:

  The subcontractor model
  A mobile operator is a supplier (the first 'B') to an education sector business that packages the

  operator's offer into a broader mEducation service: A B|B2X model.

  The partnership model
  The mobile operator remains as a supplier to another business, but in a more integrated manner:
  A B2B2X model

  The intermediary model

  The mobile operator is an intermediary and orchestrates the delivery of an mEducation service
  between one or more suppliers and the end-user. A B2B2X mode

This third alternative is the most complex in terms of the service design, partner sourcing and customer-facing activities, but it also offers the potential for greater customer loyalty and revenue capture. Present day business models are more likely to favour B2B2X approaches over B2B and B2C arrangements. That is because it is very challenging for any one organisation to master all of the expertise required to design and deliver integrated mEducation services that address multiple aspects of the pedagogical process and seamlessly integrate IT and mobile technologies. The multi-party approach can shorten the time to launch a service and limit the need for short-term capital investments.

Mobile operators risk being marginalised if they do not engage with policy makers and administrators in the education sector to promote a positive, 'top-down' vision for the adoption and use of mobile learning in the classroom and beyond. Mobile operators consequently need to promote an industry position and provide solutions to education sector challenges as well as tailoring business models for their respective markets.

2. Introduction

The mobile technology ecosystem of suppliers and service providers has created one of the largest and most significant platforms in history. Supporting more than six billion connections, the mobile phenomenon has transformed how we communicate, experience entertainment and make use of the Internet.

Many sectors of the economy, including education, are now harnessing the mobile platform to improve their efficiency and effectiveness. For education, IT and mobile service providers, the new business models that will be necessary to support commercially-viable solutions are a key issue. While it is possible to apply business models from the mobile industry, new approaches are likely to be required as the education and communications sectors come together.

This report presents the findings from a set of discussions with education-sector providers, policymakers and mobile operators. It describes the business model challenges and approaches in launching commercial, mEducation services.[1] The report represents a starting point for greater dialogue between organisations working in the education content, education services and mobile industries. It provides business developers, product managers and strategists with a description of the mEducation market landscape and the sector dynamics that will have a bearing on their business plans and product road-maps.

The growing digitisation of educational content is providing fresh impetus to mEducation. This trend is being reinforced by teachers and students' growing use of highly portable devices such as mobile phones, eReaders, hand-held gaming devices, notebook PCs and tablets - and widely available mobile network platforms. Figure 1 from Ambient Insight, a mobile learning market research firm, illustrates how several market trends are creating the perfect set of conditions to accelerate the adoption of mobile learning.

Figure 1: Market drivers that are fostering the adoption of mEducation
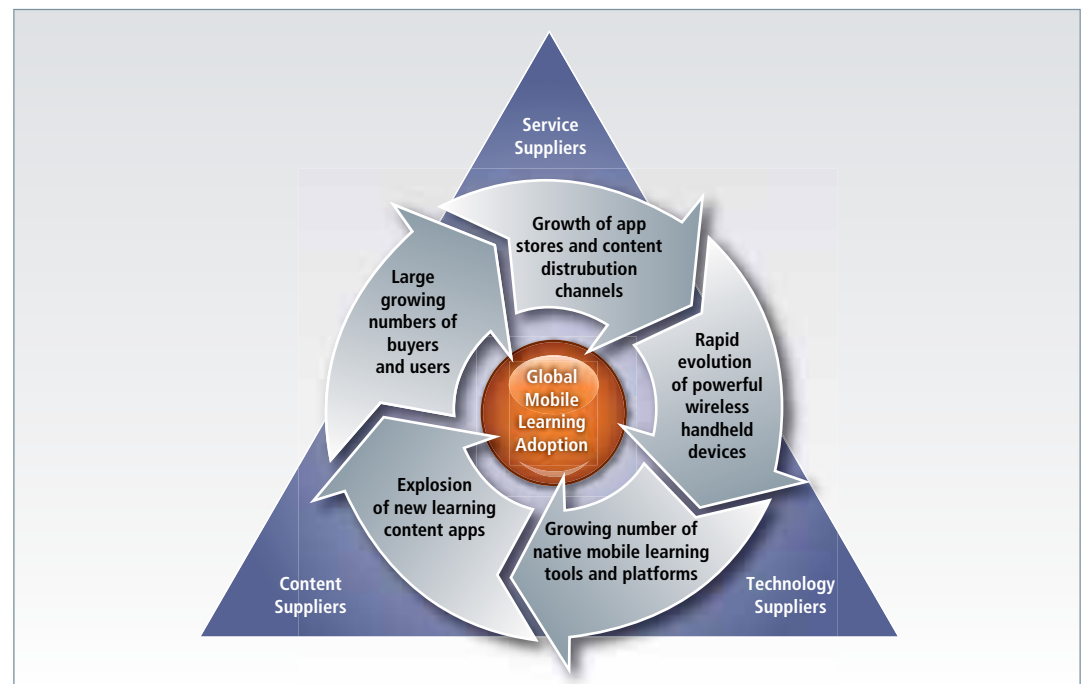
Source: Adkins S S, 2011, "The US Market for Mobile Learning Products and Services: 2010-2015 Forecast and Analysis", Ambient Insight

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1   The GSMA defines mEducation as the use of individual, portable devices which make use of mobile networks in mainstream education settings, aligning with curriculum objectives or used for high-stakes assessment. mEducation also incorporates both learning content and administrative activities

Educators are showing greater interest in the potential of mobile products and services because of the pressure on education ministries and institutions around the world to:

- provide education to more people to maintain competitiveness in the increasingly knowledge-based global economy and meet the United Nations' Education for All Millennium Goals

- meet the increasing demand for education from the growing middle class

- modernise educational systems and practices that served the needs of the pre-digital era

- deliver more for less under difficult economic circumstances

- address problems of drop out, underachievement, exclusion and un(der)employment

Companies from the mobile industry are interested in the education sector because it represents a new growth opportunity. By engaging directly with students, young and old, some mobile operators expect to retain more customers and to extend their brands beyond the boundaries of pure communications services.

Major corporations from several different sectors are also targeting the mEducation market for commercial, rather than philanthropic or corporate social responsibility motives. Early in 2012, Apple[2] announced a move into the digital text book market. This was followed by a partnership[3] between News Corporation and AT&T to develop interactive curriculum content for tablet-based solutions. More recently, Pearson[4] launched an online business and enterprise degree course.

The combination of mobile technologies and digital content is helping to improve the educational experience and offering new capabilities. Mobile devices can be used for collaboration, as well as voice and data communications, transforming the overall learning experience. The mobile ecosystem is particularly important because:

- it enables students to learn-anywhere and learn-anytime

- its successful business model demonstrates how to deliver devices and services at prices that are affordable to mass-market consumers.

However, for all the market interest in mEducation and its transformational potential, there still remains considerable uncertainty about where the commercial opportunities lie and how to monetise them. Service providers are unclear about how to propel mEducation beyond pilots and philanthropy. They are seeking business models that will give rise to commercially-viable and sustainable businesses. The situation is also complicated by the involvement of numerous distinct interest groups and the need for cross-industry discussion to match innovative services to willing payers.

This report is designed to generate greater insight and cross-industry dialogue on mEducation business models. It combines ideas and recommendations from discussions with policy makers, as well as education- and mobile-sector companies. Held between July and September 2012, these discussions examined current challenges and the on-going development of new business models.
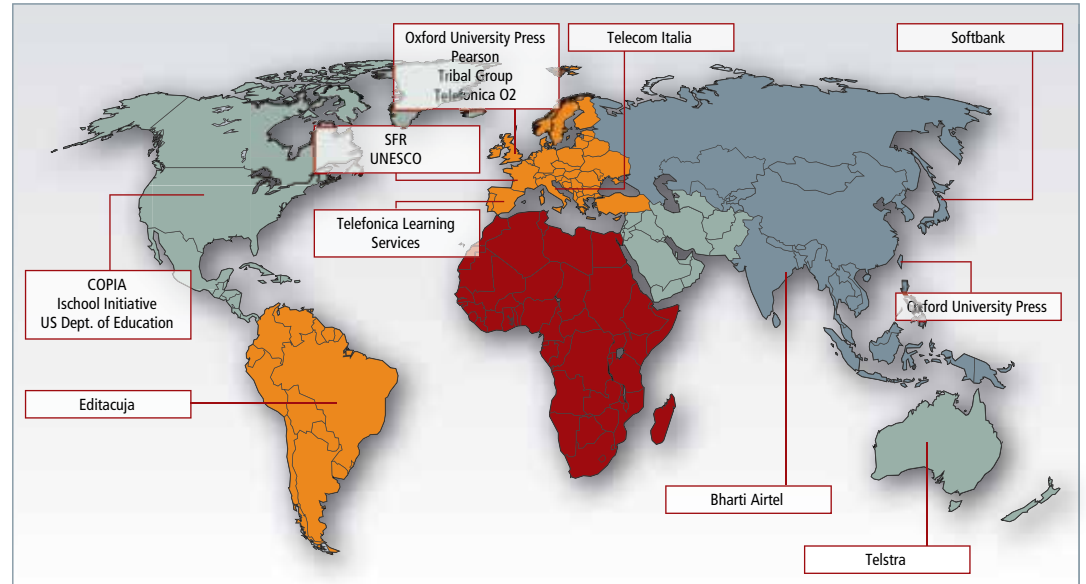
The companies and individuals that participated in this research provide a global, as well as a local, perspective coming as they do from many different countries around the world as illustrated in Figure 2.

Figure 2: The location of organisations participating in interview research

NOTE: Multiple organisations were interviewed in some countries; Spain representative is active in several countries across South America.

Following on from this introduction, we open this report with a working definition and a description of a framework for business models; this is quite distinct from the largely quantitative frameworks that are applied to enumerate a business case.

The report then examines the structure and revenue opportunities in mEducation, characterising key segments and also the concept of 'joined-up' solutions that address the complete user experience – whether they are a student, teacher or administrator.

The report also gives examples of practical implementations and insights from businesses to illustrate the business models that different companies are applying in the specific market segments they have prioritised. Finally, the report discusses some of the important trends that will affect future commercial opportunities and their implications for business model design. At the end of the report, there is a glossary to explain any unfamiliar terms.

3.   What is meant by the term 'business model'

For the purposes of this report, the term 'business model' describes the practical aspects of how an organisation captures commercial value from a particular business opportunity. In other words, what are the different elements that an organisation employs to deliver a particular value proposition to a target customer group in a commercially-sustainable manner? Figure 3 shows a core business model framework based on nine key elements:

- **Value proposition –** this describes the product or service being offered in a way that explicitly considers the customer and the benefit that is delivered

- **Customer segment(s) –** businesses may target several distinct customer groups in many ways, such as through different service offerings, a range of pricing plans and via alternate distribution channels

- **Distribution channel –** products and services may be distributed directly to customers or through intermediaries and via physical or eCommerce outlets

- **Customer relationship –** a variety of approaches can be applied to managing different facets of a customer relationship from new product identification through in-service support and problem resolution

- **Key resource, key partners and key activities –** these three elements define how the value proposition is delivered to the customer

- **Cost structure -** the investment, operational resources and third-party suppliers needed to deliver the product or service offering all contribute to the cost base of the business model and its evolution over time

- **Revenue streams –** the variants in the product or service offering combine to produce an overall revenue stream, which itself will change over time as a result of product, service and operational innovations.

Figure 3: Key elements of a business model
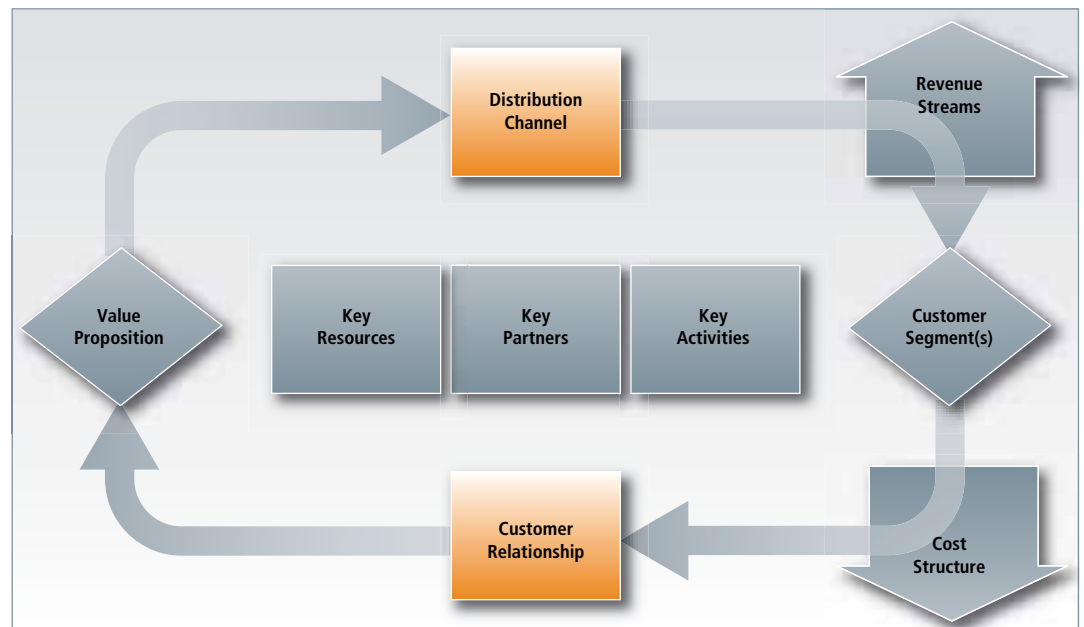
SOURCE: GSMA: Connected Life – The Need for New Business Models (2012)

The way to interpret this model is to start by considering a particular value proposition that is targeted at a specific customer segment and is based on how the customer relationship is structured e.g. business-to-business (B2B), business-to-business-to-consumer (B2B2C) etc. An example of an mEducation value proposition would be a maths course that a student can work through via a mobile phone; the course could combine instructional work, as well as self-testing and formal assessment materials. The value proposition to a student is a course that:

■ can be completed at a pace that suits the individual,

■ avoids the need for a student to be locked into a fixed schedule and physical learning venue,

■ and, captures auditable information that the student can use to demonstrate completion of the course and related tests.

Management of the customer relationship and distribution channel(s) are key processes in the business model. They will depend on one or more of the following: key resources; key partners; and key activities. The disposition of these three elements will determine the cost structure of the business model. For example, costs will depend on whether there is a need to implement a digital learning platform and by the complexity of the platform's functional capabilities. A portion of these costs may be defrayed if the platform was developed internally rather than acquired. Alternatively, costs may be contained by obtaining access to a platform in partnership with another provider.

Finally, the value proposition may be delivered to one or more target customer segments either through several product or service variants or by using multiple tariff structures. The different permutations give rise to one or more revenue streams. The forward projection of revenues and costs is what eventually constitutes the business case and return on investment (RoI) for a given initiative.

The business model should not be considered to be static. It will evolve over time to embrace new value concepts, technological change, additional distribution channels and increasing customer segments as service providers seek to address new market opportunities and to strengthen their position in the value chain.

The process of designing, or changing, a business model often starts with a new value proposition. This may be identified in a variety of ways. In a demand-led scenario, it may be a product or service that has been designed to meet a defined customer need. For example, students following a given syllabus in one school may value a service that facilitates interaction and peer evaluation with students from other schools.

The alternative approach to identifying new value propositions involves concepts driven by supply-side considerations. These generally entail packaging a technology into a new device or service. Consider the example of mobile communications which was initially targeted at affluent professionals. Over time it was packaged into affordable subscription and pre-pay consumer offerings. The mobile industry has also developed new retail concepts for distribution and consumer education purposes to drive economies of scale and efficient cost structures. This supply-side approach applies equally to other technologies, such as SIM security (mobile financial services), toughened touch-sensitive glass (enhanced user interface for tablets) and subscriber location information (advertising and personal safety).

To determine how these concepts can be applied to the education market, it is first necessary to understand the opportunities, the key segments and those segments that are projected to grow most dynamically. This is the subject of the next chapter.

4.   The Market Landscape for mEducation

This chapter examines the mEducation landscape in terms of the size and characteristics of key market opportunities. It draws on a recent study into the mEducation market by McKinsey & Co., as well as observations made by interviewees for this business models study.

4.1   Quantifying the mEducation opportunity

Early in 2012, McKinsey & Co. and the GSMA completed an assessment of the worldwide mobile opportunity in the education sector. This projected a total opportunity of USD 70 billion by 2020 of which USD 32 billion is attributable to hardware and equipment sales with the remaining balance split across a range of products and services. The precise breakdown is illustrated in Figure 4.

Figure 4: USD 70 billion mEducation market opportunity by 2020
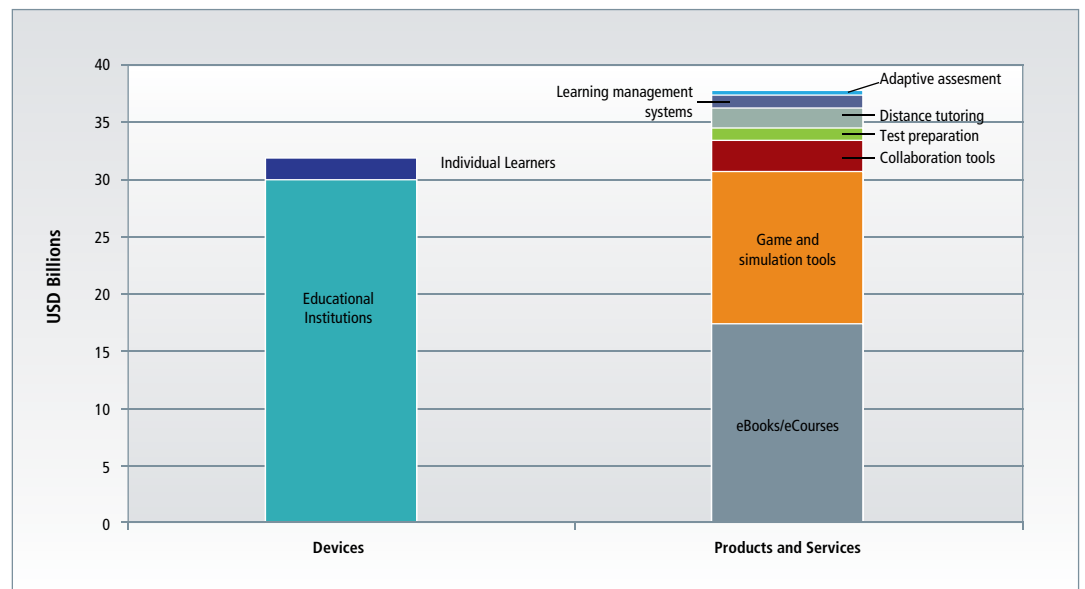
SOURCE: Transforming learning through mEducation, McKinsey & Co and GSMA (2012)

The share of revenue for dedicated devices in education is heavily skewed:

■   USD 30 billion is linked to B2B (educational institutions) solutions

■   USD 2 billion arises from the B2C (individual learners) category

In relation to the product and service solutions segment, McKinsey analysed over 100 commercial mEducation offerings and consolidated these into seven product and solution archetypes. These are tabulated in Figure 5 and, taken in combination, amount to a $38bn revenue opportunity by 2020.

Figure 5: mEducation offerings organised by archetype

Archetype	Description	2010-20 CAGR	2020 Market Size
Educational e-books and courses accessed through portable devices	This category applies to digitised content, such as textbook materials, as well as newer forms of content in the form of software applications and audio/video materials, for example.	30%	US$17.4 Bn.
Game or simulation-based learning tools	These applications integrate a digital curriculum with augmented or virtual reality-based environments, helping students understand and learn in exciting ways. They also apply to vocational courses, enabling a workman, for example, to learn to fix appliances through simulations.	37%	US$13.3 Bn.
Collaboration tools	Networking platforms allow users to generate content and share and discuss it with a larger group. Collaboration tools are often embedded within Learning Management Systems (LMS) and help educators and learners to keep in touch with colleagues.	40%	US$2.8 Bn.
Test preparation support	Preparation for standard tests (e.g. SAT, GRE, GMAT) can be delivered digitally in place of traditional study groups and practice tests. Candidates can also compare their performance with thousands of others.	28%	US$1.0 Bn.
Distance tutoring and homework support	Many developed Asian countries, such as Japan and South Korea, demand extensive supplementary education support outside the classroom. This is not insubstantial and accounts for almost 10% of the total spend on education.	30%	US$1.8 Bn.
Learning management systems (LMS) and authoring tools	LMS are used by educators to manage content and lesson plans and also to customize them using built-in authoring tools.	10%	US$1.2 Bn.
Adaptive assessment services	Educators can now assess students' understanding in real-time to track class progress and tailor instruction for students requiring remedial support.	25%	US$0.4 Bn.
TOTAL		31%	US$ 37.9 Bn.

SOURCE: Transforming learning through mEducation, McKinsey & Co and GSMA (2012)

Commercialisation opportunities within each of the categories above involve some level of customisation in relation to the educational system and the grade-level of students being taught:

■ Educational system considerations are determined by country and user-location factors, such as prevailing policies, curriculum design, public- or private-sector funding models etc.

■ Grade-level considerations are important for the reason that an mEducation service designed for learners in compulsory education, for example, will not be completely suitable for the tertiary- or corporate –education markets.

From a geographic perspective, North America represents the largest individual region with a revenue opportunity of USD 15 billion equating to almost 40% of the global market in 2020, followed by Asia Pacific at USD 12 billion. However, the emerging market regions, while smaller in absolute terms, are projected to grow much faster with compound annual rates of 50% and above. This is illustrated by Figure 6, which shows the distribution and projected compound annual growth rates of mEducation revenues by region.

Figure 6: Distribution of mEducation market opportunity by geography by 2020
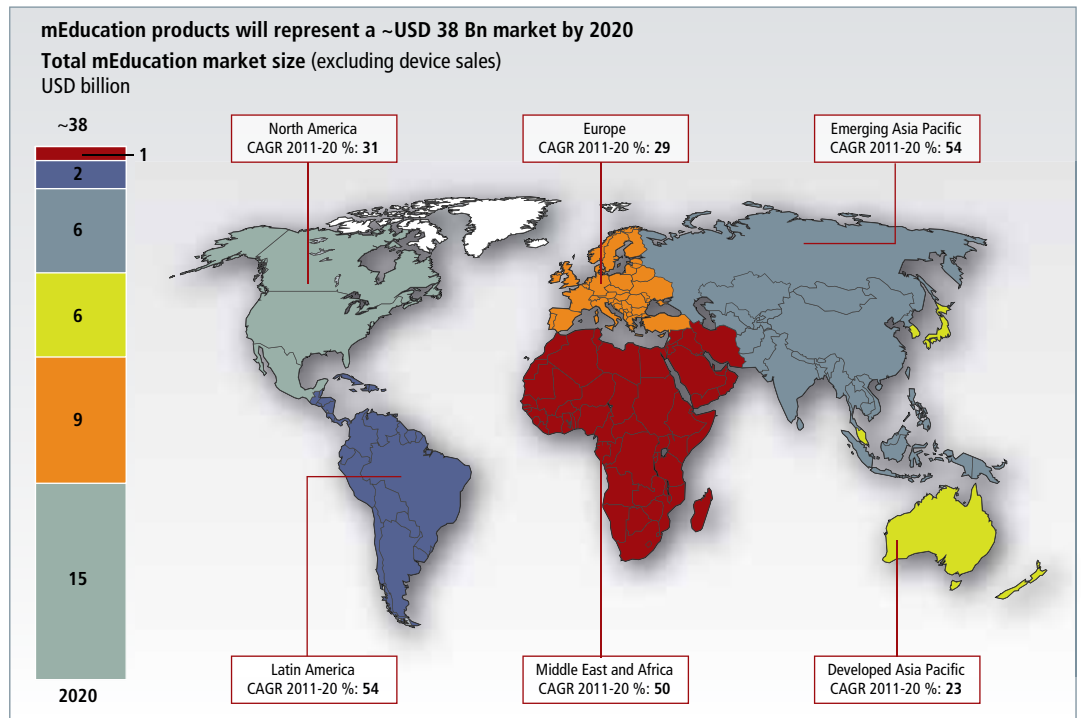
SOURCE: Transforming learning through mEducation, McKinsey & Co and GSMA (2012)

Across the different segments, K-12 (primary and secondary schooling, amounting to roughly USD 13 billion) and higher education (about USD 16 billion) represent the two biggest revenue opportunities in mEducation. The distribution across student categories and regions is illustrated in Figure 7.

Figure 7: Distribution of mEducation opportunity by educational segment and geography by 2020

In line with their share of overall spend, K-12 and higher education will be the biggest opportunity segments across the regions

2020 Market by education segment
Percent, USD billion

Legend: Pre Primary | Higher education | Corporate | K12 | Vocational

Region	K12	Higher education	Vocational	Corporate	
Emerging Asia – Pacific	1 / 45	39	6	10	6
Developed Asia – Pacific	0 / 37	43	7	14	6-7
Middle East and Africa	1 / 40	41	6	12	~1
North America	1 / 27	46	12	14	~15
Latin America	1 / 47	30	10	12	~2
Europe	1 / 36	40	4	19	8-9

~0.3   ~13   ~16   ~3   5-6

SOURCE: Transforming learning through mEducation, McKinsey & Co and GSMA (2012)

Of the two large segments, McKinsey estimates that the higher education market will be more promising than K-12. This is because the share of spend that is addressable by technology – 15% of the all expenditures within higher education - is greater than the 10% in the K-12 segment. There appears to be less potential in targeting technology expenditure budgets in the pre-school segment, where teacher salaries account for 85% to 90% of the total spend.

McKinsey projects a corporate and vocational training opportunity of almost USD 9 billion by 2020, which represents about 25% of the overall mEducation market. There is a sizeable opportunity for content which accounts for 15% to 20% of the total spend on corporate learning.

Service providers use market projections, such as those outlined above, to make market entry and service offering decisions. These decisions are also heavily influenced by local market factors, business challenges, individual company strategies and new market needs. The decisions that organisations are currently making are reflected in the views of the interviewees that contributed to this business models study.

4.2 User expectations are fuelling market demand

The interviewees for this study were generally positive about the market for mEducation services. This is reflected in an observation from Tom Hall, Head of Future Technologies & Partnerships at Pearson, that "there is a general acceptance that mobile will be the way of learning in the future and this approach gives many more options to teachers".

Travis Allen, the founder and CEO of iSchool Initiative, a student-led non-profit organisation in the USA mEducation market, said that, in his experience, many leaders in education understand the need for mEducation and are very receptive to the concept. However, iSchool Initiative works primarily with parents and students on the basis that adoption of mEducation services is more likely to occur if there is a strong demand-pull.

Joseph Noble, Head of Channels and Partnerships at Oxford University Press (OUP), also noted that market pull is growing due to the changing expectations of users and a younger generation of teachers, who have grown up with mobile technologies, becoming more influential in mediating educational content. He also pointed out that the promotion of 'digital technology and solution' policies by governments is a significant driver of demand. However, these mandates are occasionally motivated by short-term political cycles, which can reduce the likelihood of well-considered deployments.

Underlying these general sentiments, other observations were made about specific market segments. Reinforcing the high, emerging-market growth rates projected by McKinsey, Pearson has experienced strong growth in demand for both print and digital education products, notably on the part of the governments, in Africa, Brazil, India and China.

The interviewees expressed a few provisos about some of the individual solutions and services listed in Figure 4. Within the eBook category, there appears to be a short-term opportunity to digitise existing texts. However, as Andrew Lowinger, the CEO of COPIA, a digital content platform provider, pointed out "digital text books will not remain the same as they are now; eventually, they will be compilations, especially as electronic aggregation is relatively straightforward".

The text book conversion argument also applies to eCourses. Geoff Stead, Head of Innovation at Tribal Group, a provider of education technology products and services, noted that the business of "converting eLearning courses to mLearning is almost a waste of time because it is very important to re-think the mobile learning experience – shorter chunks, stop/start use, navigation and (built-in) assessment tools".

4.3 New opportunities arising from market disruptors

The transition from print to digital is a strategic market disruptor. This is partly because of the perception that end-user costs for digital content are insignificant. However, in moving from print to digital there are significant up-front costs both for users and publishers.

Joseph Noble of OUP made the point that end-user costs may be masked by government funding. In the case of higher education institutions, especially those offering a premium service, technology is considered to enhance the learning experience and its costs may be absorbed by the educational institution. From the publisher perspective, he also noted that although commodity costs for paper are eliminated there are additional cost burdens in the form of staff and systems. As the market matures and these costs become visible, there may emerge a new market segment of low-cost specialists in digital content creation.

The availability of 'free' content, such as the courses available from the Khan Academy[5], is an issue of concern among publishers. To some extent, this type of threat can be mitigated by customisation. Mark McGinn, Head of O2 Learn, an education content and platform provider, noted that content designed for US students would not necessarily meet the learning needs of students in England. As such, there is a need for different sets of tutoring materials, each one aligned with the student's local syllabus.

Tom Hayton from the Oxford University Press (OUP) highlighted the strong brand recognition of OUP, built up over a hundred years, while its content is often formally integrated into student curricula. This combination of factors acts as a differentiator and also contributes to the intrinsic value of its content. Nevertheless, OUP has been investing in digital capabilities to adapt to the changing market landscape.

Free content raises some interesting questions for students, but also opportunities for new market entry. For example, what is the incentive for a student to follow a free course to its conclusion and how do students test their mastery of the content? The value of free content can be increased by integrating it with assessment tools and games to motivate students to complete the course. There is also an opportunity to provide online tutoring support to students in one country using experienced tutors based in lower cost countries.

A different perspective on free content was provided by Karen Cator of the US Department of Education who highlighted the need for students to articulate their skills and abilities in order to apply for a job – "If you can learn from many places and for free, how does a potential employer validate your credentials?" This appears to be an area ripe for innovation in terms of "trusted, high-end assessments" and "conducting assessments to provide recognizable credentials". On this topic, Martin Restrepo, the founder of Editacuja, a trans-media publisher specialising in mobile education services, drew attention to emerging developments, such as open badges[6] and creative currencies[7]. These tools offer new ways to evaluate learning progress. They can also encourage learner engagement and facilitate recognition of skills and achievements that occur online or out of school.

5   www.khanacademy.org - The Khan Academy is a not-for-profit with the goal of changing education for the better by providing a free world-class education for anyone, anywhere.

6   http://www.openbadges.org/en-US/about.html Mozilla's Open Badges project aims to help learners get recognition for skills and achievements gained outside of school by making it easy for any organization
      or learning community to issue, earn and display badges across the web.

7   Creative currencies can be viewed as a form of qualitative money, tagged to educational, artistic, cultural, technological, environmental and civic initiatives

4.4 Demand for "joined-up" solutions and platforms

The tight integration of different elements from the range of mEducation products and services shown in Figure 4 was a recurring theme in several interviews. Tom Hall of Pearson pointed out that "in the mobile learning world, the real opportunities lie in combining services and delivering them over a device direct to students, for a personalised, one-on-one learning experience".

Joseph Noble (OUP) commented that "the market is generally moving towards offering a full service and not just digital content. The service wrapper includes items such as teacher training and syllabus structuring advice. In addition to these, OUP is itself addressing the market for test preparation services". However, interviewees cautioned that end-user's needs should determine the extent to which different elements of the service are joined-up. Institutional buyers are also seeking support for deployment, training and support activities.

To meet the needs for integrated solutions, several companies see an opportunity in the market for mEducation platforms as summarised in Table 1:

Table 1: Platform initiatives of research participants

Organisation	Market Role	Platform-related Observations
Bharti Airtel	Mobile operator	Working with a technology partner.
COPIA	Collaborative, digital content platform company	Developed own platform to be content agnostic and with a social layer for collaboration and group interaction.
Editacuja	Trans-media publisher specialising in mobile education services	Aiming to facilitate co-creation and collaboration. Platform to be launched at Futurecom 2012.
Oxford University Press (OUP)	Publisher	Investing resources in digital learning platform capabilities.
Pearson	Publisher	Pearson's strategy is to provide a technology platform for other organisations to use in their service offerings.
SFR	Fixed & mobile operator	Working with a technology partner.
Telecom Italia	Fixed & mobile operator	Platform approach, focusing on collaboration for cross-class/school use.
Telefónica Learning Services (TLS)	Education service provider	Platform is an LMS with add-on capabilities including: authoring tools; a live learning tool; certification capabilities; a community function; a function to create one's own social network.
Tribal Group	Education technology products and service provider	Tribal provides an interface for eLearning platforms to add mobile capabilities. Currently re-architecting platform to shorten development cycles.
O2 Learn (Telefónica)	Education service provider	Open platform for teachers to upload content in a knowledge repository for students to access.

SOURCE: Company interviews (2012)

In addition to enabling the underlying workflow that mimics the classroom learning experience, platforms need to support new functions such as collaboration and social interaction. For example, some students may wish to read a text and simultaneously share their experiences. They should, therefore, be able to set up groups for the purpose of annotation, as well as digital note taking and sharing using the capabilities of the underlying LMS.

Giovanna Chiozzi of TILab, the lab for innovation of Telecom Italia (TI), said that Telecom Italia does not see itself creating content, so her group's approach is to create a core proposition based on a framework of web applications. With a platform approach, TI can focus on enabling collaborative learning, integration with multimedia, student content generation and interactivity with digital whiteboards.

Martin Restrepo (Editacuja) spoke of how platform tools need to turn non-developers into developers of content; these may be teachers in the traditional sense, but could also include farmers and service technicians, for example.

Clearly, platforms and other commercial service concepts that are launched in the market need to be viable. Karen Cator (U.S. Department of Education) described one framework for assessing the viability of a service in terms of the following three elements:

■   How has the service been designed in relation to evidence of beneficial learning outcomes?

■   How has the design been implemented in conforming to actual classroom experiences?

■   What is the scope for continuous improvement?

Mohit Beotra, Head of Emerging Business at Bharti Airtel, in India, echoed the importance of replicating the classroom experience. He also drew attention to the issue of designing for the mass-market and for scale. With its existing base of about 180 million mobile customers, Bharti estimates that it needs to plan for a potential mEducation customer base of around 5 million. This estimate is based on the number of Bharti Airtel's customers in the 16-30 age range who lack access to formal education. It is useful to factor this type of projection into business and operational planning activities.

4.5 Partnering is central to new business models

From a publisher standpoint, there are challenges in licensing content to an education service provider on an arm's length basis. These challenges include loss of control over how that content is used, whether quality standards are adequate and how the publisher's brand is affected.

Tom Hayton (OUP) noted that partnering, by contrast, offers publishers a degree of editorial and pedagogical influence, while spreading the challenge of innovation across the value chain. The operators we interviewed acknowledged that partnering can help gain expertise and education brand credibility.

The sustainable delivery of mEducation services requires several business, education and technology disciplines to be combined. This calls for cross-discipline dialogue and a degree of partnering in operational ventures. In the view of Geoff Stead (Tribal Group), much of the expertise to achieve this exists, but in isolated pockets; what appears to be lacking is a greater level of collaboration across the ecosystem of academics (pedagogical knowhow), technologists (flow of funding and tools) and practitioners (organisations involved in the physical and practical challenges of delivering mEducation).

In our view, local instructional designers are also a key constituency for collaboration. These designers provide a perspective on local context and customs, as well as content and how that content is intended to be used by educators and learners.

4.6 The role and value of mobile

While many of the changes in education seem to relate to the shift from paper to digital media, the role of mobile technology should not be understated. Geoff Stead's experience at Tribal Group is that the use case for mEducation is often defined by the flexibility it gives people who do not have full control over their schedules to set aside a time for learning. Andrew Lowinger (COPIA) adds that it is "the piece-part compilation possibility that makes reading and education so amenable to mobile. It allows users to 'snack on information'".

In emerging markets, the value of mobile is more about reach, such as the ability to extend learning beyond the confines of a classroom. Steve Vosloo of the UNESCO Mobile Learning programme spoke of the opportunity for mEducation to fill gaps in education delivery to underserved populations and to supplement public education efforts.

Steve Vosloo described an upcoming pilot in Pakistan that will allow teachers in remote locations to receive content via mobile networks and to use this content in their lesson plans. The pilot is being designed to allow peer interaction whereby teachers can capture local video (e.g. learning activities and the reaction of children) and share this video material. This type of sharing is important because the user base is dispersed and served by isolated teachers who usually only have textbook materials. Mobile connectivity enables the supply of interactive and multimedia content in environments that have no broadband / ADSL networks.

Although mEducation initiatives tend to focus on the potential of mobile data services, Tom Hall of Pearson highlighted the continuing role of voice services in enabling tutoring with another person.

Mobile operators can play several different roles and provide various sources of value. Carolina Jeux of Telefónica Learning Services (TLS) explained the importance of Telefónica's business status when dealing with large organisations, such as the Ministry of Education, in a particular country. She emphasised how a mobile operator can be a strong business partner; it can also operate as a prime contractor, working with partners, even if it does not possess all the skills for a particular assignment itself.

Describing a turnkey solution for primary schools in France, Laurent Charon of SFR commented that "as operators, we are among the few companies that can bring such a service to market".

4.7 Policy matters

There is an uneven and inconsistent approach to the presence of mobile devices in schools. For the most part, several interviewers commented that students are not permitted to bring and use phones in school because they are perceived to be a source of distraction and disruption. At the same time, some administrators acknowledge the positive role that mobile devices have to play in education, whereas others do not.

The advent of the modern tablet is transforming the attitude to mobile technologies in schools in many countries and school districts. It seems easier for educators, managers and policymakers to recognise tablets as digital learning technologies and not be distracted by pre-conceived ideas they have about mobile phones.

Susi Steigler-Peters of Telstra described how attitudes have been transformed in Australia as a result of the government's 2008 Digital Education Revolution[8] initiative. This was an AU$1.1 billion plan to equip students in the 9-12 year age range with better ICT facilities including laptop, desktop and thin client computers. Susi Steigler-Peters said the programme has transformed learning pedagogies in Australia. It has also established higher expectations on the parts of students, parents and teachers about the application of technology in education. Attitudes to mobile technologies within schools have also changed to the point where there is now widespread acceptance within Australia that enabling students to access mobile devices is indeed valuable.

Part of the challenge in introducing mobile products and services is to encourage the right patterns of use in school, focused on mEducation. Karen Cator (U.S. Department of Education) observed that "When it comes to cell phones it is important to remember that these are very personal devices and their usage patterns are also very different. Some students use them for information gathering and research whereas others use them mostly for communications, to chat and to keep in touch. One of the roles of government is to ensure that all children are educated about the research and information finding abilities of mobile phones".

The safe-use of mobile phones by children and vulnerable others is an equally important policy issue, which is discussed in a GSMA publication[9]. Mobile operators and the GSMA have a number of initiatives[10] designed to address this issue, as well as partnering with wider stakeholders to address these concerns collaboratively.

Laurent Charon of SFR pointed out that if existing policy, which is determined at the national level in the case of France, is revised then the equipment cost burden to schools and government could be lowered through parent-funded devices – mirroring the bring your own device (BYOD) phenomenon that has taken hold in the corporate world. There is, however, a risk that configuration and device management issues will default to school IT and teaching staff, which is both unsustainable and unhelpful in fostering teacher enthusiasm for mEducation.

This point was also raised by Joseph Noble (OUP) who explained that the market is grappling with the question of whether the way forward is BYOD or institutional investment. If institutions take the lead, there are practical considerations about how to wire up a school. There will also be a need for middleware and an explicit question of finance models for device purchase, leasing, insurance, security services, maintenance, repair and connectivity. As essential parts of the overall solution, these elements have significant value.

Both Laurent Charon (SFR) and Karen Cator (U.S. Department of Education) raised an important reservation about BYOD: If some schools or children cannot afford to acquire mobile learning devices, there is a potential for unequal outcomes. This is an area where policy makers need to remain vigilant. They can also learn from institutions such as UK colleges that have implemented BYOD initiatives where equipment is loaned by college libraries and learning resource centers to students who do not have their own mobile devices.

8   www.digitaleducationrevolution.gov.au
9   GSMA: Safeguarding security and privacy in mobile education, April 2012, http://www.gsma.com/connectedliving/?p=485
10 For more information, please visit: http://www.gsma.com/publicpolicy/myouth/

5. Practical mEducation Business Models

This chapter begins with a description of the high level business models that characterise the diverse strategies that businesses are using to target the mEducation market. The chapter then leads into a discussion about the relative merits of different approaches, their influence on an organisation's choices and the role played by internal business case processes.

This is then followed by practical applications, which illustrate how different companies are optimising the operational elements of their business model. These include three case examples of services that are either operational or in the process of being commercialised by mobile operators.

5.1 Generic business model frameworks

Several issues can drive an organisation to implement a new business model. A new service opportunity may spur market entry. Or, operational changes may be needed to satisfy new requirements from an organisation's existing customer base. It may also be a defensive move if an existing business model is found to be vulnerable to competition or disruption.

Two key factors define an organisation's particular choice of business model:

◼ the type of customer being served

◼ the mEducation service delivery role that an organisation seeks

The spectrum of possible models is illustrated below.

Table 2: Alternative business model approaches

	Basic	Multi-party
Consumer Oriented	B2C	**Variations of B2B2X**
Business Oriented (or other institutional customers)	B2B	

◼ The range of business model alternatives encompasses business-to-consumer **(B2C)** and business-to-business **(B2B)** models. It also extends to hybrid approaches involving multiple organisations in a business-to-business-to-end user **(B2B2X)** type of arrangement. Here, the end-user 'X' may be a government agency, a business entity or a mass-market consumer.

Our research for this study revealed five types of business model:

- Business-to-business **(B2B)**

- Business-to-Consumer **(B2C)**

- Business-to-business-to end-user **(B2B2X)** involving multiple parties in supplying mEducation services to an end-user. Three variations on this theme are presented – the subcontractor model, the partnership model and the intermediary model.

The convention used to depict these different models in the illustrations below shows a business supplier, for example, in a grey box. The customer, which may be a business, government or consumer, is shown in a separate, orange-coloured box. The commercial interaction between the two involves the supply of mEducation products or services in exchange for usage fees.

The first framework we address entails a **B2B** approach. This involves the supply of an mEducation service to an enterprise customer. An example usage scenario might involve an employee training service. The supplying

B2B B → B

company in this case provides a complete learning service i.e. digital content that is aligned with the learning curriculum and inclusive of progress monitoring, tutoring and test support functions. The service is complemented by professional support services including design and project management for the deployment phase. It also includes staple communications offerings, such as connected devices, data access plans and device management. All of these are needed to disseminate learning materials and to facilitate educator-student interaction.

This type of business model is implemented by education service providers that use an LMS type of platform to organise learning materials and manage the pedagogical process flow. These providers may also produce the learning content internally or source it from external providers. Telefónica Learning Services is an example of a telecommunications provider that created a business unit to address this market opportunity.

The **B2C** business model is similar to the **B2B** approach in delivering a complete mEducation service except that this scenario involves a consumer as the buyer and user of the service.

B2C B → C

Whereas the **B2B** approach involves a few buyers (i.e. enterprises) each of which may have hundreds or thousands of employee users, the consumer approach is characterised by many individual buyers who are also the users. The implication is that while the issue of scale for the user base is similar in both scenarios, the **B2C** marketing challenge is to appeal to a sufficiently wide audience in order to attract an adequate number of paying customers to justify the business case.

The design of the mEducation service is another challenging facet of this business model. It depends on a curriculum that is sufficiently broad that it addresses the needs of many different types of user, as the complexity and cost of individualised customisation could easily undermine the business case.

The first of the three **B2B2X** business models has a provider of devices and services supplying a second business entity on an arm's length basis. The second business entity is the one to create and supply an mEducation service to an end-user. The separation between the two business suppliers in this model is designated with the label **B|B2X**.
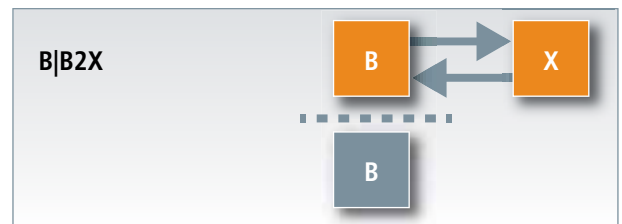
This subcontractor model is a common entry point for mobile operators who can supply connected devices, voice- and data-plans and application hosting services through their enterprise sales channels. The appeal of the education sector in this respect is as an incremental market vertical where a mobile operator's staple offerings can be marketed with no major, additional product development or capital investment costs.

For the first supplier in this service delivery chain, an important consideration with this business model is one of limited visibility to the eventual user. This means that there is less leverage to capture a share of the additional sources of value from an mEducation service.

A company that provides a component of an overall mEducation service can enhance its commercial prospects by progressing to a higher-value role in the service delivery chain. This is shown in the accompanying **B2B2X** model. Under

this partnership model, the company supplying an element of the service is more tightly integrated in the mEducation service delivery process compared to the subcontractor model, but not to the extent that it has a direct relationship with the end-user.
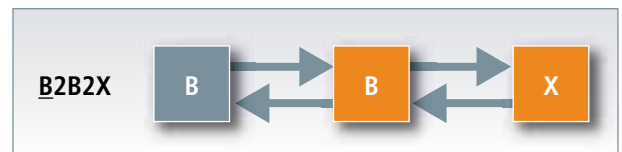
An example usage scenario might involve a 'white label' content management platform or an LMS platform provider. Either platform might be configured by an intermediary business entity to address the needs of a student population from an enterprise or university institution.

The customisation aspect of this offering provides scope for additional revenues to be captured in the form of design, implementation and IT integration activities. It can also create switching barriers for all parties in the service delivery chain.

The next stage of evolution in the multi-provider service delivery chain involves the supplier having a direct commercial relationship with the end-user while also functioning as an mEducation service integrator. This is represented as a **B2B2X** business model.
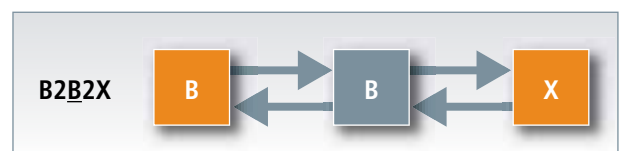
This intermediary model is comparable to the **B2B** and **B2C** models in terms of the service experienced by the end-user. However, for the user-facing service provider the simple **B2B** and **B2C** models rely on a high degree of internal capabilities and resources. In contrast, the multi-provider platform model relies on one or more suppliers to complement the service provider's internal capabilities. If this approach is successfully implemented, it can result in a shorter time to market and a less onerous capital investment profile because the necessary platforms and resources are obtained from external suppliers.

A mobile operator could adopt the role of the 'middle-B' by bringing together the elements of an mEducation service (e.g. digital content, LMS, connected devices, data access etc.) and by coordinating the efforts of other suppliers. As the user-facing entity, the mobile operator would be responsible for marketing, deploying and operationally supporting the service including the handling of payments.

Alternatively, the mobile operator could provide a platform for sharing educational content. Content would be uploaded by other businesses e.g. independent educators and accessed by student users. The value being provided is an open platform which supports simple and intuitive processes to create, upload and advertise educational content. The value to end-users is a curated body of content that is easily searched for relevant educational materials. In addition to managing the communications between providers and end-users, the platform can also serve to report on usage information and to process payments from users to content providers.

This sequence of business models within the broad **B2B2X** category illustrates how a business can progress from being a distant participant in delivering an mEducation service to occupying a much more central role. This progression involves many challenges not the least of which is mastering a new set of knowledge and operational capabilities.

5.2 Choosing a business model framework to adopt

Each of the business models described above has its own merits and applicability in different service situations. Table 3 provides a comparative assessment of the different approaches. It uses five key parameters from the perspective of a supplier of products and services using the business model convention outlined in the preceding section. The five parameters are:

- Applicability of the business model as determined by key characteristics of the addressable mEducation market

- Competitive positioning for each approach

- Drivers of profitability in terms of individual business model elements

- Degree of influence over the quality of the end-user's experience

- Degree of fit for an organisation that strategically commits to mEducation.

Table 3: Comparative assessment of alternative business models

Model	Addressable mEducation Market Characteristics	Competitive Positioning	Profitability Drivers	Influence over End-User Experience	Fit with mEducation Strategy
B2B	Large and institutional clients (e.g. enterprise, Ministries of Education, school districts etc.). Smaller enterprises with common mEducation service needs.	Strong position because service offering is customised to user needs. However, the scope of this approach may be constrained by the investment required to build resources internally.	Value pricing. Cost effective systems integration of IT and education processes. Effective change management processes to foster service adoption.	High	Suitable model for companies that are explicitly targeting institutional mEducation. May need to evolve to B2B2X to deliver more complex and social network types of mEducation services.
B2C	Mass-market consumers wanting to improve own education and skills. Parents and students seeking to augment in-school learning. Application user experience and pricing expectations are strongly influenced by app store standards.	Strong position if the service offering is customised to user learning needs and incorporates incentives e.g. gaming to sustain usage. Potential risk from weak service designs due to the size and diversity of the consumer base.	Value pricing conditioned by user affordability factors. Scalable architecture to lower per-student costs. mEducation curriculum design and production costs. Number of courses for different student types.	Medium to High	Suitable model for companies that are explicitly targeting consumer mEducation. May need to evolve to B2B2X to deliver more complex mEducation services or to integrate with institutional mEducation services (i.e. in- and out-of-school courses).
B|B2X Subcontractor Model	Involves selling to education service providers that are integrating solution components into a mEducation service.	Weak position as supplier may be substituted.	Limited scope for value pricing. Sales and operational support costs for basic products and services.	Low to None	Aligns more closely with an enterprise sales strategy with education as an incremental market segment.
B2B2X Partnership Model	Involves selling to education service providers that are integrating solution components into an mEducation service.	Moderate strength of position due to some level of integration with the mEducation service.	Design simplicity to minimise integration and support costs.	Low to Medium	Suitable entry-point into mEducation market, but limited exposure to end-users.
B2B2X Intermediary Model	Enterprise and government institutional clients. Mass-market (parents, students).	Strong position because service offering is customised to user needs.	Value pricing. Scalability of architecture to balance revenues and costs. Sourcing and co-ordination of service delivery chain (design, integration, operations, user-adoption etc.)	High	Fully aligned with an mEducation strategy that prioritizes clear visibility to end-users.

SOURCE: Ventura Team analysis (2012)

There is no single winning business model amongst the alternatives presented above. This is because each model is suited to different market conditions; commercial success is a result of how the business model elements are matched to specific market conditions and customer-needs.

Consider the example of Telefónica, which was a very early entrant in the mEducation sector when it launched Telefónica Learning Services (TLS) unit in 2000. This business originally aimed to serve consumers directly, through a B2C model. Within a year, it became apparent that the strategy was commercially unsustainable. The unit's focus was consequently re-directed to institutional clients, such as government administrations and corporations using a B2B approach. Early investments in a learning platform were made in partnership with other technology providers. Over time, TLS took overall responsibility for the platform and continued to invest in enhancing its functionality, reinforcing its B2B position.

Some 10 years after its launch, TLS has started to add direct-to-consumer user applications to its portfolio of services as it tests new opportunities in the B2C market. This evolution is a measure of how successful mobile has become as a technology platform. Arguably, TLS is responding to emerging consumer sector opportunities that have been created by the extensive consumer reach and mass-market affordability of mobile technology. Furthermore, newer mobile technologies and wider adoption of feature phones and smartphones have made it easier to deliver mEducation services directly to individuals.

TLS's example is instructive because its early transformation, from B2C to B2B, shows that its business model had to evolve in tandem with prevailing market conditions. TLS also demonstrates that as organisations grow and as new opportunities arise then several different business model approaches can co-exist within a single corporate structure. This is especially the case if a business finds a way to re-purpose existing assets and capabilities as promising new customer segments are identified.

Compared to the era when TLS was launched, the range of possible mEducation services is much more varied today. Current generation tools and technologies make it possible to deliver comprehensive mEducation services that address multiple aspects of the pedagogical process and seamlessly integrate IT and mobile technologies. It would be challenging for any one organisation to master all of the expertise required to design and deliver such integrated mEducation services. For these reasons, present day business models are more likely to favour B2B2X approaches over B2B and B2C arrangements. The multi-party approach can shorten the time to launch a service. It can also limit the need for short-term capital investments since different suppliers contribute assets and expertise that they already possess. The initial period of operations for a B2B2X model also provides organisations with a window of opportunity to assess whether there is a strategic advantage to pursue a buy-out or partner acquisition.

One final factor that influences an organisation's choice of business model is the strategic business case framework that is used in internal planning and decision making.

5.3 Justifying the mEducation business case

The business case for a commercial project is generally quantified in terms of the net present value (NPV) of its cost and revenue streams over a meaningful time interval. In the interviews for this study, participants did not discuss their business cases for reasons of confidentiality. We did, however, infer three sets of guiding principles from the initiatives that were discussed:

- **Strategic imperative -** the business case is a by-product of a strategic decision to develop and market an mEducation product or service; typically, this applies to organizations that see their existing business models being threatened. In this scenario, the goal is to re-engineer the organization's value proposition and then to implement a service delivery model that results in a positive NPV outcome.

  For education sector businesses, mEducation offers the possibility of direct access to educators and students, a new means of distributing educational materials and new service opportunities employing collaboration and interaction techniques. An existing B2B business model may, therefore, need to adjust to the different economics of digital formats, as well as embracing a symbiotic B2B2C model, for example.

- **Incremental product or service -** in this scenario, a new mEducation offering is derived from existing assets, such as those that might be used by other parts of the business. This ensures that the new venture is not burdened with a significant set-up cost. However, such set-up costs may be justified in the case of large-scale product or service opportunities.

  Examples of existing mobile operator assets that may be offered in the education sector are mobile phones, tablet devices, remote device management platforms and cloud computing infrastructure. These would be supplied to education sector service providers via a B2B2X model. The practical implementation might take a light-investment form (i.e. additional education sector sales staff) or a more involved approach (e.g. education sector product management staff and technology investments).

- **Customer value measures -** a new service proposition can be justified on the basis that it helps to: retain customers (i.e. reduce churn) by building customer loyalty; or, increase the amount of money a customer spends profitably with the provider (i.e. higher contribution margin). These approaches can be viewed as applying the NPV valuation approach at the level of an individual customer.

  There are several business model implications with this customer-centric strategy. Firstly, the creation of an mEducation service will entail some involvement of education and communications sector businesses in a B2B2C model. For mobile operators, there needs to be an additional investment in mEducation product management and a higher degree of internal coordination across service lines to ensure that the most promising customers are targeted and the mEducation service experience delivers customer satisfaction and longer-term loyalty.

The next section builds on these concepts and describes some of the tactical approaches that companies are employing in implementing new business models.

5.4 Practical approaches to implementing mEducation business models

Earlier in this report, we presented a business model framework that defines the key elements that any business needs to address in designing its approach to serve a market. As a reminder, these nine elements are:

- Value proposition

- Customer segment(s)

- Distribution channel

- Customer relationship

- Key resources, key partners and key activities

- Cost structure

- Revenue streams

Illustrations of how organisations in different parts of the mEducation value chain deal with these business model drivers are described below.

VALUE PROPOSITION DESIGN INSIGHTS

Our interviews for this study revealed that the core of each market offering begins in one of two ways. It is either driven from a customer need (demand-led) or by starting from an asset that may be packaged for the mEducation market (supply-driven).

Examples of demand-led approaches include the following:

- Mohit Beotra (Bharti Airtel) described a promising segment in emerging markets, comprised of self-motivated individuals. These are people who seek to improve their capabilities through the acquisition of new skills, through confidence-building exercises that improve their use of English in a work context, for example, or through test preparation for entrance exams. The value of an mEducation service to them is in enabling learning to take place at a time that suits their work schedules. The informal learning opportunity was also highlighted by Joseph Noble (OUP), who noted, "a growing base of users with smartphones and 3/4G connectivity" at a more general level.

- Giovanna Chiozzi (Telecom Italia) and Carolina Jeux (Telefónica Learning Services) both emphasized that government sector customers, such as the Ministries of Education, are the main agencies of change in the European and South American countries where they operate. Governments in these markets see value in dealing with a large and stable business entity, such as a mobile operator, preferably one that is able to point to a history of serving the education sector. A side benefit of supplying the government sector is that it generally represents a large scale opportunity, which alleviates some of the revenue projection complexities in the business case.

- Laurent Charon (SFR) described how SFR's market assessment studies in France helped to identify a sizeable segment of primary schools with limited access to IT staff as an attractive target. SFR's business model challenge was to design a service to meet the needs of this market. This involved assembling an array of partners with expertise in education, finance and technology.

- Several LMS providers, including TLS and Tribal Group, highlighted opportunities in the corporate sector as professional training evolves to integrate a wider variety of digital content and mobile delivery technologies. In some cases, legacy eLearning platforms are too embedded in existing business processes to be easily or cost-effectively replaced; they do, however, need to be upgraded to accommodate mobile-based educational and learning services, creating an opportunity for consultancy design and mobile integration services.

Several interviewees noted that their initial identification of concepts included some assessment of potential customers' willingness to pay. A common observation was that this is largely virgin territory firstly in terms of quantifying sources of value and secondly in terms of identifying payment transmission paths, especially in multi-provider scenarios.

Supply-side approaches to defining new mEducation product and service concepts typically draw on a variety of tangible and know-how related resources.

Examples of supply-side approaches include the following:

- Yuriko Ishihara (Softbank) described its exclusive distribution agreement in Japan for iPads and how this was leveraged to target the education sector. In particular, the mobile arm of the Softbank Group supplies another wholly-owned subsidiary which is Japan's first so-called Cyber University[11]. This is a virtual educational establishment which offers courses in IT, business and world heritage using 3G mobile and Wi-Fi technologies.

- Other operators described how existing customer relationships involving the provision of Internet access to schools could be used as a stepping stone to prospect for additional sales of managed network and cross-campus connectivity services.

- Several education service providers and mobile operators described shared infrastructure models such as cloud computing, platform-as-a-service (PaaS) and white-label content management systems, which were adapted for the education market. Some of these companies also sell their education sector technology expertise in the form of design and implementation-support professional services.

CUSTOMER SEGMENT TARGETING INSIGHTS

Interviewees described a variety of approaches to targeting key customer segments. At a macro level, large customers are prized because they enable providers to target an opportunity that has scale; this means targeting public sector education institutions and mEducation services for the military, for example.

Large customers are also attractive because they cover average operating costs. This allows a provider to also serve smaller customers, which may only be marginally attractive in commercial terms, but are a source for innovation in product management activities.

In the consumer segment, two contrasting approaches were provided by different operators.

- In the case of SFR, one of its goals is "to help customers in their digital lifestyle". Working back from this implies a strategic imperative to develop solutions for young students and adult learners for whom mEducation stands to become a significant feature of their everyday life.

- Bharti Airtel's focus begins with the premise that "education is a passport to better employability to the point that obtaining a degree is critical for future employment". Bharti Airtel defines its target segment as consumers who are aiming to enter this 'employability zone' i.e. students transitioning from high school to early employment in the 16 to 30 age range.

In the corporate segment, Tribal Group described a market for small companies involved in workplace training and their need to interact with students via mobile devices. These companies are too small to invest in custom solutions and most likely lack the necessary communications and technology expertise. Tribal Group targets this segment with a shared platform solution that delivers 'mobilised' content to users via an app that also provides user feedback information to the trainers.

11 http://www.gsma.com/connectedliving/wp-content/uploads/2012/04/gsmasoftbankcyberuniversitycasestudy.pdf

DISTRIBUTION CHANNEL INSIGHTS

A recurring theme concerned the technical distribution of mEducation content, which has to be configured for use on mobile phones to deliver an effective user experience. Content is typically intended to be consumed in short bursts, requiring content sequencing and search and discovery tools. Content also has to be usable via industry-standard device platforms, such as Android, iOS, Windows etc.

From a business model perspective, an applications store approach can be very effective. Tom Hayton (OUP) noted that Apple's App Store can be very successful for small players that deliver a compelling app. It does not require a huge marketing budget because the app ranking algorithms are considered to identify the best apps. He estimated that while it might take three years to get an app to the top level of ranking in a web search, in the App Store this interval shrinks to about one year.

In the enterprise market, Joseph Noble (OUP) noted that the digital distribution chain needs to be well-developed to sell successfully: "Being digital does not mean that the middle-man can be cut out because companies in this section of the value chain provide valuable training and support services in addition to digital materials".

CUSTOMER RELATIONSHIP INSIGHTS

Companies are still considering how to deal with customer management issues at this early stage in the evolution of the mEducation market. Mohit Beotra explained that Bharti Airtel's long term aim is to have increased customer trust in the company's brand across a range of emerging services, including mEducation. It plans to use the findings from a series of pilots to evaluate customer reaction to its mEducation service and brand.

An innovative approach that appears to be working for iSchool Initiative is to focus its marketing efforts on students and teachers who are not its paying customers. This is because they are key agents of change in persuading the ultimate buyer and iSchool Initiative's target customers - school and institutional administrators - to adopt mEducation solutions.

KEY RESOURCE, KEY PARTNER AND KEY ACTIVITY INSIGHTS

iSchool Initiative's main business model and indirect marketing approach to its customers is illustrated in Figure 8. It shows how marketing and promotional activities are targeted at parents, students and teachers with the aim of inspiring them to adopt digital and mobile education technologies. Local champions then start to engage school administrators and also to pursue grant or other funding sources to trigger the adoption of mEducation products and services.

Figure 8: iSchool Initiative Customer Targeting and Partnering Activities
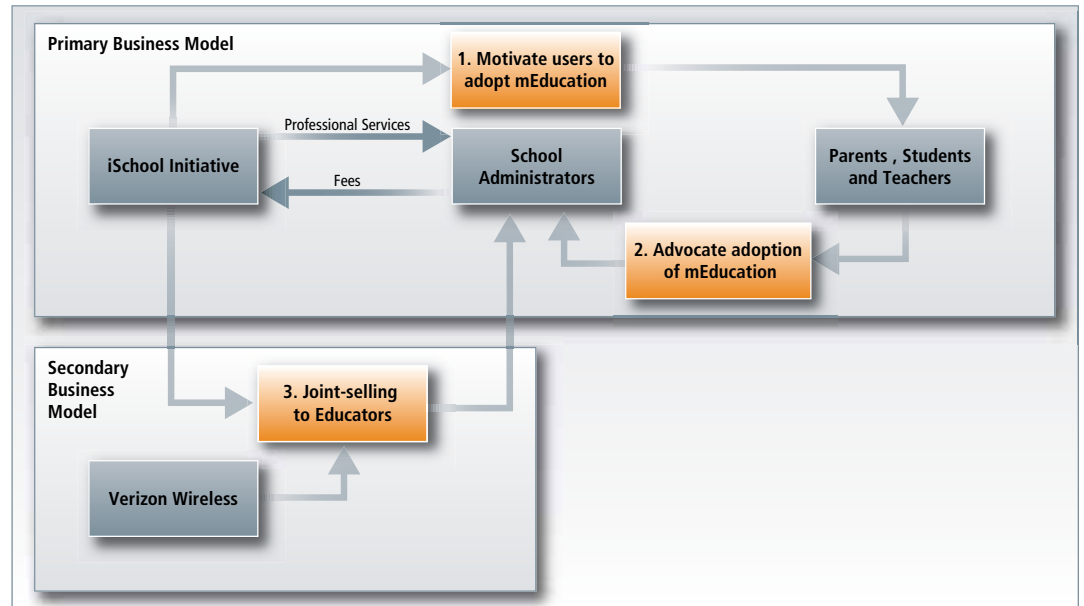
SOURCE: Company interviews (2012)

The success of iSchool Initiative's approach caught the attention of Verizon Wireless and the two companies now collaborate at industry conference and sales events - a second key activity in iSchool Initiative's business model. This approach makes Verizon Wireless' product offerings more accessible and service-oriented to education sector educators and executives and stimulates demand for iSchool Initiative. This collaboration highlights an important lesson concerning sales activities in the education market and the need to express them in terms that resonate with buyers. Carolina Jeux (TLS) noted that "there needs to be some element of the government sector – an ex-employee from human resources or policy departments - and some element that is local when selling to government sector clients in Latin America".

The concept of partnering appears to be a more widespread phenomenon as organisations design their go-to-market strategy. The value in offering a joined-up mEducation service necessitates a partnering business model as illustrated in the case study on SFR, later in this chapter.

Platforms are a key resource as noted by several interviewees earlier in this report. In addition to supporting the usual flow of activities related to an educational service, the platform needs to provide functions that allow the capabilities of mobile to be exploited. The platform also needs to handle new ways of learning which can take place outside the school and also to integrate functions such as collaboration and interaction.

COST STRUCTURE INSIGHTS

Costs have to be kept low by maximizing the intensity with which service-delivery resources are used. This results in a focus on large customer opportunities (e.g. Ministries of Education, district-wide school systems, etc.) or an aggregation of small companies with broadly common requirements. Cloud-computing, PaaS (platform-as-a-service) and SaaS (software-as-a-service) strategies were frequently mentioned by interviewees. Cloud-based solutions also have the benefit of lowering the cost of deployment and the cost-barrier to adoption, assuming any requirements for on-site equipment and installation visits are addressed in ways that are reliable and cost-effective.

Some organizations benefit from one, or two, large anchor clients on an mEducation platform. This allows smaller customers to be served using marginal cost economics.

Where new services are being launched and where there are no historical points of reference, costs may be kept under control using partner resource-sharing and cost-sharing approaches.

A false, yet commonly-held, perception about digital content is that it is much cheaper to produce and should therefore be priced at a much lower level than print content. Print to digital conversion and origination of high-quality digital content can be as expensive as print media, an outcome that many organizations are beginning to discover. Furthermore, while a lot of free and low-cost educational content is available via the Internet, there is a cost to integrating this content into an effective digital course.

REVENUE STREAM INSIGHTS

Revenue models for mEducation services remain fairly basic at this stage of the market's evolution. Subscription strategies based on per-user fees, per-event charges (e.g. for SMS interaction) and data access were commonly cited by the interviewees.

In emerging market countries, however, the number of subscription customers is low and poses a charging challenge. In the case of Brazil, for example, the founder of Editacuja said that his company is trying third party funding models. These could involve a consumer mEducation service being funded by the Ministry of Education or by a corporation seeking to promote its brand. Some corporations see value in supporting education transformation efforts through corporate responsibility funding mechanisms. Editacuja also suggested that wider adoption of providing support for open badges[12] and creative currencies[13] could promote learner engagement and provide new ways to evaluate learning progress.

5.5 Mobile operator case studies

One goal of this research was to find concrete evidence that mobile operators are seeking a greater role in the mEducation value chain and deploying innovative business models. In this section, we consider three examples.

The example of Bharti Airtel, in its home market of India, illustrates a direct-to-consumer (B2C) approach for English language students. To launch this service, Bharti Airtel has brought in a recognised educational institution for its expertise and education-sector brand.

The second example is SFR in France. It illustrates how SFR has identified a promising niche of rural schools, which it is targeting in partnership with four other companies using cloud-computing and SaaS assets. In contrast to the Bharti Airtel example, the SFR example can be classified in the business-to- government institution (B2G) category.

The third example is provided by Tata DOCOMO. This is a hybrid B2B2C model where Tata DOCOMO provides a platform that teachers can use to sell extra-curricular tutoring content to students. In this case, the company is positioned in the middle 'B' of the business model.

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12 http://www.openbadges.org/en-US/about.html Mozilla's Open Badges project aims to help learners get recognition for skills and achievements gained outside of school by making it easy for any organization or learning community to issue, earn and display badges across the web.

13 Creative currencies can be viewed as a form of qualitative money, tagged to educational, artistic, cultural, technological, environmental and civic initiatives

Case Example: Bharti Airtel – Education as a passport to better employability

Bharti Airtel is targeting the education sector as a high-potential, greenfield market. It has created a dedicated team, combining strategy and product management functions. This team has intentionally been separated from Bharti Airtel's core mobility product management unit because of the different product management and roll-out requirements of the mEducation segment.

The initial service concept is an English language self-learning module which is expected to take three months to complete. Bharti Airtel also plans to offer a second, advanced-level three month module. The design of these products adheres to a core philosophy of mirroring the offline (traditional) learning experience to the maximum extent possible. To this end, the product management team actively looks for innovative solutions that can be a part of the product offering.

These include:

■ Speech recognition that enables speaking practice for the learner

■ The opportunity for periodic, scheduled live calls with tutors

■ Mandatory assessments that the student has to clear before being able to access the next level of content

Some of the key features about its overall business model are illustrated in the framework below.
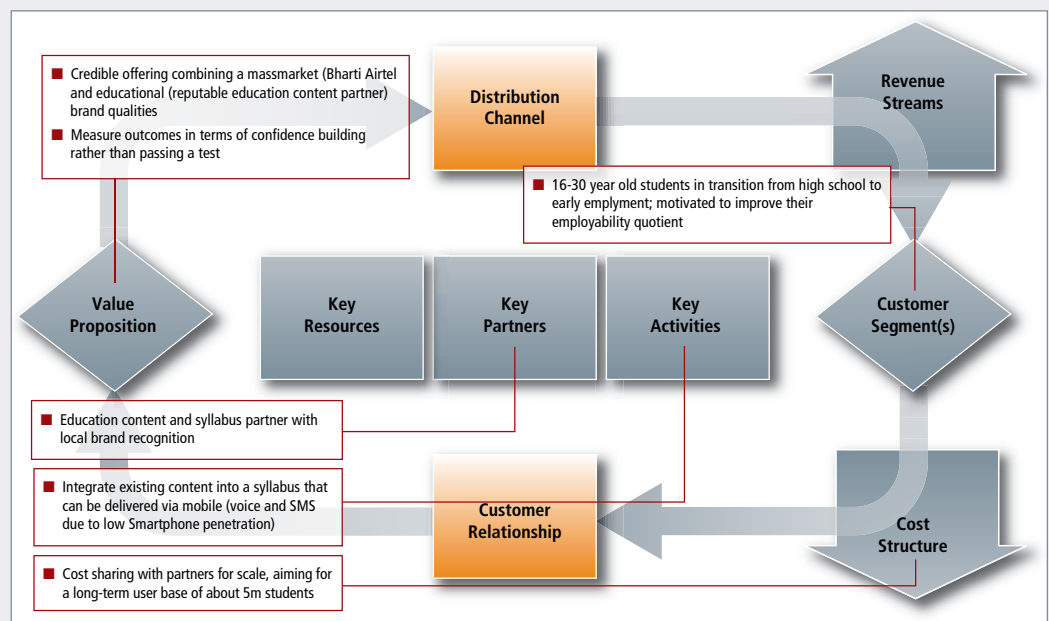
Bharti Airtel is working with partners to launch several education sector initiatives in 2012 across different parts of India. It aims to evaluate and refine its approach to key customer segments, to identify a sub-set of the most promising services and to gain actionable insights into service designs that can scale to about 5 million users.
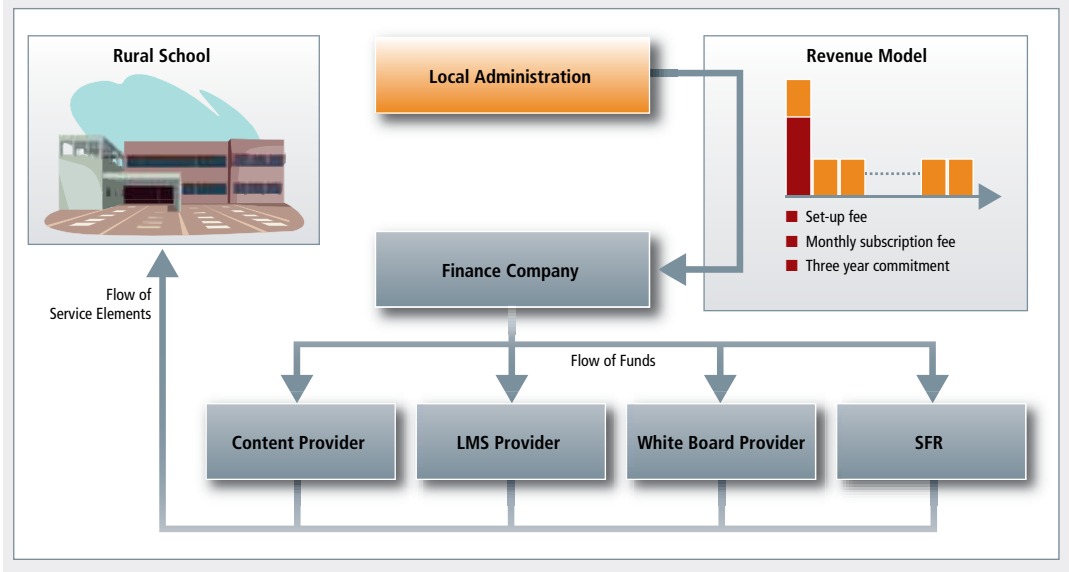
Bharti Airtel believes it has a real chance to make a difference in the education sector and to become a successful player in the new mEducation value chain.

Case Example: SFR's 'e-école pour tous' offering

Following a strategic review of the French educational market, SFR identified an opportunity to provide a turnkey offering designed to appeal to primary schools with minimal IT expertise. The communications service encompasses connectivity, support for learning capabilities, as well as training and maintenance support. Conceptually, this acts as a platform for the delivery of a digital educational experience, the components of which are supplied by other businesses with specific expertise in educational products and services.

The scope of SFR's services includes connectivity, security services and remote device management of PCs or tablets based on the preferred devices of individual schools. The integration of a learning management system (LMS) into the overall proposition is an important step, as it opens the door for students to experience the virtual learning environment. The LMS also permits auditability. In other words, student usage information is recorded and represents a potential new service and revenue stream over the long term.

The proposition is in the early stages of being deployed and is based on a partnering model. In addition to SFR, a content provider, a LMS provider and a supplier of digital whiteboards are collaborating to deliver a 'school-as-a-service' offering; a separate finance provider handles payments from the body responsible for local school administration and disburses this to the other four service providers in the partner ecosystem. The payment framework consists of a three-year commitment of monthly subscription fees, as well as a one-time set-up charge.

Case Example: SFR's 'e-école pour tous' offering - Continued

Provider Role	Company	Comments
Finance	Leasecom	Leasecom provides professional equipment leasing and financial offers to all businesses and is a subsidiary of the group Credit Mutuel Arkéa.
Content	Maxicours.com	Maxicours is an online tutoring company offering assistance to students from kindergarten to high-school. Its content database includes 20,000 courses, 100,000 of exercises, 5,000 videos, as well as animation and podcast files.
LMS	itslearning	Provider of a learning platform for use by learners from 4 to 18+ years of age. Its source code is open to content providers and other third-parties to integrate their applications and tools into the itslearning platform.
White Board	SMART Technologies Inc.	Supplier of interactive whiteboards that provides easy-to-use, integrated solutions to make collaboration and learning with digital resources more natural.
Communications and Technology	SFR	Provider of fixed- and mobile-network communications, as well as enabling capabilities such as security and remote device management services.

The content and LMS provider partners already operate software-as-a-service models. This makes it relatively straightforward to add additional accounts. This also ensures that there is a low cost threshold for schools to acquire the solution.

SFR and its partners will launch the service for the 2012-13 academic year and will use the experience to deepen their understanding of the primary school market and to plot out a road map for the long term. Within its broad target of primary schools, SFR has identified distinct sub-segments – rural schools, urban schools (which are expected to require a less integrated business model) and private schools.

In summary, SFR's identification of a promising market segment depends on creating a packaged solution involving service elements that can only be provided by third parties. The business model, therefore, depends on a tightly-integrated partnering approach. To keep costs low, the solution is designed using a cloud computing approach and the business case is made on the basis of a three-year revenue commitment.

Case Example: Tata DOCOMO – Anytime, Anywhere Learning with 'Tutor on Mobile'

'Tutor on Mobile' (TOM) uses mobile devices to offer educational services in India. Typically, the target audience—those who want to learn and acquire knowledge—are connected with subject experts across the country. The service has been developed by Tata DOCOMO with a technology partner, Voicetap Technologies.

Users can learn from experts by joining in a live conference call, listening to recorded podcasts, viewing videos, using text-based explanations on specific topics and practicing on sample questions and mock tests. Users of TOM can access content through WAP, IVR (Interactive Voice Response, a technology that automates interactions with telephone callers), SMS or Video IVR (3G video call), meaning students can use any phone/platform to access the service and search for learning content (only one in seven users have phones capable of accessing the Internet).

In addition to student users, TOM provides a service to a second category of users—knowledge providers, who create the learning content. The learning content is currently aggregated from over 75 content providers and covers topics ranging from learning to play a guitar, support for formal education applications and even career counseling advice.
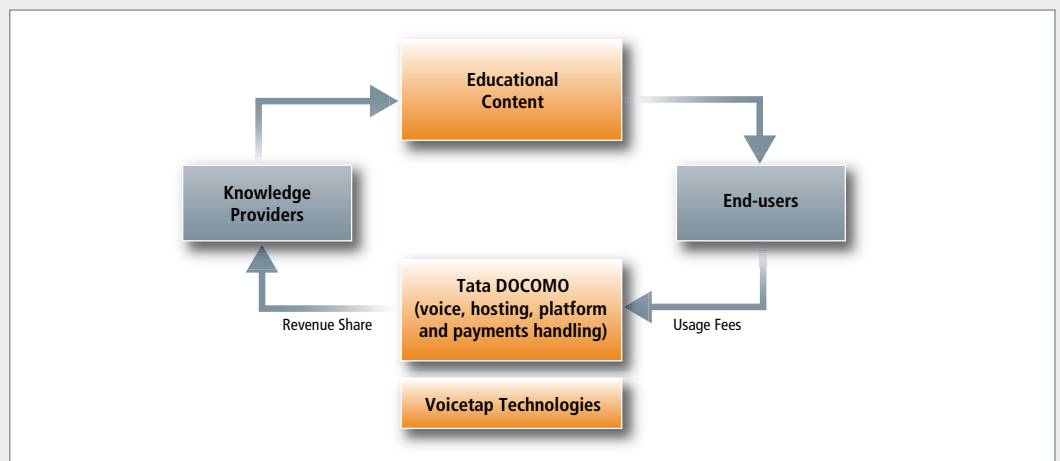
Content items can be purchased individually at a charge of Rs.2-10 (e.g. a video demonstration is Rs.5) or as part of a pack containing several items (e.g. a pack of 30 videos can be sent to the user, one each day, for learning English at a cost of Rs.30).

Since its launch in September 2011, users have accessed more than1.5 million pieces of content in various forms and the service has more than 200,000 active users. To date, the primary users of TOM have been between the ages of 15 years and 24 years. The most frequently accessed areas include career counselling, advice on entry into various job markets, support relating to the All-India Engineering Entrance Exam (AIEEE), in the form of videos which provide guidance for entering the National Institute of Technology and Vedic Maths. There is some seasonality around MBA courses and schools. Other SMS content, such as 'TalkSmart', a service which helps people learn professional vocabulary, has remained popular all year around.

Tata DOCOMO achieved its first-year revenue target for the product in less than five months.

Tata DOCOMO's business model is designed to be self-sustaining. The knowledge provider generates revenue by the use of the service, while learners get to access knowledge for a modest charge. For example, where conferencing is used, the 'expert' conducting the conference receives a percentage of the fee generated. Or when a video is viewed, the originator earns a percentage of the revenue generated.

6.   Conclusions

The conclusions of this study are based on a combination of discussions with different types of organisation from the mEducation sector and build on an earlier market assessment conducted by McKinsey & Co.

The McKinsey study provides a quantitative perspective on the market opportunity. It identified a sizeable global mEducation market valued at USD 70 billion by 2020. About USD 32 billion of this amount is attributable to the sale of hardware and devices, pre-dominantly to corporate and educational institutions; the balance of USD 38 billion is spread across a range of mEducation products and services including eBooks, eCourses, game and simulation-based learning tools, and collaboration tools. In the decade to 2020, the market for mEducation products and services is projected to grow at an annual rate of 31%. This opportunity has not been lost on major corporations with significant commitments having been announced by Apple, AT&T and News Corporation, and Pearson in 2012.

Mobile connectivity enables new ways of learning and collaboration that complement existing educational processes with new capabilities and tools. It frees students from the physical confines and schedules of schools and can introduce collaboration, interactivity and gaming techniques to enhance the learning experience. In emerging markets, mobile also increases the reach of schooling systems, providing greater leverage to scarce teacher resources and facilitating collaboration amongst dispersed teachers and students. Mobile technologies are also valuable as a platform to manage a range of IT issues associated with distributed computer devices. From a commercial angle, mobile operators have the business track record to be valued commercial partners to large organisations, such as the Ministry of Education in a particular country.

In designing mEducation services, our interviewees highlighted the importance of combining different mEducation product and service elements to create a 'joined-up' experience. This arises when learning content is intelligently packaged with any relevant instructions from the teacher, tutorials and, assessment materials.

Platforms and partnering are essential building blocks in delivering a high quality mEducation service.

- Platforms help to automate many aspects of the workflow that underpins the classroom learning experience. Platforms can also capture valuable information to guide an individual's learning progress and manage the IT aspects associated with end-user devices.

- Business partnerships are essential to bring together the education, mobile and IT capabilities necessary to deliver a joined-up and unobtrusive learning experience. Partnerships also enable a wider span of services along the value chain to be factored in the design process. This allows businesses to plan on the basis of a larger revenue opportunity, which may justify a more ambitious investment plan.

As firms get involved in partnering, their existing business models begin to change. We have identified three generic approaches through the course of our interviews:

- ■ B2B approach - In the case of mobile operators, this begins with the sale of basic connectivity services to another education-sector organisation, for example. As mobile operators extend their mEducation role, they may draw in other parts of their own organisation as well as external business partners to deliver a broader set of mEducation products and services.

- ■ B2C approach – In this case, the mobile operator supplies an mEducation service directly to students. While the operator manages the customer relationship it coordinates the input of suppliers for items such as education sector content, design expertise for appropriate pedagogical processes, syllabus branding etc.

- ■ B2B2X approach (the end-user 'X' can be a government-operated school, a corporation or a consumer) – this model represents a more complex value chain over a broader span of activities. Within this generic framework, three alternatives are possible for an organisation supplying mEducation products and services.

  - – In the case of a mobile operator, it may be a supplier (the first 'B') to an education sector business that packages the operator's offer into a broader mEducation service; this is designated as a B|B2X or subcontractor model.

  - – A second possibility is where the mobile operator remains as a supplier to another business, but in a more integrated manner. This corresponds to a B2B2X or partnership model.

  - – The third alternative is where the mobile operator is an intermediary (the middle 'B') and orchestrates the delivery of an mEducation service between one or more suppliers and the end-user. This last alternative is the most complex in terms of the service design, partner sourcing and customer-facing activities, but it also offers the potential for greater customer loyalty and revenue capture.

This report provides evidence of how mobile operators are applying different business models in addressing the mEducation market and the needs of key user segments. Examples include Bharti Airtel (B2C), SFR (B2B) and Tata DOCOMO (B2B2C).

The findings from our interviews indicate that mobile operators and education service providers use a range of business, operational and technological tactics in the way they implement their business models i.e. all B2B models are not implemented in the same way. Some of the key criteria that govern their designs include:

- ■ how they perceive the important characteristics and size of opportunity;

- ■ how their mEducation goals align with corporate strategy;

- ■ and whether they are being driven to respond to competitive threats.

6.1 Key considerations to promote market growth

The business model frameworks and tactics described in this study are intended to foster a more business-oriented dialogue between the education content, education services and mobile sectors about new and commercially-sustainable mEducation services.

Mobile devices, applications and technologies are already becoming mainstream education tools. Mobile operators now have a promising window of opportunity to become active and valued participants in delivering mEducation services and staking out an influential role in the service delivery value chain. However, we believe that mobile operators and the education sector needs to take account of the following factors which govern the context for business model innovation:

■ There is a need to foster additional cross-industry dialogue about mEducation with particular reference to information on business best practices and metrics on the monetisable value of mEducation. This type of information will benefit business development activities.

■ The acceptance of mobile devices for teaching and learning in the compulsory education sector needs to be addressed at a policy level. This calls for a 'top-down' approach with senior management driving the adoption of mobile learning in the classroom. An affirmative signal from senior management should cascade down to suitably-designed mEducation services that: take account of the learning experience which each user will receive; minimise the classroom disruption which might be faced in using mobile devices; and, negate any associated IT support issues.

■ The trend to 'Bring Your Own Device' (BYOD) is partly a 'bottom up' trend as learners demand to be able to use their own devices, and partly a 'top down' attempt to reduce the cost of providing devices for learners. This raises important issues with respect to the design of learning experiences for different devices and platforms and the challenge to IT departments of supporting access by a heterogeneous population of devices. From a public policy standpoint, there is also a need to address the potential risk of unequal access to devices and the services they provide (often referred to loosely as the 'digital divide') and what policy changes and local strategies would be required to achieve universal access in the compulsory education sector.

7. Acknowledgements

We are extremely grateful to the following representatives from different organisations from around the world who have contributed to this research by sharing their time and points of view.

Organisation	Market Role	Interviewee	Position	Location
Bharti Airtel	Mobile Operator	Mohit Beotra	Head of Emerging Business	India
COPIA	Collaborative, digital content platform company	Andrew Lowinger Rick Wyand	CEO Business development	USA
Editacuja	Trans-media publisher specialising in mobile education services	Martin Restrepo	Founder and Educational Technology Director	Brazil
iSchool Initiative	Student-led, non-profit organisation	Travis Allen	Founder & CEO	USA
Oxford University Press (OUP)	Publisher	Joseph Noble Tom Hayton	Head of Channels & Partnerships English Language Teaching, Channels and Partnerships Executive, Asia	UK Taiwan
Pearson	Publisher	Tom Hall	Head of Future Technologies and Partnerships	International
SFR	Fixed & Mobile Operator	Laurent Charon	Eco-system Development Manager	France
Softbank	Fixed & Mobile Operator	Yuriko Ishihara	Manager	Japan
Telecom Italia	Fixed & Mobile Operator	Giovanna Chiozzi	TI Lab & Global Consulting	Italy
Telefónica Learning Services (TLS)	Education service provider (part of a fixed & mobile operator)	Carolina Jeux	CEO	Europe & South America
Telstra	Fixed & Mobile Operator	Susi Steigler-Peters	National General Manager, Education	Australia
Tribal Group	Provider of education technology products and service	Geoff Stead	Head of Innovation	Europe & USA
Telefónica O2	Education service provider (part of a mobile operator)	Mark McGinn	Head of O2 Learn	UK
UNESCO	United Nations organisation	Steve Vosloo	Programme Specialist, Mobile Learning	International
US Department of Education	Government	Karen Cator	Director of the Office of Educational Technology	USA

8.   Glossary

This report is intended for audiences from the mobile, technology and educational services sectors. Some of the terms that have been included may carry a particular meaning in one sector. This glossary explains the meaning of key terms in the context of this report.

Apps	Software applications for a specific purpose, typically used in relation to devices such as smartphones and tablets that support intuitive graphical user interfaces.
ADSL	Asymmetric Digital Subscriber Line (ADSL) is a data communications technology that enables fast data transmission over copper telephone lines.
B2B	Business model framework the defines a commercial relationship between a business supplier and another business customer.
B2C	Business model framework the defines a commercial relationship between a business supplier and a consumer customer.
B2B2X	Business model framework that defines a commercial relationship between a business supplier and an end user (designated as 'X') which may be a business, consumer or government entity. The business supplier serves the end-customer via an intermediary business (designated as the middle 'B'). Several variants on this model are possible e.g. C2B2C etc.
BYOD	Bring-your-own-device. This is the phenomenon where users make use of personal devices in a work (or school) environment. It lowers the (capital) costs that businesses face in equipping their employees, but this saving is offset by operating costs necessary to ensure that devices comply with internal IT standards (configuration, security etc.)
CAGR	Compound annual growth rate.
Channels to market	Products and services are supplied to customers via different channels to market, such as retail outlets, re-sellers, eCommerce web sites etc.
Cloud computing	The use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet).
Cost structure	This term encompasses the elements of cost involved in delivering a product or service. It includes a category of capital costs (e.g. investments on equipment) and operating costs (e.g. staff, utility charges etc.)
Customer relationship	This term describes how a business engages with its customers and includes activities such as advertising, sales, in-service support to resolve queries and faults.
Customer segment	Within a market (consumer or business) it is possible to identify segments that may have specific needs. Examples of consumer segments are teenagers and the elderly. In the business market, segments may be small businesses and large multi-nationals.
Distribution channel	See channels to market.
Ecosystem	A community of interdependent organisations (e.g. businesses, regulators, technology providers) that underpin the delivery of a product or service.
End-to-end service	A composite service that covers different stages in a user's experience. This may begin with the purchase process, continue through configuration steps and functions to ensure the user has a trouble-free experience.
Gamification	The integration of games in educational content as a means of motivating students.
Greenfield	A term used to describe a project that starts afresh as distinct from a 'brown field' project that builds on top of an existing base.
K-12	This is the US equivalent of compulsory primary and secondary education in the UK.
Legacy education systems	Systems used to deliver eLearning services which pre-date the integration of mobile technologies.
LMS	Learning Management System - (also referred to as VLE - Virtual Learning Environment).
mEducation	The GSMA defines mEducation as the use of individual, portable devices which make use of mobile networks in mainstream education settings, aligning with curriculum objectives or used for high-stakes assessment. It also covers both learning content and administrative activities.

mLearning	mLearning is anytime, anywhere learning content delivered through a mobile device.
Mobile integration services	Information technology services (e.g. design, software integration, testing, project management) involved in the integration of mobile in non-mobile products and services.
NPV	Net present value which is calculated from the future cost and revenue streams for a project, discounted at a rate that reflects the risk profile of the project. (NPV is used to evaluate the viability of a project).
Opportunity space	This term describes the scope of a market opportunity for a product of service.
PaaS	Platform as a Service. This describes a communications platform that is shared by multiple users on a pay-as-you-go basis. An example is a large, high-specification data server that may be shared by multiple small-businesses. The data server may be housed in a secure location with back-up power supply and be offered at an affordable price to small businesses.
Revenue streams	The different flows of revenue accruing to a business. These may be derived from a range of products and services sold by the business.
Service variants	Variations in a service that may be arise because a basic service is tailored for different customer segments, for example.
Smartphones	A mobile phone with computing and connectivity capabilities that can be used to operate software applications in addition to voice and SMS services.
SaaS	Software-as-a-service. This describes a software application that is shared by multiple users on a pay-as-you-go basis. An example is a business accounting application that may be used by multiple small-businesses who are in effect renting access to the application.
Solution	In the communications industry, this term applies to a product or service offering that is offered in a packaged form and typically involves little configuration. This is different from the use of solution in an educational context where it used to describe an answer to a problem.
Tablet	A mobile computing device that is primarily operated by touching the screen.
Value chain	A chain of activities for a firm operating in a specific industry. Products pass through all activities of the chain in order, and at each activity the product gains some value.
Value proposition	A value proposition is a promise of value to be delivered and a belief from the customer that value will be experienced. Value may be delivered in the form of a product or service. Value may be experienced in terms of convenience, savings in time and savings in monetary terms for example.
White label content	White label content is content that is produced by one company (the producer) for use by other companies (the marketers) that rebrand the content to make it appear as if they created it.

About the GSMA and the Connected Living programme
Connected Living is a three year market development initiative whose mission is to help mobile operators accelerate the delivery of new connected devices and services. Our target is to assist in the creation of 700 million new mobile connections, whilst stimulating a number of service trials and launches in the Automotive, Education and Healthcare sectors. The Connected Living programme is also working with the city of Barcelona, the Mobile World Capital, to develop and showcase smart city services.

We are working in mEducation to help bring the operator and education industries together to address market barriers, foster collaboration and speed up the adoption of mobile education services.

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