

Disruptive innovation and its implications on Lebanese telecom industry

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Abstract —The level of innovation in the telecommunication industry progressed over the last decade. It provides new challenges that are assumed to disturb the sustainability of telecommunication companies (service of phone). Mobile phone companies are likely to be directly affected by rapid mutation occurred in consumers' spending habits closely linked to a variety of technological innovation (new products and services). Data growth and associated growth in new services and media will drive the bulk of new revenues for telecom operators. As this comes at the sacrifice of having to accept lower margins, operators need to decide how far to go and how. Through a survey we developed on the basis of the Lebanese telecom sector (Alfa / Touch), we test the reliability of innovation and its impact on profitability.

Keywords: Disruptive innovation, Telecommunication, Smartphones, Value Migration

I. INTRODUCTION

The mobile telecom industry is changing and the competitive landscape for mobile network operators has been disrupted. The industry is shifting from an environment characterized by reliability and scale of networks, to an environment where choice and flexibility of services is more prominent. This has changed the basis of competition and represents the shift from “mobile telephony” to “mobile computing” (VisionMobile, 2012a). Today, this sector plays a key role in the Lebanese economy even if it's performing below potential despite growth. According to Business Monitor International (BMI, 2013), Lebanon is one of a few countries in the Middle East and North Africa Region with mobile phone penetration rate of less than 100% at the end of 2012 despite having a relatively small population and high urbanization level. It attributed this trend to the lack of competition in the market, which has kept tariffs relatively high and delayed the roll out of network services to underserved areas. It forecast mobile phone penetration in Lebanon to reach 100.8 subscriptions per 100 inhabitants in 2013 and to rise to 110.1 subscriptions per 100 inhabitants in 2017. BMI concludes in (2013) expecting the mobile phone sector in Lebanon to post steady growth between 2013 and 2017 despite relatively uncompetitive tariffs and poor quality of service. It considered that Lebanon's young and well-educated population will continue to drive demand for advanced communication services. (BMI, 2013)

Therefore, mobile network operators launched third-generation (3G) mobile networks in 2001 and the high-speed wireless data transfer enabled the mobile network operators to distribute more services (Steinbock, 2005). The mobile network operators worldwide attempted to control the services in closed ecosystem *portals* (VisionMobile, 2011a).

The portals gave the mobile network operators the opportunity to build empires and lock-in the customers by restricting them from accessing potential competitors services. The development of 3G technologies provided a foundation for the upcoming smartphone era and in 2007 Apple launched the iPhone (Sharma, Operator's dilemma (and opportunity): the 4th wave, 2012a). Smartphones had earlier been used by a small segment of primarily business people, but the iPhone managed to target mainstream customers. According to Ahonen (2011) the introduction of iPhone transformed the industry and he states the demarcation of time in the mobile telecom industry as “before iPhone” and “after iPhone”.

The smartphone era has enabled dozens of new services for phones (Sharma, 2012a), which were boosted by touchscreens (Salz, 2011). Content of smartphones is controlled by platforms such as Google Android and Apple iOS, and not by the mobile network operators. It has caused the mobile network operators portals to decline rapidly and made them loose some of their interaction with end-users (VisionMobile, 2011a). The mobile network operators have previously been able to generate large profits and maintain high margins from the traditional voice and messaging services. But in the smartphone era the profits from voice services have are stopped growing and even declined for some mobile network operators. The usage of data access on the other hand has increased rapidly due to the smartphone usage (Sharma, 2012a).

Indeed, the innovation in mobile telecom industry is accelerating at a breakneck pace. New telecommunications technology significantly reduces the barriers to entry in the market and eliminating middlemen, allowing businesses to interact directly with their customers around the globe. The advent of the converged voice, data and video technologies mean that media, entertainment, computer and telecommunications organizations will all be merging and interoperability of their activities. In the last five years we have witnessed to a particular growing body of research regarding the importance of innovation called disruptive and its impact on financial performance. Mobile telecom has become critical to drive technological growth, and it impacts how humans communicate and interact in everyday life (Sharma, 2012a). The mobile network operators have been affected by disruptive innovation as it will be described by Christensen (2007). The objective of our study is to show how the Lebanese mobile operators, faced with the technological innovations and free services on the telecom market, can profit in a constant manner and ensure their continuity. We believe that understanding the impact of disruptive innovation for Lebanese mobile telecom industry is the more judicious approach for the purposes of this study.

- What are the problems of the telecommunications to Lebanon and its challenges
- Can the LMO ensure their competitive place in the presence of free applications on the telecom market?
- What are the solutions and the policies adopted by these companies to protect their market share?

A. Definition of Disruptive innovation

Given the complexity of innovation activity, it seems difficult to find a universal definition. According to Schumpeter (1935), the realization of an invention and the implementation of corresponding innovation are economically and sociologically two entirely different things. As such, Alter (2002) describes the invention such as the creation of a technical or organizational novelty, concerning goods, services, or devices, while innovation represents the entire social and economic process bringing the invention to be ultimately used or not. The term 'innovation' applies both to the result of a creative process (which is new), and this same process (Mayrhofer, 2011). According to Cantwell (2010), innovation can be explained as the introduction of new products and processes (process). The main difference between product innovation and innovation process (processes): the first relates to the product or service marketed, particularly in terms of functionality, the second characterizes the manner in which this offer is developed and distributed, particularly in terms of costs and qualities (Johnson, 2011).

Hence, Christensen explains (2013) that disruptive innovations are products or services with business models that introduce performance packages that are inferior to what mainstream customers value. During the early development of a disruptive innovation it only serves niche segments. Both the disruptive innovation and the established offerings improve; nevertheless the disruptive innovation improves enough over time to satisfy the mainstream customers and eventually replaces the established offerings and incumbents that exceed the demanded performance, see Figure 1 (Christensen C. M., 2013).

B. Problem of the research

Disruptive innovation has completely reshaped numerous companies and industries, and caused companies to fail while other flourish. Many firms need to periodically engage in processes of disruptive innovation for long-term survival (Christensen & Raynor, 2003).

Disruptive innovation has drawn an unusual amount of attention from both scholars and practitioners, which is rare (Danneels, 2004).

The effects of disruptive innovation have been described by a number of authors (Bower & Christensen, 1995; Bower & Christensen, 1996; Christensen et al., 2001; Adner, 2002; Gilbert & Bower, 2002; Charitou & Markides, 2003; Christensen & Raynor, 2003; Danneels, 2004; Schmidt, 2004; Adner & Zemsky, 2005; Utterback & Acee, 2005; Christensen, 2006; Danneels, 2006,

Govindarajan & Kopalle, 2006; Markides, 2006; Tellis, 2006; Dan & Chieh, 2008; Sandstrom et al., 2009; Ansari & Krop, 2012; Wessel & Christensen, 2012; Christensen, 2013). The focus is on issues as definitions, what causes disruptive innovation and how it can be classified, foreseen or handled. There is no extensive research on the overall effects of disruptive innovation at an industry level. In our study, the purpose is to shed the light in the relationship between disruptive innovation and value migration.

Knowledge about the effects of disruptive innovation can help managers understand the consequences of their strategic decision-making. Some question the ability of making predictions of disruptive innovation in advance (Thomond & Lettice, 2002), but for example Christensen (2006) and Govindarajan & Kopalle (2006) emphasize that predictions are possible. Hence, findings about the effects of disruptive innovation can result in more cost-efficient investments, which is positive from both a company and a societal perspective. Thus new knowledge adds to the theoretical field of disruptive innovation, which can have practical relevance. The practical significance can also be accentuated by the large interest in disruptive innovation by practitioners (Danneels, 2004).

Gathering information on mobile telecom industry in Lebanon, we have identified three main categories of the mobile telecom value network:

- *Mobile networks operators*
- *Infrastructure providers*
- *OTT players*

Where mobile network operators play a critical and dominant role of the mobile telecom since its inception dominant. Close to 94 % of the value of the mobile telecom flowed through the mobile network operators and they captured 97 % of the profits in 2011 (BMI, 2013). The sector of mobile communications in the Lebanon is one of the main contributors to the Lebanese economy with 2% GDP. According to the Ministry of telecommunications, the number of subscribers to mobile telephony to the Lebanon crossed the 3 million in May 2011. Despite these important developments, the Lebanon is the least competitive country in the Arab world on the mobile telephony market. Thus, mobile telephony to the Lebanon recorded an increase of subscribers. BMI (2013) forecast the number of mobile phone subscriptions to grow at a compound annual rate (CAGR) of 2.9% during the 2013-17 period and to reach 4.9 million in 2017.

Mobile telecom has become critical to drive technological growth, and it impacts how humans communicate and interact in everyday life (Sharma, 2012a). The mobile network operators have been affected by disruptive innovation as described before in this paper. However, no complete analysis with the lessons from the mobile network operators in relation to the disruptive innovation in Lebanon is available yet.

Indeed, the Lebanon is lagging behind in terms of mobile phone, which the penetration rate has doubled since 2008 to around 60% in summer 2013, and it remains much lower than that observed in other countries in the region like Saudi Arabia (177%). But, despite this recent growth attributed to a significant reduction of tariffs, mobile, and

despite the growth of the Internet and the free chat applications to the Lebanon Lebanese telecoms market is one of the most expensive in the world. We propose to explain how the Lebanese Mobile Operators (LMO), faced with the technological innovations and free services on the telecom market.

II. LITERATURE REVIEW

According to Christensen (2013), disruptive innovations are products or services with business models that introduce performance packages that are inferior to what mainstream customer's value. During the early development of a disruptive innovation it only serves niche segments. Both the disruptive innovation and the established offerings improve; nevertheless the disruptive innovation improves enough over time to satisfy the mainstream customers and eventually replaces the established offerings and incumbents that exceed the demanded performance, see Figure 1 (Christensen C. M., 2013).

Eventually almost all products improve beyond the needs of the mainstream customers. This triggers a shift in the basis of competition to focus on price, flexibility, convenience or customization, and disruptive competitors start to replace established offerings (Christensen et al., 2001). Christensen & Raynor (2003) describes disruptive innovation as a process rather than an event. Many disruptive innovations fail because they are part of a value network that cannot be adapted to support the disruption.

Most waves of disruptive innovation are captured by others than the earlier leaders of an industry (Christensen, 2013). One example is the computer industry, where IBM dominated the mainframe computer market, but missed the emergence of minicomputers by years (Christensen & Raynor, 2003). The mainframe computers were available to a few experts at universities only, but minicomputers made the technology available to a much larger population. The minicomputers have been preceded by desktops, then laptops and now smartphones. One reason is that leading companies listen too carefully to their customers, so they miss the emergence of innovation that is not valued by their customers initially. However, there are also exceptions when leading companies manage to stay on top (Christensen & Raynor, 2003).

The concept of disruptive innovation has been broadened by a number of authors and there is a debate on what exactly can be defined as disruptive innovation. Many authors classify and use disruptive innovation in a broader sense (Danneels, 2004; Dan & Chieh, 2008). (Christensen, 2006) recognizes that disruptive innovation has been improved by other authors and sees the building of theory on disruptive innovation as an ongoing process.

Christensen & Raynor (2003) divides disruptive innovation into low-end and new-market disruption. New-market disruptive innovation creates a new value network, i.e. expands the market to new customers. Low-end disruption on the other hand, target the most over served and least-profitable customers at the low end of the original value

network. Markides (2006) agrees that disruptive innovation can enlarge the industry, by attracting new customers and making existing customers consume more. Furthermore, he states that disruptive innovation can significantly change customers' behaviors and habits.

Govindarajan & Kopalle (2006) on the other hand, refers to high-end and low-end disruptive innovation. High-end disruptive innovation is disruptive innovation with a higher-per unit margin than established offerings, but with different performance features that mainstream customers do not value at the time of introduction, so it serves a small niche before it disrupts the market.

According to Slywotzky (1996) *business designs* go through life cycles, from growth to economic obsolescence. Value migration occurs when value moves from outdated business designs to new ones that better satisfy the customers' priorities. The driving force of value migration is the changing pattern in what customers want, need and are willing to pay for.

Slywotzky & Baumgartner (2006) defines the term business design as the blueprint of the way a company does business. For example how a company selects its customers, what value proposition it offers, which profit model it uses, which activities it engages in, what strategy it uses to capture profits and which organizational architecture it uses to implement decisions.

Three phases of value migration can be identified; these are the *value inflow*, *value stability* and *value outflow* phase, see Figure 3 below (Slywotzky, 1996). The phases describe how well a business designs can create value, which matches customers' priorities in relation to its competitors, and as a result generate high returns. The model can be used to describe value migration within a company, between companies and between industries.

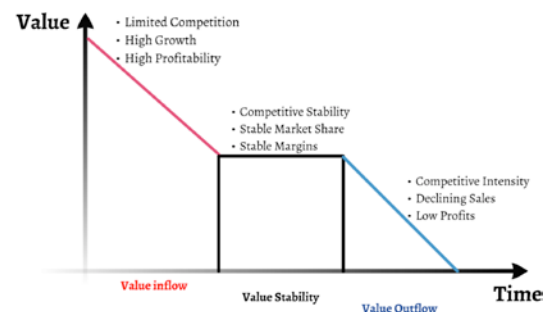


Figure 1: The three phases of value migration in accordance with Slywotzky (1996)

The *value inflow* phase provides several opportunities to abstract value from a surrounding with high growth, limited competition and profitability (Slywotzky, 1996). Value can be absorbed from other parts of for example an industry if the business design is superior in meeting customers' priorities. A shift in value migration can be initiated when a company employs a new business design, which responds to customer priorities that established competitors have failed to see or neglected. Companies with business designs in the value inflow phase are often characterized by excitement, confidence and a

capability to attract top talent.

In the second phase, *value stability*, business designs match customer priorities well and a competitive balance predominates the market (Slywotzky, 1996). Companies can grow by continuing to serve customer's priorities and improving operational efficiencies, but only at a low or moderate pace. Market shares and margins remain steady. Focus is on improving activities that have led to success in the past.

In the final phase, *value outflow*, the competition is intensifying, the opportunities to abstract value are decreasing and profits decline (Slywotzky, 1996). Value migrates from obsolete business designs to new ones, which are better able to satisfy customers' evolving priorities. Moreover, in-bound talent, customers and resources leave at an accelerating rate. In the value outflow phase, focus should be on redesigning obsolete parts of a business design.

The length of the phases varies depending on at which rate new business designs that better respond to the customer priorities emerges (Slywotzky, 1996). However, shorter product life cycles, international competition and well-informed customers have made the phases shorter. A company can only exist in one phase at the time, and only move from value outflow to value stability, or from value stability to value inflow, if it applies a new business design.

Performance is generally demanded early in business designs life cycles (Slywotzky, 1996). However, as products or services mature and competitors match the performance, the consumers' priorities often shift to cost-efficiency as long as the business designs remain the same. The reason is that what was initially new is regarded as something that all products or services must have at a later phase, i.e. commoditization.

Transition of phases

Business design phase transitions are typically subtle with no sharp transition points, so managements can easily miss them (Slywotzky, 1996). Managers have tendencies to dismiss downturns as seasonal effects or special circumstances. The above-mentioned limitations can lead to unexpected collapses of companies that have not adapted their objectives in line with the business design life cycle. Furthermore, value can migrate towards several new types of business designs simultaneously and it is even harder to be prepared for. Flexible organizations with an ability to detect early signals of transitions and adapt to them, have better preconditions of handling transitions.

As mentioned, transitions normally occur when new business designs, which better meet customer priorities, become available and customers' priorities change (Slywotzky, 1996). However, unexpected external shocks can also trigger business design phase transitions. For example trade restrictions, aggressive pricing, war, regulations and innovation can result in value migration from one business design to another. Companies can sometimes reduce the damage or even benefit from these external events if they understand them at an early stage.

Bargaining power in relation to value migration

Bowman & Ambrosini (2000) argues that the realization of value is determined by the bargaining relationships between the sellers and buyers. For instance, the level of differentiation, switching costs, presence of substitutes, strength of distribution channels and supplier competition can determine a supplier's bargaining power (Porter, 2008), which in turn decides its ability to capture value (Bowman & Ambrosini, 2000). Cox (2001) comes to the same conclusion, i.e. that value migrates in the direction of power. If the buyer is dominant, the seller has few alternatives for its services and products, thus the value flows to the buyer.

III. METHODOLOGY

A. The hypothesis of the study

Upon the theoretical literature discussed previously, it is clear that new trends in Telecoms Innovation lead to improvement in the financial performance in Telecom Companies. Therefore in order to achieve our ultimate goal (say whether an innovation, in particular by smartphones and its content, is disruptive at the mobile network operators and so on the industry level?) this is to understand the impact that applying of a variety of "intelligent" user-driven innovation tools in telecom services on customer satisfaction. The hypotheses are: H1: Decrease in price of product/service would lead to increase in customer satisfaction. H2: Qualities of services would increase the number of satisfied customer. H3: Innovation of products/services would increase the number of satisfied customer hence enhances customer satisfaction and financial revenue by a telecom industry.

To assess the hypotheses, questionnaires were designed in attempt to answer these questions, which formulated and divided in to three aspects to serve the objectives of this paper: 1) Does a pricing strategy in which a Telecom company offers relatively low prices for mobile calls led to improvement in demand for many other services provided? 2) Does a Business strategy that emphasizes on client profiles (age, occupation) to meet various expectations and needs led to increase the number of satisfied customer? 3) Do the telecom companies have the needed to follow up new technologies to limit losses on customers in a competitive market? Is it sufficient?

The iPhone platform was launched in 2007, which was an event resulting from disruptive technologies as discussed previously. Given that, we are going to focus on data starting from 2007 (see Tab 1 and Fig 2). In our case, the mobile network operators did not provide net income or ARPU for their mobile segments, thus we replace estimating ARPU by viewing the mobile segments revenue as number of subscribers between the years 2000 to 2012.

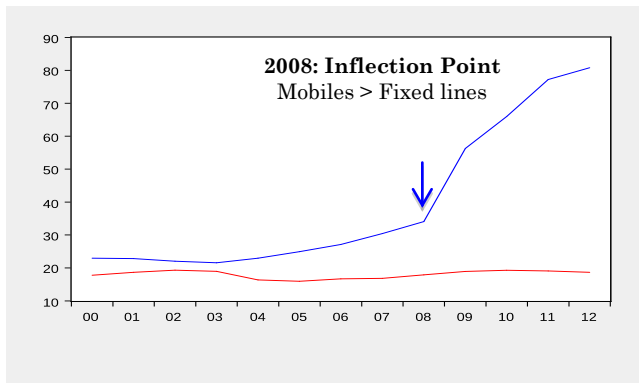


Figure 2: Global FixedTelephoneLines vs. Mobile Subscriptions, 2000 – 2012.

All prices are set by the MOT. Previous governments followed strategies to limit subscriber numbers with high tariffs. Monthly ARPU levels were over US\$60 until end of 2009. It is especially in April 2009 when government took a radical step consists of lowering tariffs and increasing the maximum number of subscribers for both operators, arguing that total revenue would increase. This had a startling affect on subscriber growth and typically generates significantly higher ARPU.

Table 1: Revenues and ARPUS

Cellular	2008	2009	2010
Cellular revenues (\$ 000)*	1 361 000	1 460 000	1 573 743
Monthly ARPU (\$)*	84,8	62,4	45.0

Internet			
Internet revenues (\$ 000)*	48 685	62 063	74 680
Monthly ARPU (\$)*	14.0	15.0	16.0

* Estimated

Source: The ArabAdvisors Group

In the information and data gathering process we have solely gathered information related to the mobile segment of the network operators. Some of the network operators provide fixed - line services that also may have been affected by the disruptive innovation. A main issue, consubstantial to the argument, it would remain to show a relationship between financial performance and usage of disruptive innovations in telecom industry.

B. A governance Structure of Telecom (Lebanon)

Lebanon's telecommunications sector is entirely owned by the government via two main licensed and working operators by 2014 (including granted and expected):

- 1) ALFA, a Mobile Interim Company, run by Orascom Telecom's Alfa, and established in 1994.
- 2) Touch a Mobile Interim Company run by Zaintelecom's MTC Touch, established in 1983 (Fig 4).

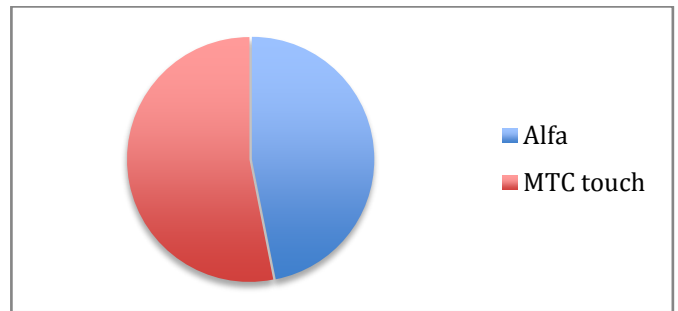


Figure 3: Lebanese operator share of mobile subscribers, 2010

C. Companies Reports

By mid-2013, Alfa announced an **increase of 296% on mobile phone subscriptions** and 446% on Internet services (over the past 13 months). According to Touch Company reports, **mobile phone subscriptions have grown more than eightfold** over the past 18 months (from 100 000 to 800 000), and an average increase of 145% up to 270 MB is estimated on personal consumption. **CDL: 10-05-2013.** (See Table 2)

Table 2: Distribution of Mobile subscribers in Lebanon

	Dec. 2009	Dec. 2010	% Variation
Subscribers Alfa	210 750	241 142	+14,4
Prepaid phone card – Alfa	856 802	1 101 243	+28,5
Total Alfa	1 067 552	1 342 385	+25,7
Subscribers Touch	212 234	238.528	+12,4
Prepaid phone card - Touch	1 110 531	1 282 751	+15,5
Total Touch	1 322 765	1 521 279	+15,0
Total	2 390 317	2 863 664	+19,8

Source: MOT.

Increasingly competitive between companies operating in the Internet industry required effective productivity enhancement from the mobile operators, government and ISPs in a way to *draw upon up-to-date technology evolves, more likely to keep Internet at the power of innovation to communicate could be.* Mobile broadband, ADSL, 3G licenses and other international Internet bandwidth are already advertised and lead to connect the large majority users in Lebanon. 3G service officially launched in Lebanon by Alfa and Touch on November 1 2011¹ (CDL/ 21-10-2011). The 4G networks are as well being installed in Beirut, Dbayeh, Jounié&Kesrouan by end of 2013 and must be implemented in Tripoli, Saida&Zahlé in coming months of 2014, according to CDL (31-05-2013). This technology is

¹ Local ISP Cedarcom claimed on involving public sector on the third-generation mobile Internet technology in Lebanon, calling to grant the right to use 3G frequencies as specified in the Telecommunications Act – 431 - “ART should exclusively define Licensees.”

The Council of State react by saying that the application of Law 431 has been suspended under a previous judgement, adding that, Alfa and Touch are anyway both state-owned companies and therefore do not require licenses.

the latest in the world of mobile data transfer, which theoretical data downlink speeds can go up to 100 Mbps. Cell phone Plans in Lebanon are offered with a wide range of \$99/10GB to \$249/100GB – per month).

Rapidly growing mobile Internet usage surpasses more highly monetized desktop Internet usage. Moreover it is known that eCPMs is 5x lower on Mobile than desktop. Thus, because of innovation, mobile ARPU can raise rapidly straining Revenue Growth in the telecom service sector.

Table 3: Telephone subscribers and Internet users for Lebanon 2000-2012.

	Mobile cellular Subscriptions/100 inhabitants	Fixed telephone Subscription/100 inhabitants	Internet users/100 inhabitant	Fixed (wired)-broadband internet subscribers per 100 inhabitants
2000	22,96*	17,80	7,95***	0%
2001	22,84*	18,64	6,78***	0%
2002	22,05*	19,31	7,00*	1,00
2003	21,56*	18,97	8,00*	1,90
2004	22,95*	16,35	9,00*	2,08
2005	24,92*	15,92	10,14 ^(a)	3,26
2006	27,12*	16,70	15,00*	4,66
2007	30,44**	16,85	18,74	4,64*
2008	34,09*	17,92*	22,53 ^(b)	4,66*
2009	56,28	18,93	30,14 ^(c)	4,64**
2010	65,97	19,30	43,68 ^(a)	6,98*****
2011	77,19	19,09	52,00 ^(d)	8,28*****
2012	80,81	18,66	61,25*	9,71*****

Source: MOT. * ITU estimate. **BMI. *** Lebanese Broadcasting International. **** Presidency of the Council of Ministers. ***** TRA.

Notes:

^(a) Estimate based on population aged 6+.

^(b) TRA estimates the number of Internet users based on the number of Internet subscriptions (3 users for every subscription).

^(c) Estimate based on population aged 15+.

^(d) Population age 15+.

ITU: International Telecommunication Union.

TRA: Telecommunications Regulatory Authority.

MOT: Ministry Of telecommunications.

CDL: Commerce du Levant.

Upon the stated statistics and facts in previous sections a hypothesis for this study has been elaborated in order to be tested for validity.

Due to the unattainability of financial statements from the telecom industry in Lebanon, a survey was conducted with both end users and providers. Moreover, a study was performed to investigate various disruptive and conventional means which might have an impact on the financial performance of telecom industry. The survey consisted of two part questionnaires, the first one was conducted with customers selected randomly of n=100, whereas the second was

performed with n=20 employees from the two telecom providers, 'Alfa' and 'Touch' at the providers' offices located in North Lebanon. All items were measured with a five-likert scale, ranging from 1(strongly disagree) to 5 (strongly agree).

The questions were designed in an easily understandable manner and performed on a number of days from different locations in the city to govern the credibility and variety of sources. Moreover, the secondary data applied were mainly obtained through websites, research articles, and journals.

The proposed hypothesis is tested based upon the gathered data, which dealt with questions related to financial performance and the role of disruptive of innovations in its development. Furthermore, the disruptive innovations in this study are categorized in to several aspects as usage of mobile phones for internet browsing, download and upload, VoIP, and social media communication which is replacing to a certain degree the conventional means of communication. Whereas the conventional means are categorized in to calls, sms and mms services.

IV. RESULTS

The results attained from the first survey are indicated in Table 4, which shows the demographics of 53% male and 47% female with a majority of surveyed are youths with age ranging between 16 and 40 (representing the biggest sector of end users). Moving away from demographic factors, the results show that 89% of customers own smart phones, and 90% are subscribed for broad band internet. These results show the change of customer needs from past years where they are highly demanding advanced communication services. These numbers indicate how customers are migrating from conventional to disruptive innovations through enlarging consumption of disruptive services, where (Markides, 2006) tends to be on the same path

Table 4: Demographic

Characteristics	Category	N	%
Gender	Male	53	53
	Female	47	47
Age	16-25	36	36.4
	26-40	41	41.4
	41-60	14	14.1
	61-80	8	8.1
Subscription to broadband services	Yes	92	92
	No	8	8
Company	Alfa	53	53
	Touch	41	41
	Both	6	6
Usage of Conventional terms (SMS, Calls)	More than 30 minutes daily	26	26
	Less than 30 minutes daily	74	74
Usage of Disruptive Innovations	More than 30 minutes daily	82	82
	Less than 30 minutes daily	18	18

The proposed hypothesis is tested through a two parts survey done with end users of telecom services n=100, in addition to aquestionnaires distributed on the two service providers Alfa and Touch with n=20.

The questionnaire for this study is designed according to likert scaling technique, which ranged from strongly agree to strongly disagree. Among the surveyed customers 90% of them are subscribed for broadbandInternet.

The disruptive innovations in this study are categorized in to several aspects as usage of mobile phones for internet download and upload, VoIP, and social media communication which is replacing to a certain degree the conventional means of communication.

Whereas the conventional means are categorized in to calls, sms and mms services.

Table 5: Linear Regression Analysis

Predictor	Beta	p value	Condition index
Calls	.191	.040	6.456
Upload	.208	.038	6.983
Social network services	.283	.004	4.719
VoIP	.084	.337	5.530
Email	.201	.028	9.796

The Cronbach’s alpha values which revealed calls, upload, social, VoIp, and email expressed the assessment of reliability with the following scores being 0.546,0.615,0.633, 0.511, and 0.524 respectively. Furthermore, reliability level for these variables is 0.674, and linear regression equation was used for providing better analysis for independent variables stated above.

Reading the results in Table 5, we get the regression equation for Telecom sector (with correlation parameters on the variable in the following equation):**Total Telecom revenue=0.19*Calls+0.2*Upload+0.28*Social network+0.2*E-mail**

The coefficient of determination; R square is 0.474, thus indicating that 47.4% of variance in the variable customers’ performance is explained by the model. All the values present in Table 5 are statistically significant since they have a value smaller than 0.05, except VoIP which was not proven in this study (Sig greater than 0.05). Furthermore, the condition index has been calculated in order to check for the collinearity problem. All the CI values for the five variables are below 15; which reveals that this study has no serious problem with collinearity. The linear regression and collinearity results are shown in (Table 5).

The second part of the survey concerning the providers revealed that the widest area for development is the category related to broadband services as shown in figure 4. The gathered results thus meet the previously studied factors showing the shift of customers from conventional modems to up to date services, which they consider to be more

compatible with their capabilities and interests thus resulting in more profits. These results show moderate similarity with (Christensen C. M., 2013) and (Sharma, 2012a) who claimed that with time disruptive innovation will improve and replace other services, thus introducing more profits from data access. Moreover, the profit from disruptive innovation will lead to a great impact on the era. Figure 4 shows that the quality of services plays a role in the future telecom market, which might boost the customers’ consumption and satisfaction thus leading to higher demand for services.

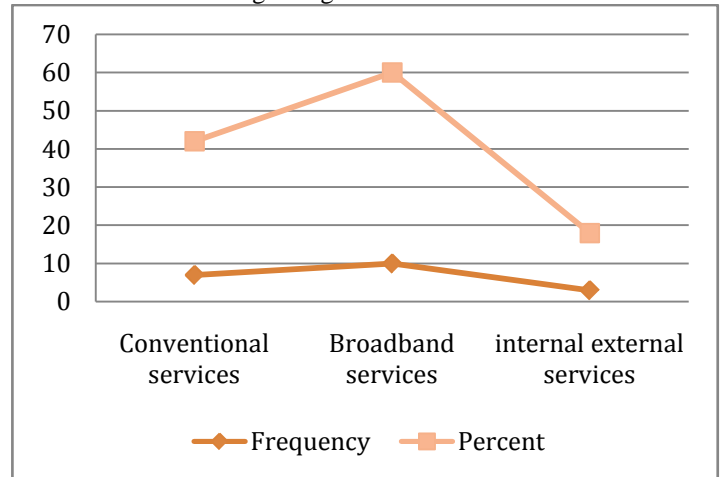


Figure 4: Providers’ Frequencies of Future Migration

V. CONCLUSION

In an era of increased competition and customer demands there are various factors affecting the telecom industry and prohibiting it from flourishing. Concerning the case of telecom industry in Lebanon, there is lack of competition, high tariffs, and not very good connections since there are only two service providers, Alfa and Touch. However, the Lebanese customers are in frequent demand for advanced communication services, which made Internet an essential mean of communication. Customers are nowadays migrating to data, thus pressuring on the industry to improve such services and providing a good value bundle offer.

In conclusion, reading the results in the regression equation stated previously shows that the highest revenue is still coming from Social network and upload and download services whereas no significant response was found on VoIP (where the use of this service is prohibited in Lebanon). Therefore, the most revenue is covered by the usage of data such as social networks and uploads. This fact has to be detected by the organizations as signals, and then adapt these signals in order to reach targeted results in the telecom industry and meet other neighboring countries instead of lagging behind them.

Upon previously stated hypothesis and literature review, the tariffs of services affect customer

For future recommendations, the presence of more competition in telecom industry will enable customers with a satisfying service and encourage them for more consumption thus higher revenues for the telecom industry.

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