

MASTER

Identifying the most attractive markets and customer segments regarding international expansion for RBN B.V.

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**Identifying the most attractive
markets and customer segments
regarding international expansion
for RBN B.V.**

by

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I Abstract

The telecommunications sector has evolved rapidly and grown enormously in the last two decades. This growth is mainly fuelled by technological advances and wealth increases in the developing world. Lately the rapid diffusion of mobile-broadband and smartphones has enabled the emergence of an array of disruptive technologies. These disruptive technologies could drastically change current industry dynamics, mainly by offering consumers lower prices and their ability to compete on a global level. One of these disruptive technologies, VoIP calling of the company RBN B.V., was the focus of this master thesis. The objective was “What strategic options, regarding international expansion, are available to RBN B.V., and which strategic options are most attractive?” In order to reach this objective, first the internal and external environment of the company were analysed to determine the (preferred) strategic position of its service. Thereafter, the findings from the different parts of the environment were aggregated and applied to market data to determine the available strategic options, the preferred competitive strategies and most attractive markets and market segments. This resulted in a (first version of a) two phased tool which can be used to determine the most attractive markets on a global level, and thereafter the most attractive market segments of these markets.

II Management Summary

This project was conducted at RBN B.V., a participation of the small venture capital firm Brooklyn Ventures. It is investigated what the strategic options are for RBN B.V., especially regarding international expansion, and which of those options are the most attractive for the company. There are several reasons why this is an important theme for RingCredible. First of all, during the past one and a half year the application has been greatly improved, and is now getting to a point where all the growing pains have been solved and the application can be marketed as a mature service. Secondly, the past year has proven that the concept works and the ambition of RingCredible is to become a prominent VoIP service provider in the world. However, in order to fulfil this ambition it is important that RingCredible's marketing budget is spend as effective as possible. Therefore it is important that RingCredible develops a clear and sustainable strategy, based on competitive advantages. The overall objective of this project is therefore:

“What strategic options, regarding international expansion, are available to RBN B.V., and which strategic options are most attractive?”

Methodology & results

The first step in this project was to determine which elements encompass the strategic options of RBN B.V. This was based on academic literature, information residing with RBN B.V. and data gathered from the market. This resulted in the selection of five theoretical frameworks and one conceptual model that allowed for the determination of the strategic position of RBN B.V. and the strategic options corresponding to this position. This conceptual framework with the different theoretical frameworks embedded within it, is represented in Figure 1 below.

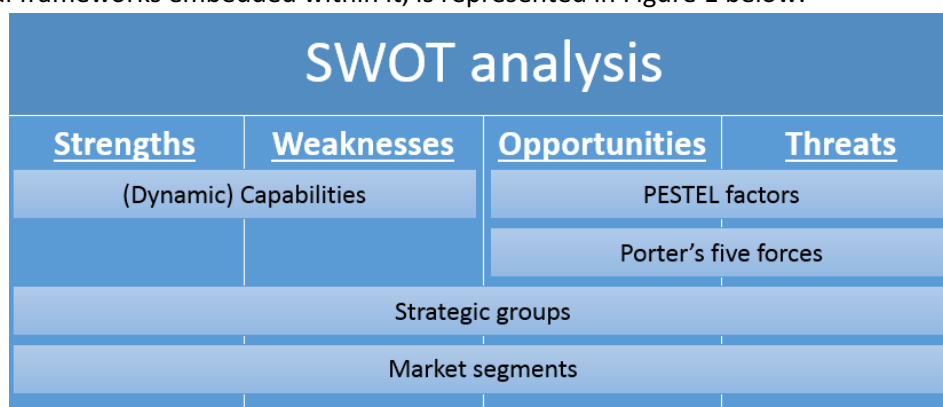


Figure 1: Conceptual model for combining the theoretical frameworks

However, this report started with an analysis of the current situation from which some of the insights can serve as input for, and allow for a better understanding of industry and customer dynamics in later chapters. After the internal and external environment were analysed on the basis of the five theoretical frameworks, the most important findings were combined in the conceptual model. By aggregating the qualitative findings from the different theoretical frameworks, it was possible to determine the strategic position, and the corresponding strategic options for RBN B.V. Furthermore, from the analysis of the external environment it became clear which characteristics attractive markets and attractive customer segments should possess for RBN B.V. The result from this aggregation in the conceptual model is depicted in Figure 2 below. From these analyses it became clear that the most attractive strategic options for RBN B.V. are (1) to focus on the international segment, and (2) focus on the low-cost segment, depending on market specific circumstances (e.g. high cost of calling or high percentage of immigration).

SWOT analysis

<u>Strengths</u>	<u>Weaknesses</u>	<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> • Business model is viable (1) • Technology employed gives competitive advantage (2) • Service can also serve as a complimentary product (3) • Flat organisation • Able to reach a large base fairly quickly 	<ul style="list-style-type: none"> • Dependent on one service (2) • Little customer knowledge (4) • Lack of marketing strategy (4) • No pro-active problem solving (5) • No clear procedures for employees (5) • Focus on iOS (6) 	<ul style="list-style-type: none"> • Roaming is unnecessary overpriced (1) • Competitive advantage over successful (MVNO) competitors (2) • Emergence of data-only segment (3) • Expansion to Windows mobile (6) • Explosion of mobile-broadband subscriptions 	<ul style="list-style-type: none"> • Lack of differentiation with other VoIP services (2) • High churn (4) • High dependence on employees (5) • Currency risk • ISP's traffic management • Government regulations on roaming • Emergence of free VoIP service

Figure 2: Conceptual model applied to RBN B.V.

Based on these qualitative findings and quantitative data gathered from the market a tool was developed to select the most attractive markets and market segments to expand to for RBN B.V. This tool consisted of two separate phases. In the first phase all countries (with complete data sets) were assigned a score based on five (sets of) variables; Blockages, VoIP attractiveness, low-cost segment attractiveness, mobile penetration, and mobile-broadband price. The results of this first phase are summarized in Table 1 below.

Table 1: The most attractive markets of each zone and zone averages

Zone	Most attractive countries	Average zone score	Blockages	VoIP	low-cost	penetration	mobile internet
1	United Kingdom, Estonia, Belgium	2.1	1.00	2.36	2.80	2.55	1.86
2	Canada, United States	2.6	1.00	4.00	1.00	4.50	2.50
3	Uruguay, Argentina, Barbados	2.7	1.50	3.04	2.38	2.88	3.67
4	South-Korea, Japan, New Zealand	3	1.29	3.71	3.86	2.95	2.95
5	Tunisia, Bahrain, South-Africa	3.2	1.43	3.43	3.43	3.73	4.00

Finally, after this first phase, for each of the 14 most attractive countries the second phase was initiated. This second phase consisted of an in-depth review of these countries to determine (a) whether they are truly attractive, and (b) if so, what the most attractive market segments are on which RBN B.V. should focus. In this second phase of the tool, the countries were analysed on, again, five (groups of) variables: smartphone OS market share, immigration, type of market competition, national call price, and international call price.

This last, in-depth, review resulted in the conclusions on each country below, which are summarized in Table 18 below. In this table, the fields that are filled green are the most attractive markets segments in the corresponding, most attractive, countries.

Table 2: Most attractive countries and corresponding market segments

	Low-cost segment attractiveness	International segment attractiveness	OS focus
United Kingdom	low	low	Android, iOS
Estonia	low	possibly	
Belgium	possibly	Italian community	Android, iOS
Canada	nation-wide	possibly	iOS, Android
United States	nation-wide	low	iOS, Android
Uruguay	medium-high	low	Android
Argentina	high + nation-wide	medium	Android
Barbados	low	medium (except for caribbean area low)	
South-Korea	high	possibly	
Japan	possibly	possibly	iOS
New Zealand	possibly	possibly	Android
Tunisia	low	low	
Bahrain	low	medium-high	iOS
South-Africa	low	low	Android

Conclusions

In conclusion, based on the aggregation of the findings from the five different theoretical frameworks it became clear that the most attractive strategic options for RBN B.V. are (1) to focus on the international segment, and (2) focus on the low-cost segment, depending on market specific circumstances (e.g. high cost of calling or high percentage of immigration). From the tool developed and the market data gathered and applied to the tool it was concluded that the following markets and market segments, divided over the five zones, are the most attractive to RBN B.V.

Belgium: National rates for Belgium are quite high (both for the MNO and MVNO researched). If this is also the case for other MVNO's active in the market, the low-cost segment is very attractive for RingCredible. When looking at the international segment, prices for calling to Italy (the second largest ethnic group present in Belgium) are very high compared to RingCredible, and thus might prove an attractive segment.

Canada: There are quite a lot MVNO's present in the Canadian market, and prices for local calling should be researched in order to determine if the low-cost segment is attractive. Furthermore, prices for nation-wide (i.e. not local) are extremely high and this could prove an attractive segment. Furthermore, it should be researched whether there are companies targeting the international segment, because immigration is high and this could prove attractive as well.

United States: The situation for local and nation-wide calling is comparable to that of Canada. MVNO prices for this should be researched in order to determine attractiveness of the low-cost segment. The international segment is already successfully being targeted for the largest ethnic groups, but there are a lot more sufficiently large ethnic groups present in the US to pursue. Prices for calling the countries where these groups originate from should be researched and compared to RingCredible prices in order to determine underserved segments.

Uruguay: Prices for national calls in Uruguay are high, probably due to the absence of MVNO's. However, the difference with the RingCredible price is not that large. If RingCredible is able to lower its price for calling to Uruguay, this could prove a really attractive segment. The international segment is not that attractive due to the low immigration rate.

Argentina: In Argentina the prices for local calls are high as well, probably also due to the lack of MVNO's. Furthermore, the price for nation-wide calls is even higher. Therefore the low-cost segment seems an attractive target segment for RingCredible. Furthermore, the international segment could offer opportunities as well. Although the immigration rate is not that high in percentage, Argentina has a large population, so in absolute terms this could be an interesting segment.

Barbados: In Barbados the price for calling national and within the Caribbean area is already low compared to RingCredible, thus not offering any opportunities. Since the immigration rate is relatively high, this could offer some possibilities.

South-Korea: Prices for national calling are high in South-Korea when compared to RingCredible. Again, probably due to the lack of MVNO presence. This indicates a highly attractive segment to RBN B.V. Furthermore, the international segment could prove interesting for the two largest foreign ethnic groups. International trade is very important for South-Korea as well, so the international business segment might be an attractive target segment as well.

Bahrain: National call prices for Bahrain are not high compared to those of RingCredible. Furthermore, because the average wealth of citizens from Bahrain (excluding immigrants) is extremely high, the low-cost segment is not attractive. However, because of the extremely high immigration rate, the international segment seems very attractive.

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1. Introduction & Research design

There are numerous anecdotes in managerial and scholarly literature that show new small firms attacking existing markets with innovations based upon disruptive technologies and achieving phenomenal success. Although the literature often goes into detail about the reason for success of these firms' strategies, it rarely explains how these firms arrived at their chosen competitive strategies. Still, it is widely acknowledged that having (access to) a disruptive technology, on itself, does not guarantee success. In order for these small firms to be successful, the disruptive technology has to be combined with a viable competitive strategy.

In this Master thesis a framework is suggested for determining the strategic options of an organisation and this framework is applied to a small firm attacking existing markets with a disruptive technology.

This project is conducted at RBN B.V., a participation of the small venture capital firm Brooklyn Ventures. It is investigated what the strategic options are for RBN B.V., especially regarding international expansion, and which of those options are the most attractive for the company. Therefore, the internal and external environment of RBN B.V. have been analysed. This chapter will now continue with a short introduction of the company and topic. Furthermore, the report structure and research objective will be described.

1.1 Company description

RBN B.V. offers a multiplatform VoIP (Voice over Internet Protocol) app (application) to consumers, under the brand name RingCredible, and white label business solutions based on the same RingCredible technology. After two unsuccessful launches of VoIP smartphone apps by RBN B.V. (RingCredible for B2B users, and Jugo for consumers), RingCredible was introduced to the market in June of 2012. RingCredible focusses on consumers (although RBN B.V. is working to extend its use to businesses as well), and has a vastly growing customer base. The app is available on multiple platforms (IOS and Android), and enables users to call phone numbers over the internet (stable Wifi, 3G, or 4G is needed to support the call). For a graphical representation of the route a call makes, see Figure 3. Users are attracted to the app, because most of the rates for international (mobile and landline), and national (landline) calls are much lower, than those of their carrier. Also, if a user has reached the monthly limit of their phone plan, national (mobile and landline) calls are less expensive if they use the app. Furthermore, the app allows you to call (almost) any phone number (i.e. does not work via a closed user group).



Figure 3: Route of a call with RingCredible

1.2 International expansion

In this project, strategies for international expansion are the central theme. There are several reasons why this is an important theme for RingCredible. First of all, during the past one and a half year the application has been greatly improved, and is now getting to a point where all the growing pains have been solved and the application can be marketed as a mature service. Secondly, the past year has proven that the concept works. During this period RingCredible has mainly focussed on the Dutch market and they have established a quite large customer base with a steady stream of revenue. However, most of the low-hanging fruit in this market has been captured, thus it is time for RingCredible to expand its focus to international markets. RingCredible has already started to market its service in several other countries and continents. The process behind these campaigns is, more or less, trial and error, and 'successful' campaigns are replicated to other countries and target groups, again with varying successes. These campaigns hugely varied in terms of success, which can mainly be attributed to the lack of a clear strategy and predefined goals, and not taking into account cultural and demographic/technical differences between countries and customer

groups. That huge differences between countries exist in the adoption and usage of the application can be found in Appendix A: Conversion funnel on country level. In this table the conversion funnel is depicted for the available countries. The conversion funnel consists of the number of (1) downloads, (2) users, (3) customers, and (4) recurring customers, as well as the associated conversion percentages. These statistics are summarized in Table 3 below on zone level (a clarification of the different zones is given later on in this thesis):

Table 3: Conversion funnel per zone

Zone	Downloads -> Users	Users -> Cust.	Customers -> Rec. cust.	Downloads -> Cust.	Downloads -> Rec. cust.
1	31%	10%	26%	3.09%	0.88%
2	16%	7%	26%	1.15%	0.29%
3	27%	5%	14%	1.44%	0.37%
4	28%	6%	31%	1.59%	0.49%
5	36%	9%	31%	4.03%	1.80%

The sources of the differences in adoption and usage, on country and zone level, will be one of the elements for determining the best international expansion strategies. However, international expansion strategies encompass a lot of different elements. Therefore, the company and its environment will be analysed from different perspectives, using various academic frameworks, market information and insights. For a detailed analysis on the current situation of RBN B.V., see Appendix G: Detailed analysis of the current situation of RBN B.V.. Some of the insights derived from this analysis will be used as input in the remainder of this report. The next paragraph will discuss the structure of the report and highlight the frameworks and methods used to arrive at the final conclusions.

1.3 Report structure

During this project, the regulative cycle of van Strien (1997) is followed. The regulative cycle is depicted in Figure 4. The regulative cycle is a tool that can be used to structure a project like this and during the project the first three steps of this cycle will be carried out. The three steps of the regulative cycle that will be carried out in this project are discussed below



Figure 4: The regulative cycle (van Strien, 1997)

In this chapter a short introduction of RingCredible is given and the central theme of the project is introduced (problem mess). Furthermore, the research design (problem definition) is discussed. The research design contains the research objective, questions and scope of the project.

The analysis of the current situation and the recommendations from the literature study will be used as input for chapter 2, in which the research method is defined. In chapters 3, and 4 the analyses, as stated in chapter 2, will be worked out in detail. Chapter 5 consists of the aggregation of the findings of the previous chapters and will be the basis for the last chapter. Chapter 6 consists of the recommendations and final conclusions. Finally, the shortcomings of the academic frameworks used will be stipulated in chapter 6, discussion.

The intervention and evaluation part of the regulative cycle are outside the scope of this project.

1.4 Research objective

In the next paragraphs the research objective, research questions and scope of the project are described. The information in this chapter was defined earlier in the research proposal, which was written as the preparation of this project (Imminga, 2013b).

As discussed in the research proposal and paragraph 1.2 of this report, RingCredible has arrived at a point where the main focus of operations will be on international expansion. During the past year some marketing campaigns were already initiated outside of the Netherlands, however these lacked a clear strategy and predefined goals. As a result, the outcome of these campaigns varied strongly.

The ambition of RingCredible is to become a prominent VoIP service provider in the world. However, in order to fulfil this ambition it is especially important that RingCredible's marketing budget is spend as effective as possible. Therefore it is essential that RingCredible develops a clear strategy which is applicable worldwide, and is based on measurable (or definable) inputs, and is evaluated on predefined goals in order to make different marketing campaigns comparable.

1.5 Research questions

In order to reach the objective stated in this chapter, the research question of this Master thesis project is formulated in the following way:

“What strategic options, regarding international expansion, are available to RBN B.V., and which strategic options are most attractive?”

This assignment can be split up in sub-questions, which are listed below:

1. Based on academic literature, information residing within RBN B.V., and data gathered from the market, which elements encompass the strategic options for RBN B.V.?
2. Out of which factors (e.g. availability of affordable mobile broadband, smartphone penetration) are these elements (e.g. target segments, target markets) constructed, and how can the value of these factors be determined?
3. For which regions will the values of these factors be determined, and what are the values for the factors in these regions?
4. Based on the results of sub-question 3, what are the most promising markets to expand to for RBN B.V.?
5. Based on the combined results from sub-questions 1 through 4, what is the optimal competitive strategy for RBN B.V. in the most promising markets?

The final deliverable of the Master thesis project will be a report that describes the analysis, as stated above, and answers will be given for the main assignment and sub-questions. Furthermore, a tool will be developed, in which the values for the different factors for market attractiveness will be combined into one score that represents the attractiveness of a market compared to other markets. Furthermore, based on the values for the different elements, the most attractive strategy can be constructed for a specific market. Finally, after the conclusions, further recommendations for problems encountered during the Master thesis project will be given.

1.6 Research scope

Since the central problem for this Master thesis project is now defined, it is possible to determine the scope of the project.

- The project will focus on the RingCredible app of RBN B.V., white label versions of the app are outside the scope of this project.

- In principle the optimal strategy for all markets (worldwide) could be determined. However, because some of the data that is needed to do this, is time consuming, or difficult to gather, the optimal strategy will only be decided for a number of regions on each continent. The criteria that are the basis for the decision on which countries to include will be stated at the beginning of the chapter that determines the values of the important factors. If the outcome of the project proves useful and reliable, the developed tool can be used by RBN B.V. to determine the optimal strategy for other countries, once that data has been gathered.

1.7 Theoretical frameworks and conceptual model

As was stated in the beginning of this chapter, as preparation for this Master thesis, a research proposal was written. Next to this research proposal, an extensive literature study was performed to identify the theoretical frameworks suitable for determining the strategic options of an organisation. In this literature study the following theoretical frameworks were selected: (1) the Resource-based view (RBV) (extended with dynamic capabilities) for analysis of the internal environment, (2) the PESTEL framework, (3) Porter’s five forces model, (4) strategic groups, and lastly (5) market segments for analysis of the external environment (Imminga, 2013a). The last step of the literature study consisted of combining (the findings from) the separate theoretical frameworks into one last framework, SWOT. This resulted in the model, as depicted in Figure 5, for which as basis the concept of the SWOT analysis was taken.

SWOT analysis			
Strengths	Weaknesses	Opportunities	Threats
(Dynamic) Capabilities		PESTEL factors	
		Porter’s five forces	
Strategic groups			
Market segments			

Figure 5: Conceptual model for combining the theoretical frameworks

In this model, the (absolute) strengths and weaknesses will come from analysing the internal environment, and the opportunities and threats are identified by using the PESTEL framework, and Porter’s five forces models to analyse the external environment. The outcomes from the analysis of strategic groups and market segments can be very diverse and lead to the discovery of relative strengths, relative weaknesses, opportunities, and threats.

In chapter 2 the abovementioned frameworks, and used methodologies, will be explained shortly, and in the chapters 3 and 5 the different frameworks are discussed in more detail and will be applied to RBN B.V.

2 Research Method

In the literature study (Imminga, 2013a), it was determined which of the academic frameworks are best suited to determine the strategic position of RBN B.V., and the corresponding strategic options. This information was put into the context of the Master thesis project which resulted in the research model as described in the research proposal, and described below. The type of research in this project is mostly descriptive. Descriptive research “tends to focus on analysis, the causes of phenomena, the causes of possible malfunctions or of less than satisfactory performance” (van Aken, et al., 2007). The information that will be gathered during the project will for the largest part be related to the current characteristics of the industry and markets. Furthermore, it will be supplemented by more exploratory data (e.g. future trends in the macro environment).

This chapter will describe in more detail how the research questions will be answered and which data will be used during the project. In order to answer the research questions, the concepts and structures that were proposed in the literature study will largely be followed. Therefore, the project will mostly consist of an examination of the internal environment and the different factors in the external environment.

For a lot of the factors taken into account in this project, major differences in their values are expected due to geographical characteristics. Therefore, the world will be split up in different zones in accordance with RBN B.V. This implies that certain analysis will be executed multiple times for different zones.

In Appendix B: World map with the five zone it is shown which countries belong to which of the five zones. The decision which country to include in which zone was made on multiple criteria. First of all, all countries within a zone should be grouped based on geographical characteristics. This ensures that (in most instances) cultures and the technological infrastructures (e.g. internet availability and speed are (more or less) comparable. Furthermore, there should not be too many zones, because this will make the project to extensive.

After the first broad analysis of the zones, for each zone a number of countries will be selected which will be looked at in more detail. The selection can depend on a number of criteria (e.g. the amount of available data for specific countries in a zone, the number of countries within a zone (i.e. North-America only consists of Canada and USA)).

In the following subparagraphs the different parts of the environment that will be analysed and the corresponding theoretical frameworks will be briefly discussed. Furthermore, the methods for gathering the necessary data will be explained. For a more detailed explanation on of the frameworks and reasons for selecting these frameworks, the literature study (Imminga, 2013a) and research proposal (Imminga, 2013b) can be consulted.

Firstly, the internal environment of RBN B.V. will be analysed. Because, RBN B.V. is a very small and young organisation, the internal environment cannot be analysed extensively. However, analysis of the internal environment is part of the conceptual model and some important insights can be acquired for RBN B.V. The internal environment will be analysed with (an extended version of) the resource-based view, namely on (dynamic) capabilities. Therefore the resources and competences of RBN B.V. will be analysed.

The second step in determining the strategic position, and the strategic options corresponding to this strategic position, is analysing the macro-environment in which RBN B.V. operates. The macro-environment consists of broad environmental factors that impact the organization. The PESTEL framework will be used to identify future trends in the macro-environment in order to determine the key drivers for change. Key drivers for change are high impact factors that are likely to significantly affect the success or failure of strategy (Johnson, et al., 2008). Input for the analysis of the macro-environment where gathered by desk research.

The next step is the analysis of the industry in which RBN B.V. operates. This will be done on the basis of Porter’s five forces model. This model helps to understand the foundation of competition and underlying causes of profitability in a certain industry (Porter, 2008) by looking at the five forces that shape competition. The information necessary to perform this analysis was gathered by desk research.

Complementing the analysis of competitors and substitutes of the previous step, a closer look will be taken to different strategic groups within the industry. In this analysis companies within an industry that follow

similar strategies are placed in the same group, and the differences between these groups are analysed. Employing strategic groups to analyse organisations in an industry, is useful for a couple of reasons. It can help organisations to understand their competition (Johnson, et al., 2008), focus strategy on direct competitors, and can be used to assess the successes and failures of the other organisations within the industry. Furthermore, strategic groups in combination with strategic group maps can point organisations towards unexploited opportunities (Johnson, et al., 2008). Desk research also provided the input that was needed for this chapter.

Instead of looking at the supply side of an industry, as is done with strategic groups, one can also look at the demand side of an industry to determine the position of competitors within that industry. Market segmentation uses the heterogeneity of demand to classify consumers with the same demand in the same group. The goal of market segmentation is to try and identify those groups of potentially interested, or receptive, customers that is sufficiently large and lucrative to justify pursuit (Yankelovich & Meer, 2006). The input for the analyses of different market segments present in the industry was mainly from case-studies and whitepapers on MVNO's, which was again gathered by desk research.

Finally, the most important findings and conclusions from the different frameworks are aggregated in the proposed SWOT model in chapter 7. Furthermore, these qualitative conclusions and findings will be combined into a tool with the quantitative data gathered, for selection of the most attractive markets. Before the report will continue with the actual analyses in the next chapter, the reliability and validity will be shortly discussed here. The outcomes of a study are deemed reliable when they are independent of the particular characteristics of that study, and can thus be replicated in other studies (van Aken, et al., 2007). The largest risk of unreliable results in this project is probably the data that was gathered and used for the developed tool. Some of the used data for this was gathered from unverifiable sources. However, where this was the case it is mentioned. Furthermore, a large part of the final report consists of secondary data (e.g. the report of the ITU). One of the pros of secondary data is that it is readily available, thus much faster to gather. However, because the data has been gathered and aggregated by other persons it can be difficult to establish the reliability and validity of the results when the used methods and/or source data are not available. In order to cope with this problem it is important to only use secondary data that is verifiable, or from a very reliable source (e.g. the ITU report is an annual report from a subcommittee of the UN, and the data is gathered by governments worldwide).

Research can be considered valid when it is justified by the way it is generated (van Aken, et al., 2007). Therefore, validity refers to the relationship between the research result and the way it has been generated. There are three types of validity: construct validity, internal validity, and external validity. Construct validity concerns whether a measuring instrument measures what it intends to measure. The constructs that are being used during this project have been validated in scholarly literature. Internal validity, in case of the methodological approach of the regulative cycle, refers both to the adequacy and the completeness of suggested relationships (van Aken, et al., 2007). Internal validity is high if the actual causes of the problem are found. Since this project does not aim to find causalities, instead the current situation will be studied from all angles, the internal validity of this project is of no issue. The last type of validity is external validity, which refers to the generalizability of the obtained result to other people, organisations, countries, and/or situations (van Aken, et al., 2007). The results of this study are generalizable to other organisations as RBN B.V. who employ the same technology (VoIP), and/or target the same market segments (low-cost and/or international segment). Furthermore, some of the findings from the analysis of the external environment can be insightful to any competitor in the specified industry.

3 Internal environment

The first step in constructing a clear picture of the strategic position of RBN B.V. will be to analyse the internal environment. This will be done from a resource-based view (RBV) of strategy, which entails that sustained competitive advantage derives from the competences and resources in control of the firm that are valuable, rare, imperfectly imitable, and not substitutable (Barney, 1991). There are two important assumptions at the heart of the RBV. Firstly, the model assumes that organisations within an industry (or group) may be heterogeneous regarding the strategic resources they control, and secondly, these resources may not be perfectly mobile across firms, thus heterogeneity can be long lasting (Barney, 1991).

As one can see, a distinction is made between competences and resources. The resources of an organisation can be divided over four broad categories: (1) Physical resources, (2) financial resources, (3) human resources, and (4) intellectual capital (Johnson, et al., 2008). Resources are one part of the strategic capability of an organisation, and are important to organisations, because they are the means to which they achieve their goal. However, at least as important as resources are the competences of an organisation. Competences are defined as: “the skills and abilities by which resources are deployed effectively through an organisation’s activities and processes” (Johnson, et al., 2008, pp. 96). The analogy behind the importance of competences is that the efficiency and effectiveness of resources does not depend on their existence, but on the manner in which they are deployed. When the capabilities (i.e. resources and competences) of an organisation meet the requirements to compete in a certain market they are said to be at threshold level. When organisational capabilities exceed the threshold level they can be a source of competitive advantage and superior performance (Johnson, et al., 2008). These sources of competitive advantage and superior performance are called unique resources and core competences. Unique resources are resources that others cannot obtain or imitate, and critically underpin the competitive advantage of an organisation, while core competences are those skills and abilities by which resources are deployed to create a competitive advantage that others cannot imitate or obtain. In order to determine whether an organisation’s capabilities are achieving competitive advantage and are sustainable, it needs to be considered if (1) they are unique (or rare), (2) inimitable (3) non-substitutable, and (4) most importantly the capabilities will need to be of value to customers (Barney, 1991).

3.1 Capabilities within RBN B.V.

Now that the concept of the RBV is clear, it will be applied to RBN B.V. in order to determine whether there are sources of competitive advantage and superior performance. RingCredible has proven for the past year that their business model was sustainable in the Dutch market. This implies that RingCredible can compete in this industry, and indicates that their capabilities are at least at threshold level.

Since the capabilities of RBN B.V. are at least at threshold level, the next step is to determine whether there are unique resources and/or core competences. In order to be able to do this, first the (noteworthy) resources of RBN B.V. will be analysed. The most important resources of RBN B.V. fall in the categories human resources, intellectual capital, and financial resources. First of all and foremost, there is the application (software system) that provides the service to the consumers. As was already mentioned in chapter 3, in November of 2013 RBN B.V. launched its new system. When comparing the conversion from download to user of the last two months of 2013 to the rest of 2013 it becomes clear that improvements in the application can improve the results of the organisation as a whole. However, it should be noted that, although the application was made in behalf of RingCredible, it is not inimitable or non-substitutable. This is mainly due to the fact that the VoIP technology used for the application can be purchased by anyone. Secondly, human resources are essential for the success of RBN B.V. Although there are currently only two FTE active in the operational part of the organisation, these two are responsible for the development and improvement of the application, customer communication, detecting and resolving operational issues, and directing the customer support unit. Furthermore, since RingCredible is a start-up there are no clear guidelines or best practices on how to tackle problems encountered, thus employees will have to rely on their own knowledge and skills. When looking at the enumeration above, the human resources of RingCredible can be considered unique. On the other hand, due to the rather long list of tasks for

employees, and the constantly changing situation, employees have (almost) no time to engage in pro-active problem solving, or improvement of the application and business processes. During the start-up phase of an organisation, this situation might be unavoidable because there is simply too much work for a small group of employees. However, as the service matures, customers will expect more and this can only be achieved by continuously improving instead of fixing.

Another resource on which RBN B.V. depends is its backing by investors. These investors supply the organisation with the financial resources it needs to keep the organisation running and more importantly allows the organisation to engage in marketing to grow the customer base. Furthermore, these investors made it possible for RingCredible to invest in the new application.

Besides these most important resources, there is one more resource present within RBN B.V. which shall be discussed here and which can become a source of competitive advantage, customer databases. Currently, only very general information about customers is used to gather insights about the results of application improvements and marketing effectiveness. However, as will be explained in the chapters to come (especially in sub-chapters 6.2 and 6.3), the better that RBN B.V. will be able to understand its users, the more value it can extract from them and the better they will be able to prevent customer losses.

As one can deduce from this, rather meagre, list of resources, competences probably play an important role within RBN B.V., because they will, most likely, not be able to compete at threshold level on these resources solely. The most important competences within RBN B.V. are their ability to quickly make changes, and the experience and learning about what works well and what does not.

Whether the abovementioned capabilities are a source of competitive advantage and/or superior performance is difficult to determine because there is no freely available data about the performance of competitors to compare results to. However, even if the current capabilities of RBN B.V. already are a source of competitive advantage, there is ample room for improvement. Furthermore, as will be discussed in the next paragraph, generally the threshold level of capabilities will increase as time passes. Generally this process will go faster when the industry in which the organisation competes is changing rapidly. As will be analysed in the chapters on the external environment, the industry in which RBN B.V. operates is undergoing rapid changes, implying that capabilities need to be improved continuously in order to be able to compete at least at threshold level. One manner to achieve this is by developing dynamic capabilities.

3.2 Dynamic capabilities

Thus, capabilities do not need to be durable over time. Especially in high-tech markets, where innovations follow each other at an ever increasing pace, due to advances in technology, and therefore offer greater opportunities for substitution and imitation of existing products, services, and capabilities (Johnson, et al., 2008). In order to explain why some organisations were able to sustain their competitive advantage (in these dynamic market places), the resource-based view was extended with dynamic capabilities by Teece, et al. (1997). Dynamic capabilities is defined as “the firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (Teece, et al., 1997, pp. 516). From this perspective, organisations have to adapt, integrate and reconfigure their capabilities continuously to respond to changing market conditions. Developing these dynamic capabilities is not straightforward, they require internal processes and efforts, instead of acquisitions (Zhou & Li, 2010). Because dynamic capabilities need to be developed internally, “they are the most unique and difficult-to-imitate assets a firm can use to achieve and sustain competitive advantage” (Zhou & Li, 2010, p. 224). Furthermore, Teece (2007) notes that the necessary managerial services that support dynamic capabilities cannot be outsourced, because for understanding and implementing the processes and structures that support dynamic capabilities, an intimate understanding of the organisation, and the ecosystem in which the organisation operates, is required.

In summary, whereas in more stable conditions competitive advantage might be achieved by building capabilities that may be durable over time, in more dynamic conditions competitive advantage requires the building of capacity to change, innovate and learn (i.e. to build dynamic capabilities).

Abovementioned arguments are very general and can be applied to any organisation that operates in these dynamic market places. Still, as was discussed in the previous paragraphs, RBN B.V. will need to

continuously improve their capabilities in order to be able to compete at threshold level, and preferably, create source(s) of competitive advantage. In order to be able to achieve this, chapters later in this report will (a) list the sources and areas susceptible to rapid change in this industry, (b) highlight those resources and competences which are needed to compete in this industry, and (c) flag capabilities that competitors employ and serve as a source of competitive advantage. These lists can serve as input for the management of RBN B.V. to guide the development of dynamic capabilities.

3.3 Conclusions on the internal environment

All in all, it can be stated that the capabilities of RBN B.V. are, at the moment, not very well developed and furthermore not numerous. This should however not be surprising, because it is still a start-up, and their service has only started to gain traction during the last year. On the other hand, even though their capabilities are not that well developed, they are able to compete in this industry and growing rapidly at the moment, indicating that consumers do value their service. Therefore, if RBN B.V. will be able to improve its capabilities (preferably by developing dynamic capabilities) at a greater speed than the industry (i.e. threshold level) they will create a (or enlarge their) competitive advantage over competitors. This report will now continue with the analysis of the macro environment. In this analysis, key drivers for change in the macro environment will be discussed. These key drivers for change can give insights as to which resources and/or competences will be necessary to compete in this industry in the coming years.

4 External environment

The next step in constructing a clear picture of the strategic position of RBN B.V. will be to analyse the external environment. In order to structure the process of analysing the external environment, the frameworks described in the literature study will be used. These frameworks are organised in three layers, namely the macro environment (PESTEL analysis), the industry layer (Porter's five forces), and competitors layer (strategic groups and market segments).

4.1 Macro-environment

The highest-level layer in the business environment is the macro-environment. The macro environment consists of broad environmental factors that impact the organization. An appropriate framework to identify future trends in the macro-environment is the PEST (Political, Economic, Socio-cultural, and Technological) or PESTEL (with Legal, and Environmental ('green') added) framework. Political highlights the role of governments; Economics looks to macro-economic factors; Socio-cultural refers to changing cultures and demographics; Technological refers to innovations; Environmental highlights 'green' issues, such as pollution; and finally Legal embraces legislative changes and constraints.

Yüksel (2012) argues that PESTEL analysis has two basic functions for a company: (1) it allows identification of the environment within which the company operates, and (2) it provides data and information that will enable the company to predict situations and circumstances that it might encounter in the future. This is in accordance with Johnson, et al. (2012) who state that a "PESTEL analysis provides the broad 'data' from which to identify *key drivers of change*".

In order to carry out a PESTEL analysis, it is important to first analyse how the aforementioned factors are changing now, and thereafter how these factors are likely to change in the future. Furthermore, these factors can also be interrelated (e.g. the Legal environment is usually related to the Political environment, where laws and regulations only change if there is political will).

A PESTEL analysis will in most cases produce a long and complex list of changing circumstances. After composing this complex list, it is necessary to take a step back and pinpoint the 'key drivers for change' (Johnson, et al., 2008). The key drivers for change are "the high impact factors likely to affect significantly the success or failure of strategy" (Johnson, et al, 2008, pp. 56). By identifying these key drivers for change, managers can focus on those PESTEL factors that are most important (i.e. are most likely to (greatly) affect the company, or offer the greatest opportunities) and must be addressed with the highest priority. Without a clear picture of the key drivers for change, managers will be unable to make decisions that allow for effective action (Johnson, et al., 2008).

Since RBN B.V. is an online service provider and, besides this, a very small organisation, environmental factors will not play a role. Therefore, they will not be included in this analysis. In this section the key drivers for change that are relevant globally (i.e. for all or most zones) will be discussed. Furthermore, the categories political and legal will also mostly be excluded in this section, because political and legal (in the case of ICT/telecommunications) factors are related to a country (or at most to a zone (e.g. EU)), thus very specific. In addition, in Appendix G: Detailed analysis of the current situation of RBN B.V. paragraph 1.2.1.7 countries with government policies regarding VoIP will be discussed and listed. This section will thus mainly consist of global key drivers for change in the categories Economic, Socio-cultural, and Technological.

4.1.1 Technological

A lot of sectors in which technologies are playing an important role have been rapidly evolving the last decades. This is also (maybe even especially) the case for industries related to cellular and internet technologies, which have seen enormous change and developments in the past decade. This is evident from the numbers and forecasts released by the ITU¹ (International Telecommunication Union) on October 7th 2013. The report states that today, almost all people on Earth live within reach of a mobile cellular signal, and estimates that by the end of 2013 there will be on average 96.2 mobile-cellular subscriptions for

¹ The ITU is a specialized agency of the United Nations that is responsible for issues that concern information and communication technologies.

every 100 people (this is defined as the penetration rate) (ITU, 2013). Already by the end of 2012 around 50% of the world's population was covered by a 3G network, and this percentage is continuing to rise. Furthermore, the report estimates that by end 2013 there will be 2 billion mobile-broadband subscriptions (Mobile-broadband is defined here as "wireless internet access through a mobile device of at least 256 Kbit/s" (ITU, 2010)). However, huge differences between regions exist. For example, penetration rates range from 10.9% (Africa) to 67.5% (Europe) (ITU, 2013). Another difference between regions is that in most developed countries mobile-broadband is a complement to fixed-broadband access, whereas in developing countries mobile-broadband is often a substitute (ITU, 2013).

Since 2007 the CAGR (compound annual growth rate) of mobile-broadband subscriptions was 40%, and with that, the fastest growing segment over the past few years. The ITU forecasts that by 2018 there will be 6.5 billion mobile-broadband subscriptions (in comparison, today there are around 6.8 billion cellular telephone subscriptions) (ITU, 2013).

The number of fixed-broadband subscriptions also continues to grow, although much slower than mobile-broadband subscriptions, at around 10% CAGR. With fixed-broadband connections the penetration rates differ even more per region, from 0.3% (Africa) to 27% (Europe). This large difference is mostly attributed to the difference in affordability in different regions. Although the price (as measured as a percentage of GNI per capita²) has fallen by 82% over the past four years, it is still unaffordable for most people in developing countries, costing on average 30% of GNI per capita (ITU, 2013)(more on this under the category economic later on).

Besides this significant growth in both mobile- and fixed-broadband subscriptions, the speed of both types has also increased significantly in the past years and is, especially for mobile-broadband, expected to continue rising (ITU, 2013). The average speed of broadband connections rose globally, however, the difference between the developed and developing world continues to exist. Together with this increase in internet speed, the average data allowance for each subscription type also rose globally (ITU, 2013). For RBN B.V. especially the increase in mobile-broadband speed is important, because the minimum requirement for the application is the 3G standard, and since this standard (or higher) is becoming available in more countries every year, the potential market for RBN B.V. keeps expanding. At the end of 2012 a mobile-broadband subscription of at least 3G standard was available in 124 of the 157 investigated countries (ITU, 2013). Furthermore, connection speeds beyond 3G will, for RBN B.V., not affect the quality of calls anymore, thus forecasts with regard to that are not relevant in this analysis.

The (projected) increase in mobile-broadband subscriptions and mobile data traffic is mostly fuelled by a strong demand for smartphones across all geographies. The IDC (International Data Corporation) estimates that this year (2013) will be the first year that smartphone shipments will surpass 1 billion units, out of 1.8 billion cellular phone shipments in total (IDC, 2013). Smartphone shipments will continue to rise sharply, from around 500 million units in 2011 to a forecasted 1.7 billion units in 2017 (IDC, 2013). By 2017 it is expected that smartphones will represent almost all of the mobile phone market in the world's most developed economies. However, large portion of the forecasted growth is expected to come from less developed markets, due to the introduction of a growing array of cheaper (under \$200) smartphones. Regarding the operating systems (OS's) of the for 2017 projected smartphone shipments, no major shifts are expected (Table 4). IDC projects that Android will remain dominant, followed (at large distance) by iOS, while Windows Phone and Blackberry will battle for the third place (IDC, 2013).

Table 4: Estimate of 2013 and forecast for 2017 smartphone operating systems (source: IDC (2013))

Smartphone OS	Estimate 2013 market share	Forecast 2017 market share
Android	75.3%	68.3%
iOS	16.9%	17.9%
Windows Phone	3.9%	10.2%
BlackBerry OS	2.7%	1.7%
Others	1.2%	1.9%

² GNI per capita is defines as: gross national income divided by mid-year population (http://www.unicef.org/infobycountry/stats_popup1.html)

Finally, one last issue that can potentially change the market for mobile calls is the development or rise of free VoIP services which are adopted by large portions of the market (e.g. comparable to services like WhatsApp and Line, which disrupted the SMS market). Currently there are a few free VoIP services available for smartphone users (Skype, Rebtel, etc.), but all of them have pitfalls and do not offer the same ease of use as regular calls or paid VoIP services. For instance, instead of using a telephone number, you need the username of the person you intend to call and that person needs to be online on the application at the time you want to call (closed user group). For now, no such service is in sight, however RBN B.V. should monitor developments regarding these sort of services.

4.1.2 Economic

The level of development of the telecommunications sector (measured as the ICT Development Index (IDI)) in a country has a direct relation ($R^2 = 0.8848$) to the GNI (Gross National Income) per capita (ITU, 2013). This relation between IDI and GNI per capita is shown in Figure 6.

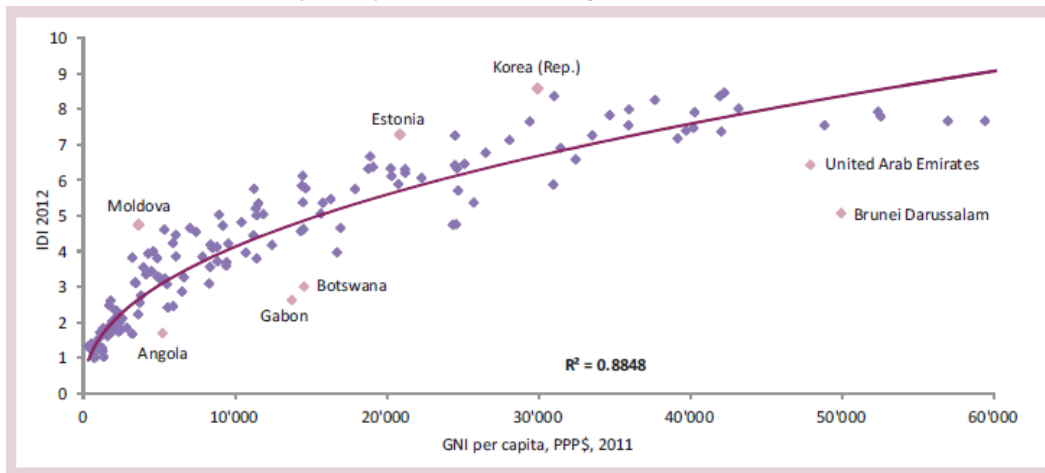


Figure 6: The relation between IDI and GNI/capita for all countries in the ITU database (source: (ITU, 2013))

This relation is mostly being attributed to increasing customer needs that accompany the increase in prosperity of consumers, and “the link between the uptake of ICTs and the price of telecommunication services” (ITU, 2013, p. 43). This relation between the level of ICT development and the affordability of ICT services (in % of GNI per capita) is graphically depicted in Figure 7.

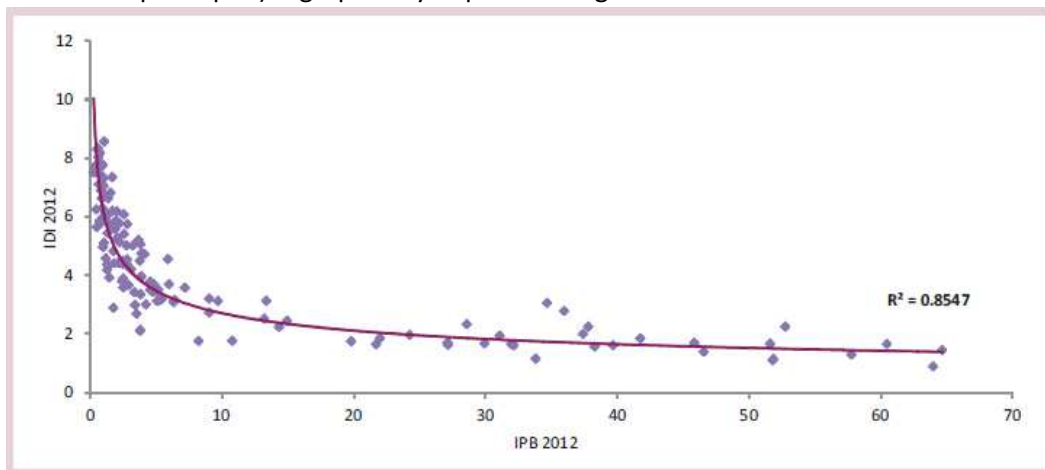


Figure 7: Relation between IDI and price level (in % of GNI/capita) for all countries in the ITU database (source: (ITU, 2013))

Furthermore, these two effects amplify each other (i.e. the more people that can, and do, make use of telecommunication services, the lower prices become, which further enlarges the potential consumer market). As one can deduce from the data (and from **Error! Reference source not found.**, and **Error! Reference source not found.**), the effect from GNI/capita on price level and IDI is the strongest in the lower range.

One of the variables that is used as input for the ICT Price Basket (IPC), the metric which measures the affordability of ICT services, is the price of mobile broadband (prepaid and post-paid) in each country. This variable, that measures the price of the service in % of GNI per capita, can be used as an indicator for the

adoption of mobile broadband (with lower prices leading to higher penetration rates). These lists on affordability of post-paid and pre-paid mobile broadband, per country can be found in Appendix D: Mobile-broadband prepaid and post-paid prices (500 MB, 2012).

Two conditions that can further accelerate the adoption of mobile-broadband in less developed countries were already mentioned in the previous paragraph (technological), namely the availability of an array of cheaper smartphones, and mobile-broadband being the primary source of access to the internet in these countries (i.e. in these countries mobile-broadband is often a substitute for fixed-broadband, instead of a complementary product). For RBN B.V. the most interesting markets to possibly expand to, are markets where prices for mobile-broadband are relatively low compared to those of cellular-calls.

One last issue that is covered in this paragraph is on currency exchange rates. Since, the launch of the new app, most users of RingCredible pay for call credits in their own currency. The currency in which a user pays is determined on the basis of the telephone number prefix of the user. At this moment, there are eleven different currencies in which users can pay and this number will further increase in the future. Offering users the ability to pay in their own currency, poses a threat for RBN B.V., due to fluctuating exchange rates. This is the case, because all calls (cost of goods sold) are paid for in Euro's by RBN B.V., and consumer prices (of call credit packages and call minutes) are adjusted only once a month for changing exchange rates. Generally, this will not result in significant losses (or profits), because most exchange rates are not volatile (over a monthly period). However, recently some currencies (e.g. Indian Rupee, Argentine Peso) have shown very volatile changes, and even the Brazilian Real has shown volatile changes (to EUR) in the past weeks (high: 0.316 (Jan. 20th), low: 0.299 (Jan. 29th), i.e. 5%+ change (X-rates.com, 2014)). This threat can be easily offset, by monitoring exchange rate changes, and changing the consumer prices once the difference becomes larger than a certain threshold.

This gap (of maximal a month) between currencies is however not the largest threat posed by exchange rate changes. The largest threat is namely (rapid) depreciation of the Euro. This is caused by the fact that purchased call credits are valid for six months and are, for users denominated in the users currency, but for RBN B.V. collected in Euro's after (on average about 3-4 weeks) the purchase. The following, simplified, example illustrates this threat. Take for instance an US user who purchases for \$10 call credits in January at an exchange rate of 1.0, \$ to €. This user has bought the call credits for the purpose of calling to the Netherlands, which in January costs € 0.01, and thus \$ 0.01 for the user, at a 40% profit margin for RBN B.V. Now suppose that in July the exchange rate from € to \$ is 2.0, that the user has not spend any of his call credits, and that the price of calling to the Netherlands has not changed (i.e. it is still €0.01 at 40% margin). In July, the price of calling to the Netherlands for US users will be \$0.005 (€0.01 / 2), thus effectively doubling the amount of call minutes for the user, and halving the margin for RBN B.V., for the specified user.

Of course, in the previous example the fluctuation in the exchange rate (between two stable currencies) is enormous for six months. Still, when the number of transactions in foreign currencies, and/or the number of different currencies offered by RBN B.V. increases, it could pose a significant risk. This risk can be mitigated by taking different measures. One of the measures which could be taken is linking the balance of users (denominated in their own currency) to the euro value of the moment of purchase and adjusting the balance of users to changes in exchange rates. This can however be confusing for users, because their balance can change when they do not use the service. Another option for RBN B.V. will be to hedge themselves against exchange rate fluctuations, but this is not without costs.

4.1.3 Socio-cultural

During the last 10-15 years, the mobile phone and mobile calling have become a part of everyday life in developed countries. Whereas people were previously only reachable when they were near a fixed telephone line, nowadays almost everyone is reachable at any moment. During this period the number of (domestic) called minutes per person per year increased heavily the first few years, but eventually plateaued after penetration rates surpassed 100% and prices dropped. This same process is currently underway in semi-developed and less-developed countries (more on this in Porter's five forces analysis). Again, the GNI/capita is a good predictor for the use of cellular technologies (ITU, 2013).

When taking a look at the international outgoing telephone traffic of different countries, the GNI/capita is a much worse predictor of called minutes per person. Since one of RingCredible's propositions is that they enable the user to significantly reduce their costs for international calls, it is important to know the most important drivers for international call traffic. Although, GNI/capital is not as good a predictor for international traffic as it is for several other statistics, it is still a relevant one. Generally, countries with a higher GNI/capita have more international outgoing telephone traffic. However, "Reasons for large traffic volume have as much to do with population size, immigration and proximity of trading partners as wealth" (ITU, 2011). For the consumer market, countries where a lot of people immigrate from or to, could be interesting markets. Especially if this statistic is combined with the development of the telecommunication sector, countries with high immigration (relative to population) and a low level of development (thus higher prices), should be interesting targets.

As was already mentioned in the previous paragraphs (technological and economic), the use of smartphones and mobile-broadband has increased enormously over the past years, especially in the more developed countries. These technological advances enabled the use of mobile VoIP technologies for a wide array of devices and locations. However, most consumers associate VoIP calling with closed-user groups and are unaware of services (such as RingCredible and Skype out) that allow for outgoing access. Consumers in the more developed countries are gradually becoming more aware of the opportunities that VoIP services can offer them, but still a lot of improvement is possible on this aspect. Since RBN B.V. is a small player in the global market, they will most likely be unable to make a substantial contribution to this. Fortunately, some of the larger players are trying to better inform consumers and enlarge the potential market for all players in the process.

4.1.4 Legal and political

The explosive growth of the telecommunication sector in recent years gave rise to a whole array of different problems to which policy makers had to respond (e.g. low competition in the market, privacy issues, etc.). According to the ITU, "Over the past two decades, most markets have achieved some level of regulatory maturity, many with an established, separate regulator, competitive framework and privatized incumbent" (ITU, 2013, p. 5). One of the important tasks of regulators in the telecommunication sector is to achieve a certain degree of net neutrality in the market. Net neutrality can be broadly defined as "the principle that all electronic communications passing through a network should be treated equally" (ITU, 2013, p. 6). In practice, not all traffic passing through a network is treated equally. Internet service providers (ISP's) are allowed to manage the traffic on their networks for a variety of reasons, for example to prevent congestion or ensure network security (ITU, 2013). The tools these ISP's employ to manage traffic on their networks can however also be used to block competing services or providers. Lately, several incidences of traffic management by ISP's for anti-competitive purposes has been a subject of concern. Some mobile operators have for instance blocked VoIP applications (Telecompaper.com, 2013; The Guardian, 2006), because they see these services as a threat to their revenues.

Critics point out that there is a fine line between applying traffic management in an appropriate way and wrongly interfering with traffic that threatens the ISP's own business (ITU, 2013). This is especially the case with bandwidth-hungry services (e.g. HD video streaming).

For now, almost all regulators are strongly opposed to the use of traffic management by ISP's, this could however change as dynamics of the ICT markets change. Advances in the telecommunications sector of a country is an important driver for economic growth in other sectors as well (ITU, 2013), and these advances are facilitated by ISP's, who face increasing capital investment costs. If ISP's are no longer able to earn back these investments, regulators may change their standpoint and new business models may become common practice. Suggestions for new business models include, for example, charging service providers for access or prioritization to networks. RBN B.V. should monitor developments in this debate in order to be able to timely respond to possible threats of this type.

Another issue on which policy-makers and regulators have expressed concerns in recent years, are international mobile roaming rates. Reviews and analyses of mobile roaming, that have been undertaken by different international organizations, regional bodies, and individual countries have all reached a similar

conclusion; retail prices for international roaming are (a) significantly high, (b) have no linkage to domestic mobile prices, and (c) do not reflect costs (ITU, 2013; ITU, 2011). The difficulty for policy makers to reduce these prices, lies in the fact that “authorities from the country of origin of international travellers have no authority to control and regulate the prices set for international mobile roaming in a visited country” (ITU, 2013, p. 10). According to the ITU (2013), resolving the high prices for roaming will only happen through appropriate regional, bilateral and/or international agreements. In the EU, the first steps have been taken to lowering international roaming tariffs, by gradually reducing the maximum price that operators can charge (per minute of call, and text message) for connections within the EU. As the prices of roaming gradually drop, the incentive for consumers to use services such as RingCredible will diminish (i.e. cost saving by the use of these services will be lower) and this can form a threat. However, prices of international roaming are not expected to drop significantly in the coming years. Furthermore, a price drop in international roaming will also make mobile broadband more affordable abroad, which brings about opportunities for services such as RingCredible.

4.1.5 Conclusions from the macro-environment

The objective of carrying out a PESTEL analysis is determining the key drivers for change. These key drivers for change are likely to significantly affect the success, or failure, of strategy. In this paragraph the most important key drivers, from all categories, are briefly summarized. First of all, the uptake of mobile-broadband services (potential customers of RBN B.V.) is expected to skyrocket, from around 2 billion subscriptions currently to 6.5 billion by 2018. Due to the high regional differences in mobile-broadband penetration nowadays, this growth will for a large part be fuelled by consumers in less-developed countries. Secondly, the level of development of the telecommunications sector of a country is directly linked to (a) the GNI/capita, and (b) the price of telecommunication services. As explained, this relation can be used to estimate country attractiveness (e.g. uptake and use of telecommunication services, mobile broadband adoption, and price level of calls) for RBN B.V. However, when looking specifically at international telephone traffic of a country (low international rates are a USP of RBN B.V.), GNI/capita is not such a good predictor, and other factors, such as immigration, can point to interesting markets. In addition, several possible threats were also uncovered during the PESTEL analysis. Firstly and foremost, there is the threat of evaporating margins if the Euro depreciates rapidly. Especially when revenues keep growing at the current rate and a large portion of these revenues are denominated in foreign currencies. Another threat that should be monitored are ISP's that block VoIP applications. Possibly the best ways to monitor this threat, is to monitor (large) increases in the amount support requests coming from a country, and/or (large) decreases in the number of called minutes to and from separate countries. Lastly, in some geographies (e.g. the EU), international roaming tariffs are decreasing due to government regulation. Since low international rates is one of the USP's of RingCredible, this can threaten their value proposition. Finally, some of the conclusions drawn in the PESTEL analysis (mainly on country attractiveness) will be used in chapter 8 to determine the most interesting markets for RBN B.V. to expand to. However, this report will first continue with the analysis of the industry layer.

4.2 Industry layer

After the analysis of the macro environment, it is now time to take a closer look to the industry in which RBN B.V. operates. The analysis of the industry will be done on the basis of Porter's five forces model. According to Porter (2008), the model should be used at the industry level. An industry is defined here as: a market in which similar or closely related products are sold. In this analysis the service for sale is that of 1 on 1 paid mobile calls for the consumer market.

"From a strategic management perspective it is useful for managers in any organisation to understand the competitive forces in their industry or sector since these will determine the attractiveness of that industry and the likely success or failure of particular organisations within it" (Johnson, et al. 2008, page 59).

However, slightly in contrast with the previous statement, Porter (2008) states that the point of analysis should not be to declare an industry attractive (or unattractive), but to understand the foundation of competition and underlying causes of profitability in a certain industry.

As the name of the framework suggests, Porter's five forces model consists out of five forces, which shape industry competition. These forces are: (1) threat of entry, (2) the power of suppliers, (3) the power of buyers, (4) threat of substitutes, and (5) rivalry among existing competitors. Before going into more detail on these five forces, the model is represented graphically in Figure 8 below.

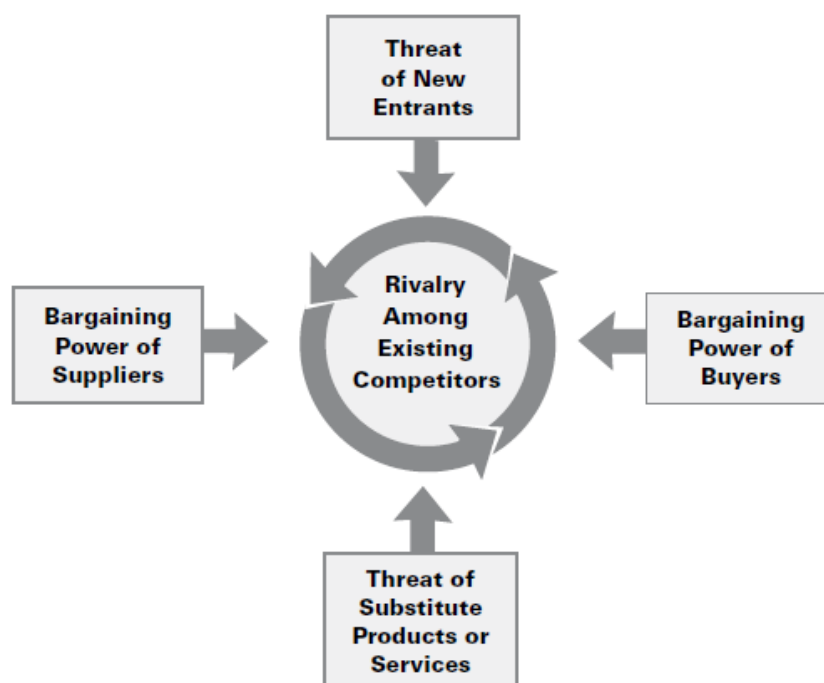


Figure 8: The five forces that shape industry competition (source: (Porter, 2008))

Before starting the analyses of the different forces, it should be noted that this industry is changing rapidly at the moment. The industry is in transition from a state where incumbents (large telecommunication providers) control the industry and set prices, to a state in which there is a much broader offering of services, from different types of organisations, employing different technologies. This transition is caused by the rapidly growing availability, and use, of faster (especially mobile) data subscriptions. The transition resembles what happened to text messages over the last couple of years by the introduction of substitute messenger services like WhatsApp and Line. Due to the emergence of different types of organisations and different technologies employed, some of the five forces will not be equal for the different type of organisations. Where this is the case, the differences will be explained. In order to be able to explain these differences in forces, a short explanation of the different types of organisations is offered below. Subchapter 4.3.3 will offer more detailed descriptions of the types of organisations, their differences and the market segments on which they focus.

In general three different types of organisations that compete in this industry can be distinguished. The first type is the traditional telecommunication provider (or Mobile Network Operator (MNO)) that has heavily invested in its own (GSM/network) infrastructure. These are usually very big corporations (such as América

Móvil and Vodafone) and/or (formerly) state owned companies (such as Telefónica and Orange). Secondly, there are providers (often subsidiaries or affiliates of the first type) that buy/lease/rent network access from the first type, and employ the same technologies. These type of organisations are also called Mobile Virtual Network Operators (MVNO's). Lastly, there are VoIP service providers who offer applications with outgoing access (i.e. the ability to connect to users of the first two types of organizations). This last type of organisations only partly employ the same technologies as the first two types of organisations. These VoIP service providers handle the 'first' part of the call themselves, and buy capacity from organisations of type one (indirectly, through a broker) for the 'last' part of the call (see Figure 3 for a graphical representation of a call over VoIP). However, the experience of the service for consumers is identical regardless of the type of organisation that facilitates it. RBN B.V. can be qualified as an organisation that falls into this last category. Except for differences in their business models, these different type of organisations generally also differ in size (market share). MNO's are always the largest, because they created the market or entered it in an early stage. MVNO's, are (if present) often much smaller than organisations of the first type, because they entered the market at a (much) later moment and often focus on specific user segments. Another important difference between the types of organisations which should be noted is their (geographical) focus. MNO's are mostly focussed on multiple countries or specific continent(s), MVNO's are often much smaller and focus on one or a couple of countries. Lastly, VoIP service providers mostly offer their services globally. Although they usually have a strong user base in a specific country or continent, in theory everyone with an internet connection (and appropriate device) can use their services. Therefore, it can be difficult to determine whether an organisation of this type competes in an industry (if there are very few users) or when they enter a specific market.

Below, the different forces, their impact on strategy and the conclusions from the specified industry are discussed. For a detailed, in-depth, analysis of Porter's five forces model for the specified industry, see Appendix H: Detailed analysis of Porter's five forces model, for the specified industry.

4.2.1 Threat of entry

Whenever a new competitor enters an industry, they bring extra capacity to the industry with the goal to gain market share, in turn, this pressures prices, costs, and the investment rate necessary to compete (Porter, 2008). The threat of entry puts a cap on the potential profit of an industry, because when this threat is high, incumbents must either increase investments, or hold down prices to deter new entrants. In order to clarify the previous statement, it is the threat of entry that holds down profitability, and not whether entry actually occurs. Whether the threat of entry in a specific industry is high, is dependent on the height of the entry barriers present. There are multiple, conflicting definitions of the concept barrier to entry (McAfee, et al., 2004), but in a broad sense it can be defined as follows: "Entry barriers are advantages that incumbents have relative to new entrants" (Porter, 2008, p. 26).

According to Porter (2008) there are seven major sources of entry barriers, namely: (1) Supply-side economies of scale, (2) Demand-side benefits of scale, (3) customer switching costs, (4) capital requirements, (5) incumbency advantages independent of size, (6) unequal access to distribution channels, and (7) restrictive government policy. These seven major sources of entry barriers, together with their explanation, are listed in Table 5.

Table 5: The seven barriers to entry and their explanation

Supply-side economies of scale	These economies occur when firms that produce in larger volumes have lower costs per unit. This effect can occur for a number of reasons: (a) they can spread their fixed costs over more units, (b) they use more efficient technology, and (c) they are able to claim better terms from their suppliers.
Demand-side benefits of scale	These benefits, which are also called network effects, arise when a buyer's willingness to pay for a company's product increases with the number of products sold of the company.
Customer switching costs	Switching costs are (fixed) costs that customers face when they change suppliers.

Capital requirements	If the relevant industry requires large capital resources in order to compete. Especially if it is required to invest this capital in unrecoverable assets, it can be a high barrier to entry.
Incumbency advantages independent of size	In many industries incumbents have cost or quality advantages over new entrants. There are numerous sources from which these advantages can stem (e.g. established brand identities, production experience, proprietary technology, etc.)
Unequal access to distribution channels	New entrants in an industry must secure distribution for its products. "The more limited the wholesale or retail channels are and the more that existing competitors have tied them up, the tougher entry into an industry will be" (Porter, 2008).
Restrictive government policy	Governments can limit or foreclose entry into specific industries (e.g. by licensing requirements) or have policy in place that limits entry into a specific industry (e.g. patenting laws, environmental laws). However, government policy can also lower entry barriers, by for instance subsidies.

The abovementioned barriers to entry do not have to be all present, and/or present in the same magnitude, in all industries. Dependent on the industry some of these barriers may be much more significant than they are in other industries. Furthermore, the entry barriers should be judged from the perspective of capabilities from potential entrants (Porter, 2008).

However, these barriers of entry are not the only factors that can deter a potential new entrant from entering. The expected retaliation of incumbents also plays a significant role in this decision. If the reaction of incumbents is strong and lengthy enough, the potential profit of entering the industry can fall below the cost of capital. Potential new entrants are more likely to face these retaliations if incumbents: (a) "have previously responded vigorously to new entrants", (b) "possess substantial resources to fight back", (c) "seem likely to cut prices", and (d) "industry growth is slow, so newcomers can gain volume only by taking it from incumbents" (Porter, 2008, pp. 29).

4.2.1.1 Conclusions on threat of entry

For the analysis on the threat of entry, it is chosen to distinguish between three types of markets. This distinction will be made on how well developed the market is. This distinction is made, because the level of development of markets is related to the degree of competition and the price level.

Generally, three types of markets can be distinguished. First of all, there are (highly) developed markets, such as Japan, North-America and Western-Europe. On the other hand there are under-developed markets, like most sub-Saharan African countries, where especially the less densely populated and rural areas are being severely underserved. Lastly, there are markets, such as India and Peru, which are bridging the gaps between these two extremes. The degree of development of certain markets can be related to a couple of variables, but is mostly related to the GNI per capita of the country/region (where a higher GNI relates to a more developed market, mainly due to higher consumer needs). Furthermore, country/region specific circumstances, such as population density, government policies (e.g. capping mobile termination rates (MTR's) (Corrocher & Lasio, 2013)), or geographical issues (e.g. remote islands) can influence the degree of development. The sub-index Access, from the ICT Development Index (IDI), provides a good reference on the level of development of 157 countries (see Appendix C: ICT Development Index, Access sub-index). Lastly, possible retaliation from incumbents also differs for the type of organisation that wants to enter a market. Generally, incumbents will retaliate more vigorously to direct competitors (i.e. organisations of the same type), because they tend to focus on the same customer segments.

(Highly) developed markets

The (highly) developed markets have matured, and are more or less in equilibrium. They are characterized by sufficient, and often even excess, network capacity and relatively low prices. Prices in these markets have dropped due to the emergence of MVNO's, who could offer lower rates due to slimmer business

models and the availability of excess network capacity. Because these markets have matured, industry growth is low or null, so potential new entrants can only gain market share by taking it from incumbents. Furthermore, because the price level in these markets is already relatively low, profit margins are low to non-existent (i.e. services are offered at cost-price).

In these markets, entry barriers for VoIP service providers are the low (compared to MNO's and MVNO's). Due to the different technology employed in the first part of the call, they are able to produce at (slightly) lower costs, thus being able to achieve higher profit margins at the same price level (or the same profit margin at a lower price level). By being able to offer lower prices, these potential entrants can form a threat to incumbents. However, because profit margins are already under pressure, they cannot retaliate by cutting prices directly. On the other hand, incumbents can cut prices indirectly. They can, for example, offer bundled products (data subscription, text messages, and call minutes) at a slightly higher price than the separate products (in most cases a data subscription) to give customers the feeling that calling costs them almost nothing extra.

Semi-developed markets

In semi-developed markets, entry barriers and retaliations from incumbents differ from those in (highly) developed markets. These semi-developed markets are currently in the process of becoming mature, but are at the moment still growing as penetration rates have not yet reached/surpassed 100%. In most of these markets there is excess capacity (in order to cope with expected future market growth) and MVNO's have, or are in the process of, entering these markets and causing prices to drop. Although prices have already dropped significantly in most of these markets during the past years, profit margins are still higher than in (highly) developed markets. This is caused by the fact that the market is still growing, allowing competitors to grow by attracting new customers, and furthermore causing costs per unit to decline as the market grows and no additional network capacity is required. However, because these markets are maturing, competition is intensifying and prices are dropping further.

Threat of entry from VoIP service providers is high in these type of markets. Entry barriers for these type of organisations are low and because profit margins are higher than those in (highly) developed industries, the price difference that these organisations can offer to consumers are higher (i.e. enabling them to gain market share quickly). Although the threat of entry of these organisations is thus relatively high, vigorous retaliations by incumbents are not very likely. First of all, they can cut prices, however due to technicalities already explained previously, incumbents cannot produce at the same marginal costs. They will thus either have to sell their products at a loss, or will try to undercut prices indirectly by bundling.

Under-developed markets

Lastly, the threat of entry will be analysed for under-developed markets. These markets are characterized by low GNI/capita, low penetration rates, moderate to high growth rates, and a few large organisations that control the market. Often these markets are dominated by a large organisation MNO (often a formerly state-owned company) who has built the basic network infrastructure. Because these markets are small (relative to population), the costs of the network infrastructure were high, competition is low, and the price level (and margins) are high. Of course, these high margins will attract competition, thus depending on the size and expected growth of the market, MVNO's might be present (the more developed the market is, the higher the chance of their presence). Still, almost none of the under-developed markets house MVNO's. This is because these markets have almost no regulation which allows (or forces) MNO's to give MVNO's access to their networks.

For VoIP service providers that want to enter the market, the situation is quite different than that in the other types of markets. Whether this type of organisation pose a threat to incumbents, is first and mostly dependent on the availability and cost of fast enough (mobile) internet connections for consumers. When a significant portion of consumers in these markets has access to an internet connection, the threat of entry of these organisations is high. Furthermore, incumbents will most likely not react to entry from these type of organisations, because if they will react by heavily cutting prices (which would be needed to compete with these organisations in these markets) they will lose a significant part of their profits from their current

customer base. On the other hand, if most customers in these markets do not have access to fast enough internet connections, the entry barriers for VoIP service providers will be high. This is caused by high customer switching costs (i.e. customers will first have to get access to internet in order to switch services).

In conclusion, the threat of entry into the analysed industry is represented in Table 6 below, for each market type for VoIP service providers. The results depicted in this table are generalised for the market types. In order to be able to determine the threat of entry for a specific market, far more detailed analysis is required. The signs (e.g. +, +/-) in the table below, indicate the effect of threat of entry, as viewed from the incumbent. For example, the sign -- indicates that the threat of entry is large. Lastly, where the threat of entry in the cell is depicted as '+/-', there are market specific circumstances (as explained above) that greatly influence the threat, and more detailed analysis of the specific market is required to determine the threat of entry.

Table 6: Threat of entry for different markets and organisation types, as viewed from the incumbent

	(highly) developed markets	Semi-developed markets	Under-developed markets
VoIP service providers	–	--	+/-

4.2.2 Power of suppliers

Those who supply the organisation with what they need to produce their product or service are called suppliers. Suppliers can come in many forms, and most companies depend on multiple, if not numerous, suppliers. Since most organisations have multiple suppliers, it is important to focus the analysis on the most important suppliers. This can either be those suppliers that account for most of the costs, those that supply the most critical commodities, or those suppliers which are the only one that can supply a certain commodity. A few examples of commodities that companies can need to produce are: raw materials, equipment, sources of finance, and labour. Powerful suppliers have the ability to capture more of the value for themselves, because they can charge higher prices, shift costs to industry participants, and/or limit quality or services (Porter, 2008).

The power of suppliers is likely to be higher if (a) the group of suppliers of a certain commodity is more concentrated than the industry that it sells to (Johnson, et al., 2008). (b) The group of suppliers is not heavily dependent on the industry for its revenues (Porter, 2008). (c) There are high switching costs associated with switching suppliers (Johnson, et al., 2008). (d) Suppliers offer differentiated products (Porter, 2008). (e) There is no alternative supplier for the commodity in question (Porter, 2008). (f) The supplier can credibly threaten to integrate forward into the industry (Johnson, et al., 2008).

4.2.2.1 Conclusions on power of suppliers

As is already discussed during earlier in this chapter, there are huge differences between the types of organisations and markets in this industry. Therefore, the number of suppliers, the amount of power these suppliers can exert, and what they supply also differs enormously for specific organisations. In addition, as is already explained previously, MNO's are the main suppliers to MVNO's. Due to the overwhelming differences in suppliers between types of organisations, organisations of the same type, and disclosed agreements between incumbents and suppliers, it is not possible to thoroughly analyse the power of suppliers in this industry. However, all of the organisations that compete in this industry have one type of supplier in common; wholesale carriers of telephone calls. These wholesale carriers (Verizon, At&T, iBasis, BT, etc.) form the backbone of the international telecommunication network and allow connections between different service provider networks to be made.

Although these wholesale carriers are referred to as suppliers here, in essence they are a sort of brokers, because they sell network capacity to the outgoing party, which they buy from the receiving party. Take, for instance, a call from a consumer in the Netherlands (with KPN as service provider and outgoing party) to a consumer in the USA (with T-Mobile as service provider and receiving party). These, wholesale carriers are thus not only suppliers to MNO's, but also buyers from MNO's. For MVNO's and VoIP service providers they are merely suppliers.

On the one hand, one could consider this group of suppliers as very powerful, because they are much more concentrated than the group that it sells to. On the other hand, these suppliers are also heavily dependent on the industry for its revenues. Generally, the power of these type of suppliers depends mainly on the size of the incumbent, where the larger organisations can demand lower prices due to higher volumes, and interdependencies between the two organisations.

4.2.3 Power of buyers

Buyers are essential for the survival of any organisation. Conversely of powerful suppliers, powerful buyers can capture more value by forcing down prices, demanding better service or quality, and playing industry participants off against each other (Porter, 2008). Buyers can be considered powerful if they have negotiating leverage on the industry participants, they can achieve this if one, or a combination of, the following situations occurs. (a) If the buyers are concentrated, i.e. if a few customers order quantities that are large compared to the sales of a single vendor, this effect is amplified for industries with high fixed costs (Johnson, et al., 2008). (b) The products in the industry are undifferentiated or standardized (Porter, 2008). (c) If there are low switching costs and buyers can thus easily switch between suppliers (Johnson, et al., 2008). (d) Buyers can credibly threaten to integrate backwards into the industry (Porter, 2008).

Sometimes powerful buyers can have so much bargaining power that there is hardly any profit margin left in the industry. This is especially the case if the buyer is price sensitive (i.e. it exerts its buyer power only to drive down price). There are a few situations in which buyers tend to be price sensitive, these are: (1) if the product acquired from the industry represents a large fraction of its cost structure, (2) the buyer is under pressure (e.g. the buyer is low on cash) to cut its purchasing costs, or (3) the quality of the buyers product is not affected (or only slightly) by the bought product (Porter, 2008).

The abovementioned sources of power (except for high volume, and threat to integrate backward), and reasons for price sensitivity can be applied to business, as well as consumer equally well. The largest difference lies in the fact that consumer needs can be more intangible, thus harder to quantify (Porter, 2008).

4.2.3.1 Conclusions on power of buyers

The product of the industry under analysis is a consumer product, therefore the buyer will in this case not be concentrated and cannot threaten to integrate backwards into the industry. However, this does not necessarily mean that the buyers in this industry are not powerful.

Overall, buyers can be considered powerful in this industry. This is mainly due to the fact that the service is undifferentiated (i.e. a call is a call), thus competition in the industry is mainly price driven and buyers are price-sensitive. As was mentioned earlier in this chapter, incumbents offer bundled products and differentiate their offerings in this manner. Although incumbents bundle products, most incumbents offer the same sorts of bundles or subscriptions, thus competition will again mostly be focussed on price.

More specifically, the power of buyers is dependent on the degree of development of the market in which he resides. As explained previously in the threat of entry, generally, the more developed a certain market is, the broader the offering (i.e. number of competitors), the lower the prices, which results in a more powerful position for the buyers. Furthermore, buyer switching costs are generally low. Buyers might be stuck to a subscription or network for a period of time, but even then they can easily switch between suppliers for, in example, excess usage or long-distance calls.

The degree of buyer power in the different types of markets is summarised in Table 7 below. The signs in this table again indicate the effect of buyer power on industry attractiveness as viewed from the incumbent.

Table 7: Effect of buyer power on industry attractiveness for the different types of markets

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of buyer power on industry attractiveness	--	-	+/-

4.2.4 Threat of substitutes

A substitute is a product or service that can perform a similar function as the industries product or service, but in a different way. Substitutes are present in every industry and for every product or service, but they can be easy to overlook because they may appear to be different from the industries product (Porter, 2008), and they always come from outside the incumbents' industry (Johnson, et al., 2008). Furthermore, doing without the product, purchase it second hand, or make/do it yourself, also counts as a substitute (Porter, 2008).

When there is a high threat of substitutes in a certain industry, profitability will suffer (Porter, 2008). This is because substitute products place a ceiling on the prices, thus limiting the profit, and growth, potential of an industry. Industries can counter this effect by distancing themselves from the substitute through product performance, marketing, or differentiating.

The threat of a substitute can be considered high, if (a) it offers a better price/performance ratio than the industries product (Johnson, et al., 2008), and (b) the switching cost for the buyer are low (Porter, 2008).

4.2.4.1 Conclusions on threat of substitutes

As was already discussed in the PESTEL analysis, there are substitutes that offer their service for free (e.g. Skype, Rebtel). These type of substitutes can be considered the biggest substitute threat to the industry. There are no switching costs associated (assuming the consumer has access to fast enough the internet) with the use of these substitutes, and the price/performance ratio is infinitely better than that of regular calls, when you define performance as the call quality (and again assume access to fast enough internet). However, the pitfall of these services is that they work on the basis of closed user groups (i.e. both parties need to be online on the same network in order for a connection to be established). Thus, you need to be signed in to the service to be able to receive calls. Thus, in order to use it in the same manner as the GSM network, one would need to be online at all times, which takes a significant toll on memory, data, and battery usage of mobile devices. Furthermore, the benefit from the use of these services only accumulates to the outgoing party (i.e. they call for free), whereas the receiving party is required to invest extra effort (i.e. be online). These obstacles are relatively high at this moment, but are not insurmountable in the future, as was demonstrated by the text message market takeover by services such as WhatsApp and Line (who also work on the basis of closed user groups). All in all, these type of services will very likely further change the shape of the telecommunications sector in the coming decade. However, nowadays these services are mostly used to make pre-agreed upon (long-distance) calls.

In conclusion, the threat of substitute for this industry is relatively high in the long run. However, when looking at the threat of substitutes in the medium run (+/- 3 years), it is very difficult to predict the adoption of the free VoIP services. For the medium to long run, the threat of substitutes for the industry and different markets, as viewed from incumbents, is summarised in Table 8 below.

Table 8: Effect of threat of substitutes on industry attractiveness for the different types of markets

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of threat of substitutes on industry attractiveness	–	–	+/-

4.2.5 Rivalry among existing competitors

Competitive rivals are those organisations who are aimed at the same customer group and offer similar products or services (not substitutes, since not only the function, but the product as a whole is similar). As can be seen in Figure 8, all the above mentioned forces come together in the centre: Rivalry among existing competitors. The arrows indicate that these four forces all influence the degree of rivalry among existing competitors. The more competitive this rivalry is, the worse for incumbents within the industry. Besides the four earlier mentioned forces, there are additional factors that directly affect the degree of rivalry in an industry. Rivalry is most intense if: (a) There are numerous competitors and they are more or less of equal size (Johnson, et al., 2008). (b) The industry growth rate is low or negative (Porter, 2008). (c) Firms are not

able to read each other's signals well (Porter, 2008). (d) There are high exit barriers (i.e. a lot of sunk costs) (Johnson, et al., 2008).

Besides the intensity of competition in a certain industry, the dimension of this competition is also a major influence on the profitability (Porter, 2008). If the dimension of competition is mostly on price, this is especially destructive for industry profitability, because this transfers profits directly to the customers. Price competition is most likely to occur in the following situations: (1) Products or services are (almost) identical, and there are little switching costs for buyers (Porter, 2008). (2) The industry has high fixed costs and low marginal costs (Porter, 2008). (3) Extra capacity can only be added in large increments, thus temporarily disrupting the supply-demand balance (Johnson, et al., 2008). (4) If the product is perishable (Porter, 2008).

When competition is on another dimension than price (e.g. features, support services, etc.) it is less likely to eat away profitability, and in some cases can even increase profitability industry wide. This can be the case when competitors aim to serve different market segments, and in that way increase a market segments size, because their needs are better served.

4.2.5.1 Conclusions on rivalry among existing competitors

First of all, as was already discussed in paragraph 6.2.3.1, price is the main dimension of competition. This is (for a large part) caused by the undifferentiated (identical) service offered. Another reason for the competition on price is that MNO's have high fixed costs and low marginal costs, and these organisations are a necessity for the presence of organisations of the second and third type (i.e. no network infrastructure means no (GSM) calls). Lastly, for this industry it also holds true that extra capacity can only be added in large increments. Whereas the dimension of competition (price) is largely the same for all types of markets, this is not the case for the intensity of rivalry. Large differences exist in the intensity of rivalry between markets, the different type of markets will therefore be discussed separately.

(Highly) developed markets

In (highly) developed markets, rivalry between competitors is generally the most intense. Most of these markets are characterized by the presence of several (2 to 5) MNO's, who serve the majority of the market. Within these markets, the size of these organisations is in the same order of magnitude, and competition is mainly focussed on each other. Besides these traditional telecommunication providers, these markets have MVNO's that make up for most of the remainder market share (averaging 10% to 20% in Western Europe and North-American markets (Chou, et al., 2013) (Shin & Bartolacci, 2007). Typically, these organisations are targeting their services at the lower segments, and competition is aimed at MNO's, and other MVNO's. However, the size (as percentage of the market) and number of these MVNO's differs largely for specific markets. Also, in some of these markets VoIP service providers have established a steady customer base. Furthermore, as was already mentioned previously, these markets exhibit low growth rates, which further intensifies rivalry among the different competitors. Finally, for MNO's the exit barriers are very high (due to high investments in infrastructure and radio spectrum frequency rights), which puts even more pressure on these organisations to retain their markets share.

The abovementioned circumstances in these markets, in combination with the fact that price is the main dimension of competition in this industry, leads to very intense rivalry between competitors.

Semi-developed markets

The situation in semi-developed markets is comparable to that of more developed markets, although rivalry between competitors is generally less intense. The reasons why competition is less intense in these markets are mainly the moderate growth rates and higher profit margins. Incumbents are able to increase their customer base not only by taking customers from their rivals, but also by attracting new customers. Furthermore, there are viewer competitors (especially less MVNO's), and size differences between organisations are often larger, because different organisations are trying to establish a foothold or have just entered the market. Lastly, as time passes in these markets, growth rates will decrease and the

dimension of competition will focus more and more on price. This will continue till the point where the market can be seen as a (highly) developed market.

Under-developed markets

In under-developed markets the rivalry among existing competitors is generally the lowest. Growth rates in these markets are moderate to high, profit margins are relatively high and there are few competitors (mostly only MNO's). These few competitors are furthermore large (in terms of market share) compared to more developed markets, and have considerable power. Whereas in the more developed markets the level of service and quality of competitors has more or less converged (or at least passed a certain threshold). These under-developed markets are still evolving, and the dimension of competition is not only focussed on price, but can also be focussed on service or quality (e.g. nationwide coverage). Over time, these circumstances will attract new entrants, and prices and profitability will drop. Eventually a point will be reached where the market can be considered semi-developed.

Overall, the effect of rivalry among competitors, as viewed from the incumbent, in this industry, for the different types of markets is summarised in Table 9 below.

Table 9: The effect of rivalry among competitors for the different type of markets in the industry

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of rivalry among competitors on industry attractiveness	--	+/-	++

4.2.6 Conclusions of the industry analysis

In this paragraph, the conclusions drawn from the analyses of the different forces will be combined for the different types of markets. This will allow for a comparison on the attractiveness of the different types of markets for the medium to long run, as viewed from the incumbents. Because the configuration of the five forces differs per industry, not all forces are equally important for a specific industry. Moreover, 'the strongest competitive force (or forces) determine industry profitability, and should be the most important when formulating a strategy' (Porter, 2008). In the industry under analysis, the strongest forces are power of buyers, and rivalry among existing competitors. The effect of each force, and the relative strength of these forces are summarized in Table 10 below for the different types of markets.

Table 10: Summary of Porter's five forces analysis

	(highly) developed markets	Semi-developed markets	Under-developed markets	Relative strength
Threat of entry	++	-	+/-	Medium
Power of suppliers	+/-	+/-	+/-	Low
Power of buyers	--	-	+/-	High
Threat of substitute products	-	-	+/-	Medium
Rivalry among competitors	--	+/-	++	High
Overall industry attractiveness	--	-	+	

However, determining whether an industry (or in this case, types of markets in that industry) are attractive or profitable is not the ultimate goal of Porter's five forces analysis. "Understanding the competitive forces, and their underlying causes, reveals the roots of an industry's current profitability while providing a framework for anticipating and influencing competition (and profitability) over time" (Porter, 2008, p. 26). Thus the goal of Porter's five forces model is not so much determining whether an industry is profitable, but rather analysing the industry from different perspectives, in order to determine appropriate strategies for the medium and long run. Therefore, several elements discussed in this chapter will be used as input, and/or starting point in later chapters, as is demonstrated in the analysis of the competitor and markets layer next sub-chapter.

4.3 Competitor and markets layer

The layer of the external environment that is closest to the organisation, is that of competitors and markets. This layer is a more in-depth analysis of the industry layer. In most industries there are different kinds of players, each positioned differently. In this layer, the competitor differences can be captured by grouping them in strategic groups. Furthermore, customers also differ significantly. These differences can be expressed by differentiating between market segments.

In the previous chapter (Porter's five forces model) three different types of companies that compete in this industry were already shortly discussed. In this chapter, especially the paragraph on strategic groups, their strategies and differences will be more closely analysed. Extra attention will be devoted to MVNO's, because the challenges they have faced in the past, and are experiencing now, are in many ways similar to those of RBN B.V. and extensive research has been performed on the successes and failures of these type of organisations. Furthermore, MVNO's started the process of (micro) segmenting in the telecommunications sector, and insights from their efforts will prove critical for a thorough understanding of the dynamics in the previously described consumer market.

4.3.1 Industry overview

Before starting the analysis on strategic groups and market segments, first a brief overview of the emergence of MVNO's in this industry will be offered here. This will allow for a better understanding of the differences between MNO's and MVNO's and explain shortly how the emergence of MVNO's structurally changed industry dynamics. The existence of MVNO's can be explained by the following statements: "As the telecom market continues to become increasingly mature, different segments begin to demonstrate different demands. However, because telecom markets in various nations are usually dominated by several monopoly players who can hardly satisfy the various needs of each segment, room is created for MVNO's" (Chou, et al., 2013, p. 5), and "segmentation can be done by an independent brand or by a sub-brand owned by a mobile network operator (MNO), but it is likely that any country will always have a segment of the mobile customer base (large or small) that can be served better or more cost-effectively by a brand other than the main MNOs" (Informa telecoms & media, 2013, p. 5). In other words, MNO's were unwilling and/or unable to serve all market segments, and this created room for new players to enter the industry. Due to this need for underserved market segments, MVNO's tend to compete in mature and saturated markets. These markets are characterised by penetration rates that have often exceeded 100%, declining revenues per user (Corrocher & Lasio, 2013), and fairly low margins (Talmeiso, 2014).

The fixed costs of MVNO's are generally relatively small (around 25%) compared to the high fixed costs of MNO's (around 75%) (Chou, et al., 2013). Their virtual approach implies the delivery of mobile services at lower rates (Corrocher & Lasio, 2013), and empirical evidence suggests that the market entry of MVNO's caused a drop in prices of services by both MVNO's and MNO's (Kim & Seol, 2007; Corrocher & Lasio, 2013; Shin & Bartolacci, 2007). Besides this drop in prices, the entry of MVNO's has "meant an increase in the number of new segments served and still shows high potential for further expanding the heterogeneity of demand of an already saturated sector" (Corrocher & Lasio, 2013, p. 1113). As a result of not deploying their own networks and competing in saturated markets, margins for MVNO's are significantly lower than those of MNO's (Chou, et al., 2013).

The first MVNO was launched in 1999 in the UK (Virgin) as a joint venture with one of the MNO's active in that market (T-Mobile). Halfway through 2010 there were 602 MVNO's of which roughly 25% was owned by a MNO (Mobile World Live, 2010). Furthermore, they were divided across regions and categories (business of the parent company (or partner in case of MNO owned brands)) as displayed in Table 11. At the end of 2012 the MVNO market (almost 1000 organisations) reached a subscription base of approximately 117 million, which accounted to 1.9% of the global mobile market (Talmeiso, 2014). It is estimated that the number of subscriptions will reach 270 million (and account for 3.1% of the market) by the end of 2018 (Talmeiso, 2014). This growth will primarily come from the Asia Pacific region and South-America, whereas Europe and the US are expected to remain the largest MVNO markets for the time being (Talmeiso & Tricarico, 2012).

Table 11: Distribution of MVNO's to regions and categories (source: (Mobile World Live, 2010))

Region	MVNOs	Operator-owned brands
Africa	5	1
Americas	4	3
Asia Pacific	72	12
Europe: Eastern	34	19
Europe: Western	357	110
Middle East	5	8
USA/Canada	72	9
International	53	-
	602	162
Category	MVNOs	Operator-owned brands
Discount	168	71
Telecom	117	14
Retail	77	14
Migrant	64	11
Media/Entertainment	63	45
Business	56	6
Roaming	46	1
M2M	11	-
	602	162

As can also be seen in Table 11, the differences between regions are very large. In the majority of mobile markets, MVNO's do not exist at all, whereas in developed markets, MVNO's can account for 15-20% of the customer base (Talmesio & Tricarico, 2012). Furthermore, at the end of 2013, only about 70 of 227 mobile markets hosted MVNO's (Informa telecoms & media, 2013). This, combined with the very low global market share, suggests that the MVNO industry is still in its infancy stage and a lot of opportunities will present itself as the now untapped markets develop and mature.

Now that the emergence of MVNO's is explained, and some of the structural and geographical differences between MNO's and MVNO's have briefly been stated, the next sub-chapter will delve deeper into the differences between these organisations and their implications for competition and strategy.

4.3.2 Strategic groups

Organisations within an industry (or sector) who are following similar strategies, or compete on similar bases, are called strategic groups (Johnson, et al., 2008). The strategic choices on which the organisations are based are mostly long-term in nature, and costly to reverse (McGee & Thomas, 1986). This results in tightly structured groups, within the more loosely drawn industry structure (McGee & Thomas, 1986). Using strategic groups as a way to summarize competitor's strategies is helpful especially in those industries that have so many competitors, that individually considering all is impossible (Peng, et al., 2004). The bases on which strategic groups can be formed are numerous, one way to do so is to divide organisations characteristics over two broad categories, firstly the scope of an organizations activities, and secondly their resource commitment (Johnson, et al., 2008). Table 12 below gives an overview of examples which elements belong to each category. However, this table merely gives examples (i.e. are more characteristics). Furthermore, which characteristics are relevant in a certain industry needs to be deducted from the history and developments in that industry, and the forces at work in the environment (Johnson, et al., 2008).

Table 12: Characteristics for identifying strategic groups (source: Johnson, et al. 2008, pp. 76)

Scope of activities	Resource Commitment
Extent of product (or service) diversity	Extent (number) of branding
Extent of geographical coverage	Marketing effort
Number of market segments served	Extent of vertical integration
Distribution channels used	Product or service quality
	Technological leadership (leader or follower)
	Size of organization

One of the methods for establishing the important dimensions on which to map strategic groups is to identify the top performers in the industry and compare them with low performers (McGee & Thomas,

1986). If there are certain characteristics that are only shared by the top performers, these characteristics are likely to be relevant for mapping strategic groups.

Besides these, strategic groups are also characterised by mobility barriers. The concept of mobility barriers rests on the same assumptions as that of entry barriers; an organisation within a (strategic) group makes strategic choices which organisations outside the group cannot instantly imitate without (1) significant elapsed time, (2) substantial costs, and/or (3) uncertainty about the outcomes of such decisions (McGee & Thomas, 1986). Mobility barriers can be divided into three broad categories (see Table 13), market-related strategies, supply characteristics of the industry, and firm specific characteristics (McGee & Thomas, 1986).

Table 13: Sources of mobility barriers (source: McGee & Thomas, 1986, pp. 151)

Market-related strategies	Supply characteristics of the industry	Characteristics of firms
Product line	Economies of scale: (1) production, (2) marketing, (3) administration	Boundaries of firms: (1) diversifications, (2) vertical integration
User technologies	Manufacturing processes	Organisation structure
Market segmentation	R&D capability	Control systems
Distribution channels	Marketing and distribution systems	Relationships with influence groups
Brand names		Ownership
Geographic coverage		Firm size
Selling systems		Management skills

Organisations can also be classified into strategic groups on the basis of these mobility barriers. This can be done by looking at the cost advantages of members of the same group (e.g. economies of scale), and emphasize the time and investment expenditures required for would-be entrants (into the strategic group under consideration) to overcome the mobility barriers (McGee & Thomas, 1986).

As one can see, these concepts overlap with the way that Johnson, et al (2008) suggests to divide organisations into strategic groups. Which method is favourable depends on the situation and industry on hand. The most important criteria to depend this decision on is the ease and accuracy of assessing relevant characteristics of the organisations needed to use one of the methods.

Dividing organisations within an industry in strategic groups is useful for a couple of reasons. First of all, it can help organisations to understand their competition (Johnson, et al., 2008). Strategy can be focussed towards direct competitors (organisations within the same strategic group), instead of towards the whole industry. Furthermore, it can be used to assess the basis of success (or failure) of other strategic groups and apply (or obstruct) them to their own organisation.

Secondly, all existing strategic groups can be put into a single map (a strategic group map) on the basis of two criteria (e.g. geography (local to international), and price (high to low)) to identify the most attractive strategic places within an industry (Johnson, et al., 2008). Blank spaces on these maps can correspond to unexploited opportunities (however they can also be 'black holes') and should be investigated further (Johnson, et al., 2008).

Lastly, strategic groups (and strategic maps) can be used to assess whether there are more profitable groups in the industry, than the one that the organisation is currently residing in. However, if an organisation wishes to move across groups to be able to reap those opportunities, there will be mobility barriers in place to protect the better situated strategic group. Overcoming these barriers can be very time and money consuming, since it will often require rare resources and difficult decisions. (Johnson, et al., 2008).

Although there are, as mentioned above, some important advantages to classifying organisations into strategic groups, it is in no way straightforward to do so. Outcomes will not only differ by which method is used, but furthermore "problems of controlling exogenous variables, the lack of comparability among the units of analysis and the disparate nature of these units, and the changing nature of opportunity sets and the environment generally restricts the ability of researchers to make causal connections between sets of variables" (McGee & Thomas, 1986, pp. 158). Nevertheless, classifying sets of organisations into strategic

groups can lead to important insights about the profitability (or underperformance) of certain organisations in an industry, and may lead to the discovery unexploited opportunities, which are not possible at the aggregate industry level analysis.

4.3.2.1 Top versus low MVNO performers

This first paragraph on strategic groups will briefly discuss characteristics that are shared by top performing MVNO's and pitfalls that have caused the failure of MVNO's. As was already explained above, identifying characteristics shared only by top performers are likely to be relevant for mapping strategic groups (McGee & Thomas, 1986). However, whereas the rest of the analysis on strategic groups will look at the whole industry (i.e. MNO's, MVNO's and VoIP service providers), this paragraph is limited to MVNO's. The reason for this distinction is twofold. Firstly, extensive research has been done on the key characteristics of successful MVNO's and on the reason(s) for failure of unsuccessful MVNO's. Secondly, as will be explained later, MVNO's are the competitors in this industry on which RingCredible should focus strategy. Furthermore, some of the characteristics on top performers and mistakes from MVNO failures are applicable to RingCredible as well.

According to Chou, et al. (2013) there are three key elements to success in the MVNO business. First of all, successful MVNO's usually have at least one of the following resource advantages (1) a sound distribution channel, (2) a strong brand, (3) operators own resources, and/or (4) content advantage. The second element that is described is the need for a clear positioning of its marketing strategy in order to differentiate their services from MNO's. The last element that is shared by most successful MVNO's, is their ability to attract a large amount of initial customers in a short time. Corrocher & Lasio (2013, pp. 1112) agree on some of these elements: "In order to be successful, MVNO's must add value, leveraging brand loyalty, targeting new market segments previously not exploited, or focussing on the provision of very specific services." Lastly, largely in line with the previous statements, Informa (2013) has over the years observed that there are nine key stipulations for an MVNO to be successful. These nine key stipulations are summarized in Table 14 below.

Table 14: Nine key stipulations for an MVNO to be successful (source: (Informa telecoms & media, 2013, p. 8))

Fig. 6: Informa Telecoms & Media's key stipulations for successful MVNOs	
Brand	Existing strong brands that have the potential of expanding their brands into the mobile business
Lean cost base	The vast majority of MVNOs have low-cost operations (both capex and opex)
Flexibility (commercial and technical)	Ability to change business agreements and IT /network-related adjustments both cost-effectively and in a timely fashion
Differentiation	Pricing and CEM represent the most successful ways for MVNOs to innovatively differentiate themselves
Distribution	This is the single most important factor; it is the most common feature of the large and successful MVNOs
Existing customer base	Not all MVNOs have an existing customer base at launch but the majority of the successful ones have entered the telecoms market by taking advantage of existing customer relations
Committed management	MVNOs often belong to larger non-telecom groups; management buy-in is indispensable for their success given that MVNO is often the non-core, smaller activity
Access to funding	Financial agility is one of the least discussed but most important requirements for MVNO to be able to launch and, especially, to remain in operation
Complementarities	While MVNOs will always attract some of the customers of their own host operators, complementing the business of the hosting network makes it more possible to start and maintain a mutually-supportive business partnership

Source: Informa Telecoms & Media

On the other hand, there have also been many unsuccessful MVNO's. Informa (2013), stated that approximately one in four MVNO's did not reach the second year of operations and expects that the MVNO market will continue to see many new MVNO's launches, but also many closures. Lots of the failures over the past years have been due to factors out of MVNO's control (such as radical and rapid change of the overall retail market, or lack of MNO (host operator) support)) (Talmeiso, 2014). However, "the major common characteristic of failed MVNO's is a lack of customer monetization and retention" (Talmeiso, 2014, p. 5). The most notable MVNO failures (e.g. ESPN mobile, Disney Mobile) have been MVNO's that have focused almost solely on acquiring new customers, at the cost of being able to retain existing users (Talmeiso, 2014). In other words, these MVNO displayed a lack of customer focus.

Lastly, the key elements for success and failure for MVNO's in this industry leads to the following recommendations, which are (too a large extent) also applicable to RingCredible. First of all, MVNO's need to focus on what they do best, the business of segmentation. In order to do this, "they will have to implement micro segmentation and real-time marketing analytics, and support faster decision making and more pro-active problem solving in their organisation" (Talmeiso, 2014, p. 8). Secondly, supplemental to the problem solving and faster decision making in the previous sentence, Informa (2013) states that the ability to implement changes rapidly remains a critical factor, as well as the focus on cost (both capital expenditure and operating expenditure). MVNO's usually operate on thin margins, and these make it important to have lean cost base. In order to be able to operate in a lean manner, MVNO's need to focus on customer experience management (CEM) through automated processing which require a minimal level of human interaction (Talmeiso, 2014). However, "this does not mean that offers need to be standardized: MVNO's need to engineer mass-customized processes that are accurate and work in a low-labour intensity fashion" (Talmeiso, 2014, p. 8). Lastly, as was deducted from the failures amongst MVNO's, customer retention is (after the initial launch period) much more important than acquisition. Customer retention can be achieved by engaging in "perpetual real-time scrutiny of each customer's "mood" in order to be able to anticipate and prevent customer losses" (Talmesio & Tricarico, 2012, p. 7). In conclusion, "The challenge for MVNO's is being able to combine the need to be fast with the ability to get the most from their customer base, despite small size of their staff and overall budget constraints" (Talmeiso, 2014, pp. 5-6).

4.3.2.2 Resource commitment

The first broad category of organisation characteristics that is looked, at is that of resource commitment. Resource commitment entails the allocation of tangible and intangible entities available to the organisation, that enable it too effectively and/or efficiently produce an offering that has value for some market segment(s) (Hunt, 2000). "In other words, resource commitment deals with how valuable resources are allocated or targeted to do the most good" (Richey, et al., 2005, p. 234). This category of characteristics is analysed first, because differences in this category are the main reason for differences in the category of scope of activities. Within this category, the largest differences lie in the extent of vertical integration in the industry. Furthermore, the extent of vertical integration in the industry is the main determinant for large differences in most characteristics of organisations in the industry.

4.3.2.2.1 Extent of vertical integration

One of the main determinants for differences between organisations in this industry is the extent of vertical integration within the industry. In chapter 4.2, the industry was defined on the basis of the service for sale, namely: 1 on 1 paid mobile calls for the consumer market. Furthermore, as already discussed in that chapter, there are, broadly viewed, three types of players present in this industry; MNO's, MVNO's, and VoIP service providers. For MNO's that compete in this industry, the extent of vertical integration is more or less equal. These organisations all have their own network infrastructure, license to part of the radiofrequency spectrum, and interact directly with consumers. Until the first MVNO's were launched, these type of organisations where the only ones active in this industry and they controlled the whole value chain. The rise of the MVNO model allowed various players other than MNO's to access the value chain at different levels and acted as a catalyst to vertical disintegration in the industry (Shin & Bartolacci, 2007). The differences in the extent of vertical integration between MVNO's are substantial. Depending on the extent of vertical integration, MVNO's can be classified as different types, as can be seen in Figure 9. Whereas MNO's and (all types of) MVNO's make use of the same technology to send and receive data (in this case 1 on 1 calls), VoIP service providers use a different type of technology for the connection of the user initiating the call. Therefore, it is difficult to compare the extent of vertical integration in the industry of these type of organisations to that of MNO's and MVNO's. However, when looking at the tasks that VoIP service providers undertake, they are most closely matched by SP MVNO's, who "purchase calling time from a network operator and sell it to customers, using their own brand name, provide billing and customer support, without though engaging in any network activity" (Corrocher & Lasio, 2013, p. 1112).

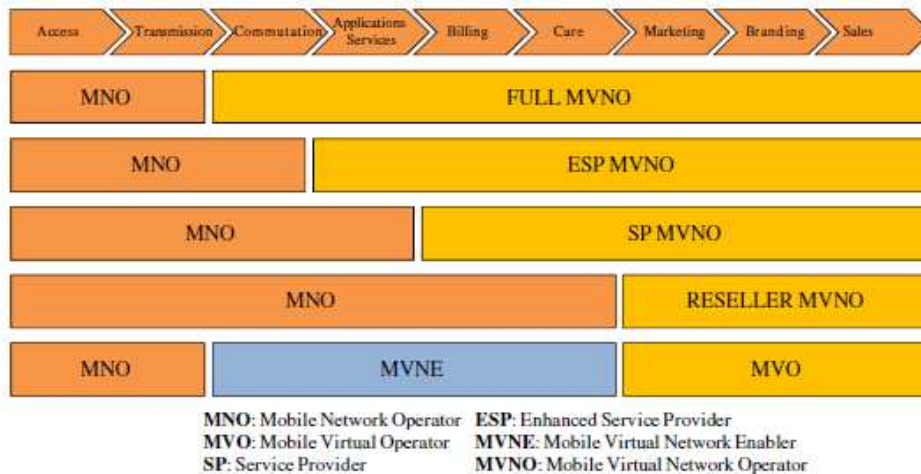


Figure 9: MVNO business models (source: (Corrocher & Lasio, 2013, p. 1113))

Concluding, MNO's are the organisations that have the largest extent of vertical integration in this industry, followed at considerable distance by the MVNO's. Within this group of organisations the 'thickest' type of MVNO, the full MVNO, has the largest extent of vertical integration and the 'thinnest' types of MVNO's, reseller MVNO's and MVO's, the smallest extent of vertical integration. VoIP services can be best compared with SP MVNO's with regard to the extent of vertical integration.

4.3.2.2.2 Technological leadership

Another characteristic on which organisations can be grouped is whether they are leaders or followers in terms of technologies employed, or in this case the level of technological advancement of services offered. When looking solely at the service as was defined in chapter 4.2., almost no quality difference exists between MNO's and MVNO's, although technologies employed do differ somewhat across continents and between MNO's (global market share by technology in Q2 2010 was the following: (1) GSM 78%, (2) WCDMA 12%, and (3) CDMA 10% (GSMA Intelligence, 2010)). Cellular reception and call quality can be considered good for all operators across the world, with the exception of (very) rural areas and on peak-moments of extreme network traffic (e.g. New Year's Eve).

For VoIP service providers, the situation is somewhat different. Although, at least all of the bigger (e.g. Skype, Viber), VoIP service providers theoretically offer the same level of call quality as MNO's and MVNO's, the actual call quality is dependent on the internet speed and connection stability of the user. Thus, when looking solely at paid 1 on 1 consumer calls, at most two different groups appear (i.e. MNO's and MVNO's vs. VoIP service providers). However, because large differences in technological leadership between organisations in this industry do exist, a broader view will be applied. Furthermore, insights derived from this broader view will prove critical for understanding differences in the rest of this sub-chapter and, more important the sub-chapter on market segments. In order to reveal the differences in technological leadership, a look will be taken to differences in speed (type) of data subscriptions offered by the different organisations present in the industry.

Currently, in the large majority of countries (205 countries, 547 commercial networks (the Global mobile Suppliers Association, 2014)), 3G services are commercially available, at least in major urban areas (ITU, 2013). Furthermore, in 101 countries (247 commercial networks) 4G/LTE services are available (the Global mobile Suppliers Association, 2014) to consumers. Almost all (if not all) MNO's offer 3G services, and most offer, or have announced, 4G/LTE data services. The same cannot be said for MVNO's. In the (semi) developed markets a substantial part of the larger MVNO's and data-only MVNO's offer 3G data services, but worldwide only a handful of MVNO's (only in the most developed markets (e.g. US, Australia, Japan) offer 4G/LTE data services (e.g. Tesco Mobile in the US) (Pawsey, 2013). This difference between MNO's and MVNO's is in itself not surprising, because MNO's create the network infrastructure capable of delivering these services and have to buy the rights for use of the radio frequency spectrum. The capital requirements for the network infrastructure and radio frequencies licences are extremely high, and MNO's try to recover these sunk costs as quickly as possible by employing price skimming (to both consumers and

MVNO's). The initially high prices for these services puts a cap on consumer demand, and makes them unattractive to most MVNO's. As prices of these services drop over time (due to other MNO's offering these services in the same market, and/or to tap into other customer segments) they become more diffused in the market and more attractive to (or even critical to some) MVNO's. Besides the difference in technological advancement between MNO's and MVNO's, there are also large differences in this between MVNO's. Differences in technological advancement between MVNO's are mainly caused by the market segments the individual organisations intend to target (more on this in the sub-chapter 4.3.2 market segments). Of course, differences also exist between MNO's and within this category of organisations there are also leaders and followers. However, the differences within the MNO segment are not that big, because if these organisations cannot keep up with technological advances of competitors, they will not survive. In conclusion, MNO's are the technological leaders in this industry, although differences between them exist. MVNO's are following at different paces, depending on their target audience.

4.3.3.2 *Scope of activities*

After having taken a look to resource commitment of the different types of organisations present in this industry, attention is now shifted to their scope of activities. The different characteristics that will be discussed in these paragraphs are; (1) the extent of service diversity, (2) extent of geographical coverage, (4) number of market segments served, and (5) distribution channels used.

4.3.3.2.1 *Extent of service diversity*

The extent of service diversity in this industry will be analysed for the different types of organisations. Only the consumer market will be discussed (i.e. the b2b wholesale market of MNO's will not be taken into account). Three different types of services are being offered by organisations in this industry, namely voice, text messages, and data. As was already mentioned in the section on technological leadership, little difference exists in the quality of calls and text messages nowadays. The same cannot be said about data subscriptions, where depending on the level of market development 2G, 3G and/or 4G services are offered. Generally, MNO's offer all three types of services to their customers (with the exception of highly-underdeveloped markets or very rural areas where data services may not be available yet). Furthermore, as was explained previously, MNO's are, in most markets, the only organisations that offer the most advanced data services in the period (2-3 years) after their introduction into the market.

In the semi- and highly-developed markets, a large portion of MVNO's also offer all three types of services to their customers. However, only a few MVNO's (e.g. Tesco) offer the fastest type of data connection (4G) just after introduction of this service, whereas most MVNO's that offer all three types of services, wait for prices of 4G to drop. The remainder of MVNO's in these markets either offer voice and text messages services or data-only. In less-developed markets, most MVNO's offer only voice and text message services, however the number of MVNO's offering data services is on the rise (Kimiloglu, et al., 2011). Which type of services a MVNO offers is dependent on its value proposition and the market segments that it intends to serve. Most VoIP service providers offer only voice, however some also offer text messages.

Lastly, some MVNO's offer unique services, which are not being offered by MNO's (e.g. mobile banking, unique content) in order to reach a specific market segment. However, due to the diverse nature of these services and disappointing results in practice (Talmeiso, 2014) these will not be considered in this report. In conclusion, MNO's and a few MVNO's have the largest extent of service diversity, followed by the remaining MVNO's (with an offering depending on their value proposition). VoIP service providers are the organisations in this industry with the smallest extent of service diversity.

4.3.3.2.2 *Extent of geographical coverage*

In this industry there are huge differences in the extent of geographical coverage between the organisations competing. These differences are an easy way of grouping organisations, which are similar on this characteristic. The extent of geographical coverage can in this industry best be analysed on country level, because extending offerings to another country is a deliberate step, which is furthermore time and money consuming. In order for a MNO to expand to another country, network infrastructure has to be

build, a license to the radio frequency spectrum acquired, and operations have to be developed (e.g. distribution channels, support services, marketing, etc.) (a takeover of a MNO already present in a specific country might in some cases also be an option). In order for a MVNO to enter a new country, a deal has to be struck with a MNO in that market, and, depending on the type of MVNO, operations also have to be developed (at least marketing, branding, and sales (in the case of a reseller MVNO)).

Although expanding to a new market is a time and money consuming step, most MNO's are present in multiple countries, across multiple continents. On the other hand this is also not surprising, because MNO's are the only commercial organisations that have the abilities and resources to build and operate a mobile telecommunications network once the opportunity presents itself (e.g. when the mobile market in a specific country is liberalised or privatized). Especially the larger MNO's are usually present in a large number of countries (10-20) across (2-3) continents. Interestingly, most of these larger MNO's tend to concentrate their activities on one to a few specific regions (e.g. Airtel in the Indian subcontinent and Africa, América Móvil in the Americas, Telefonica in South-America and Europe). This focus on specific regions can be explained by the similarity of market circumstances of countries in the same regions, which enabled MNO's to transfer existing capabilities and best practices upon the entry of adjacent countries. For MVNO's present in the industry the extent of geographical coverage is in most cases much smaller. The extent of geographical coverage for MVNO's is also much harder to comprehend due to the absence of aggregated data on MVNO's in different countries. Most MVNO's offer their services in one or a few (neighbouring) countries. They usually start their operations in one country (mostly the home market of the parent corporation) aimed at a specific market segment(s) they believe is underserved and/or to which they can leverage existing capabilities. If this strategy proves successful, these MVNO's will try to copy this strategy to adjacent market segments and/or countries displaying the same characteristics (e.g. Simyo). "According to the respondents to Informa's MVNO business development survey, the most-preferred way of expanding an existing MVNO business is still for the MVNO to launch operations in new geographies" (Informa telecoms & media, 2013, p. 7). Still, there are some MVNO's (e.g. Lycamobile, Virgin mobile) that operate in a much larger number of countries (10-20 countries).

VoIP service providers are, in terms of the extent of geographical coverage, by far the most global players in this industry. This is inherent to the technology they employ to deliver their service, as was explained previously. Once a VoIP service provider launches its service, consumers worldwide can use it immediately if they have internet access (with the exception of some fiercely regulated countries).

All in all, VoIP service providers have the largest extend of geographical coverage, followed at a distance by (most of) the largest MNO's and a few MVNO's. The remainder of organisations active in the industry (a few MNO's and most MVNO's) only cover a small number of countries with their services.

4.3.3.2.3 Number of market segments served

The potential number of market segments served by all organisations that compete in this industry is capped by the extent of service diversity they offer. VoIP service providers, for instance, do not offer data subscriptions and will thus be unable to serve customer segments that require these services. Furthermore, it was established that MNO's generally have the largest extent of service diversity (i.e. they offer all types and the most advanced services), and are in theory able to serve all customer segments. There are a few MVNO's that have the same extent of service diversity as the MNO's, although most MVNO's have a smaller extent of service diversity.

However, as was also established earlier, MVNO's exist and succeed in markets, due to the fact that they are able to serve certain customer segments better, or more cost-effectively, than MNO's active in that market. This implies that MVNO's tend to target their offering towards a specific market segment (or segments), whereas MNO's tend to target their offerings towards the mass market. This notion is substantiated by the fact that at the end of 2012 approximately 1000 MVNO's served 1.9 % of the global market (Talmeiso, 2014), whereas approximately 800 MNO's (Wood, 2012; Telecoms Networks, 2012) take up the rest of the global market. Furthermore, as is evident from the geographical dispersion of MVNO's, they are concentrated in highly developed markets (Western Europe, and North-America). These markets have matured and are saturated (Corrocher & Lasio, 2013; Talmeiso, 2014), thus market share can only be

gained by taking it from incumbents, which can be done by competing on price and/or targeting underserved market segments.

The number and type of market segments a MVNO can successfully serve depends on a number of factors, which will be discussed in section 4.3.3 market segments, but is generally very low. Furthermore, as will also be explained in chapter 4.3.3, most MVNO's prefer expansion to new markets over expansion to other market segments in the same market (Informa telecoms & media, 2013).

In conclusion, MNO's generally serve the most market segments (i.e. they focus at the mass market). On the other hand, MVNO's often focus at one or a small number of market segments, likewise as VoIP service providers. However, whereas VoIP service providers are forced to target only one or a few target segments due to their limited service offering, (most) MVNO's are in theory able to serve a large array of market segments, but choose not to.

4.3.3.2.4 Distribution channels used

The distribution channels used by organisations in this industry is the last characteristic upon which groups of organisations will be distinguished in this analysis. Between the three types of organisations competing in this industry, there are explicit differences in the distribution channels they use to sell their services. Although, the differences between organisations of the same type are generally not that large.

Firstly, all three types of organisations make use of online sales channels to sell their services. The importance of this type of sales channel differs per organisation, but especially in the more developed markets these are increasingly important for all players. VoIP service providers and some MVNO's have even gone so far as only offering their service through this channel. VoIP service providers are, in any case, very dependent on this type of distribution channel, because it allows them to serve their customers globally, without the need for physical presence in all markets. On the other hand, most MVNO's also sell their services through independent mobile phone retailers and/or, if possible, use existing distribution channels of the parent organisation (e.g. retail stores when the parent company is a retailer (e.g. Tesco, Aldi)). Still, even if MVNO's have access to existing distribution channels of the parent organisation, these cannot be compared to the store networks of MNO's, whose sole purpose it is to sell mobile telecommunication services. For MNO's, traditionally the main distribution channel was their network of stores. Nowadays, this is still an important distribution channel, especially in semi- and under-developed markets, but in (highly) developed markets the number of stores is decreasing and demand is shifting towards online sales channels. Furthermore, just as with MVNO's, MNO's also make use of independent mobile phone retailers to sell their services.

One last type of distribution channel, that all three types of companies make use of, is that of independent retailers (not to be confused with independent mobile phone retailers). These independent retailers are usually organisations in non-related industries that have access to a lot of consumers (.e.g. gas stations, convenience stores, mobile phone repair shops, etc.). Usually, these independent retailers only sell pre-paid call credits, for which they get a share of the revenue. However, due to the emergence, and popularity, of online sales channels, sales from this type of distribution channel are diminishing rapidly in semi- and highly- developed markets.

Thus, the largest difference between MNO's and MVNO's on the distribution channels they use, is that MNO's are for a large part dependent on their own network of stores. Some MVNO's have access to existing distribution channels of their parent organisation, however these are much closer to independent retailers, than to MNO store networks. Therefore, the most important distribution channels for MVNO's are online sales channels (especially in the more developed markets), and independent (mobile phone) retailers (especially in the lesser developed markets). Lastly, VoIP service providers are largely dependent on online sales channels.

4.3.3.3 Conclusions on strategic groups

As was already explained in the opening section of this sub-chapter on strategic groups, there are multiple reasons for dividing organisations within an industry in strategic groups. Firstly, it can help organisations understand their competition and can be used to understand the basis of success and failure of other

organisations within the industry. Secondly, it allows organisations to focus strategy towards direct competitors (i.e. organisations within the same strategic group). This last paragraph will focus on determining RingCredibles' direct competitors and implications of this on strategy. When looking at the different characteristics, as described above, for each characteristic the type of organisation closest to RingCredible can be determined. For the most important combinations of characteristics, the direct competitors of RingCredible will be determined and implications for strategy will be discussed.

The first characteristics that will be looked at in this light are the extent of service diversity and the number of market segments served. RingCredible, like most VoIP service providers, only offers one type of service; voice. Due to this limited service offering and their ability to offer cheap rates for calling abroad, most VoIP service providers are mainly targeting the international segment. Furthermore, in some markets (where voice prices are relatively high) VoIP service providers are also able to target the low-cost segment. The majority of MVNO's active in this industry (more specifically, in the most developed markets), offer a wider range of services to its customers (voice, text messaging, and data). However, there are MVNO's, mainly aimed at the international (e.g. Lycamobile) and low-cost (e.g. Simyo) segments (these segments will be discussed in detail the sub-chapter hereafter), that offer a more simplified package of services (voice, and text messages). These types of MVNO's are, together with other VoIP service providers, the closest competitors on this combination of characteristics, as is graphically depicted in Figure 10 below. As will be discussed in detail later, MVNO's active in the international segment are generally the most successful MVNO's (Corrocher & Lasio, 2013). Most of these MVNO's have entered this market segment recently and this suggest that there is a lot of growth potential in this segment (Corrocher & Lasio, 2013). Furthermore, first-mover advantages seem to play an important role in this segment (Corrocher & Lasio, 2013).

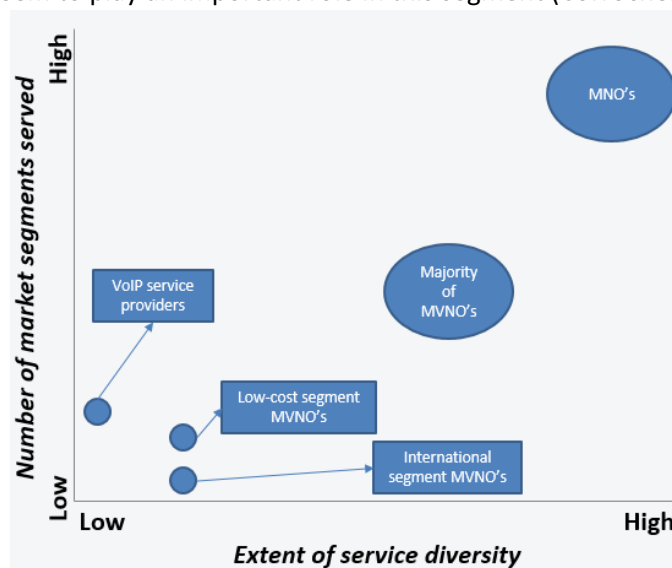


Figure 10: Strategic group map for the combination of the number of market segments served and the extent of service diversity

The last combination of characteristics on which the different organisations will be compared are the extent of geographical coverage and, again, the number of market segments served. The extent of geographical coverage is in this instance defined as the number of countries an organisation serves. This varies largely for the organisations active in this industry. Differences in this characteristic are not only found between the different types of organisations, but also amongst MNO's and MVNO's. VoIP service providers are, by far, the organisations with the largest extent of geographical coverage, since they serve (almost) all markets. Behind them, most of the largest MNO's (e.g. Vodafone, Telefonica, Airtel) follow at a distance, accompanied by a few MVNO's. These MVNO's either focus on the international segment (e.g. Lycamobile), or have rolled out their successful business model to a large number of countries (e.g. Virgin Mobile) (these will be referred to as international MVNO's). The remaining MNO's and most of the MVNO's serve only one to a couple of markets. In Figure 11 the extent of geographical coverage of the different organisations is combined on a strategic group map with the number of market segments served. From the strategic group map it can easily be deduced that, none of the other types of organisations are close competitors of VoIP service providers on this combination of characteristics. The reason for this, as

explained previously, is the technology that VoIP service providers use, which enables them to serve (almost) all markets without the need for network capacity. When one combines this advantage in geographical coverage with the conclusions from the previous strategic map and the chapter on market segments (i.e. International segment MVNO's are the closest competitors, and furthermore the most successful MVNO's), an opportunity presents itself. Because VoIP service providers are already able to serve (almost) all markets, they have an advantage over MVNO's that target the international segment in markets where these MVNO's are not yet present. Especially since first-mover advantages seem to be important in this segment, it might prove lucrative for VoIP service providers to actively pursue this segment in the most developed markets where these MVNO's are not present. Furthermore, if this strategy is successful, it will raise entry barriers to these markets for MVNO's targeted at the international segment. In conclusion, when taking into account all of the characteristics discussed, there seem to be very little differences between VoIP service providers in this industry. However, differences between the other types of organisations present in this industry can be huge for certain characteristics. From the analysis of the characteristics and the two most important combinations of characteristics it can be concluded that MVNO's which target the international segment are the closest competitors of VoIP providers (besides themselves).

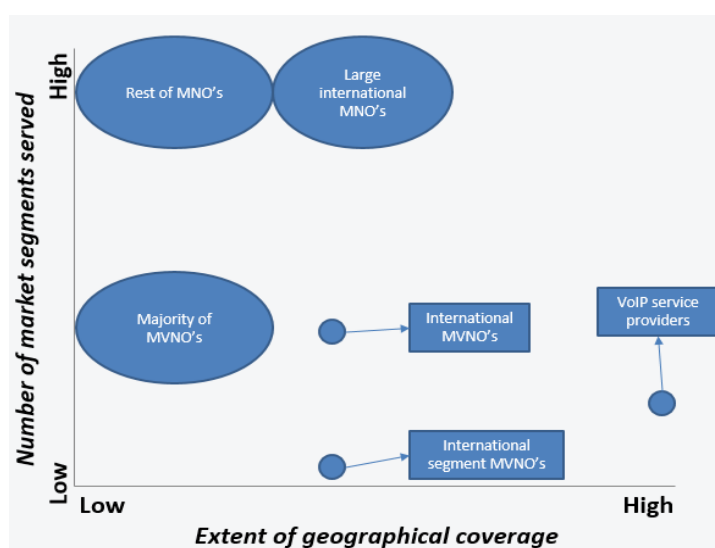


Figure 11: Strategic group map for the combination of the number of market segments served and geographical coverage

4.3.4 Market segments

Instead of looking at the supply side of an industry, one can also look at the demand side of an industry to determine the position of competitors within that industry. According to Johnson, et al. (2008), understanding what customers (and other stakeholders) value, and the position of an organisation relative to these needs and its competitors are crucial to understanding strategic capability. Nowadays, almost all markets (especially B2C markets) are faced with heterogeneity of demand (Johnson, et al., 2008). Market segmentation uses this heterogeneity to classify consumers with the same demand in the same group. Most markets in this industry are still developing, have not yet matured and are not saturated. Therefore, these markets are still growing (rapidly) and competition is focussed on attracting customers new to the industry. Furthermore, “as the telecom market continues to become increasingly mature, different segments begin to demonstrate different demands. However, because telecom markets in various nations are usually dominated by several monopoly players, who can hardly satisfy the various needs of each segment, room is created for MVNO's” (Chou, et al., 2013, p. 5).

Thus, in highly developed markets in this industry, market segmentation is playing an increasingly important role. Given that MVNO's entry in the market has not been driven by the emergence of a disruptive technology, and they enter in a saturated market, they should attract competitors' customers willing to change operator (Corrocher & Lasio, 2013). They can either do this by focussing competition on price and/or focus on specific market niches. The entry of MVNO's has “meant an increase in the number of

new segments served and still shows high potential for further expanding the heterogeneity of demand of an already saturated sector” (Corrocher & Lasio, 2013, p. 1113).

Because the process of market segmentation has advanced furthest in highly developed markets, and the less developed markets are expected to evolve along the same trajectory (albeit faster, because technologies are readily available), this analysis will focus on highly developed markets. Furthermore, segmentation strategies from successful and unsuccessful MVNO’s will form the basis of this analysis. The reasons why this approach is used are the following. Firstly, there is almost no customer data (freely) available, for different countries in (highly) developed markets in this industry on which customers can be segmented. Secondly, MVNO’s can only succeed if they are able to successfully identify and target ‘those groups of potentially interested, or receptive customers that are sufficiently large and lucrative’ (Yankelovich & Meer, 2006). Also, there are striking similarities between MVNO’s and VoIP service providers, and most of the best practices and pitfalls from MVNO’s can be applied to VoIP service providers. Lastly, the data available on customers of RingCredible is not detailed enough for distinguishing customer segments, and furthermore current customers from RingCredible might not include customers from the most attractive market segments. Generally speaking, two different categories of competitive strategies of MVNO’s can be distinguished. Most of the existing MVNO’s can be grouped under one of these categories, however there are some MVNO’s that combine different types of strategies, or apply different strategies for different sub-brands.

Supply-push strategies

First of all, there are ‘supply-push’ strategies, “driven by the possibility to exploit the core competences of the firm in different sectors, usually close to the core sector business of the company” (Corrocher & Lasio, 2013, p. 1117). In the previous sentence, the firm that the authors are referring to is the parent company of the MVNO. This category of competitive strategies, however, is not necessarily aimed at market segmentation for attracting new customers. Still, they will be discussed shortly, in order to explain the successes and failures of MVNO’s employing these strategies. Three different types of companies are found to be active in the MVNO segment employing these supply-push strategies; (1) Telecom operators (Informa telecoms & media, 2013; Corrocher & Lasio, 2013), (2) retailers (Informa telecoms & media, 2013; Corrocher & Lasio, 2013), and (3) companies offering value added services (Corrocher & Lasio, 2013) (e.g. financial services). Within this category of competitive strategies, the approach of telecom operators proved to be the most successful one. The competences of the parent companies of these MVNO’s have been crucial for the identification of the users’ needs and allowed them to offer a set of integrated services to customers (Corrocher & Lasio, 2013). Furthermore, the telecom operators have been able to leverage their brand, technical and marketing capabilities (Informa telecoms & media, 2013).

Initially, retail operators expanding their business to the telecom industry were very successful as well. Due to their strong brand, large existing customer base and very extensive distribution channels they were able to reach a large customer base within a short timeframe. However, as the market matured and different customer segments with differentiated demands emerged, their “limited competencies in the telecom business and the scarce capability of understanding the market led the companies to lose market share” (Corrocher & Lasio, 2013, p. 1120).

Lastly, several MVNO’s employing the value added services strategy have tried to gain a foothold in some markets, especially companies from the financial sector (often banks (e.g. Intesa Sanpaolo, Rabobank)). Although some of these were successful for a period (due to their well-known brand, existing network of physical branches (i.e. distribution channel) and IT infrastructure) (Talmeiso, 2014), the emergence of the smartphone and accompanying app-markets have given them new opportunities to market their services without the risks and operations of operating a MVNO.

Demand-pull strategies

The other category of competitive strategies are characterised as ‘demand-pull’ strategies, driven by the identification of underserved or uncovered market segments (Corrocher & Lasio, 2013). A few different strategies, focussing on different types of segments, have been distinguished: (1) international/ethnic

(Corrocher & Lasio, 2013; Informa telecoms & media, 2013), (2) low-cost (Corrocher & Lasio, 2013), (3) youth (Corrocher & Lasio, 2013), and (4) data-only (Talmesio & Tricarico, 2012; Chou, et al., 2013; Korkmaz, et al., 2012). According to Corrocher & Lasio (2013), the most successful of these strategies is the international market strategy. This is underpinned by Informa telecoms & media (2013), who state that the ethnic segment, which is made up of companies (both tiny and huge) specializing in international communications services for communities living outside their own country, represents by far the largest MVNO segment. These market segments are currently being underserved by MNO's. Although there are some MNO's offering bundles or subscriptions for calls to specific international destinations, prices (and margins) are still very high, which creates room for MVNO's in these segments. The largest challenge for these type of MVNO's is that "diffusing within ethnic communities and establishing itself as the reference brand for calls to the country of origin takes time and first-mover advantages seem to be playing an important role" (Corrocher & Lasio, 2013, p. 1121). In some countries (e.g. Italy, France) most players active in these segments entered quite recently, which suggests that this is still a promising growth segment, even in developed markets (Corrocher & Lasio, 2013).

The low-cost segment is characterized by customers with very basic needs, and mostly low usage. Due to these basic needs, in theory, almost all organisations present in the market can serve these segments. However, because usage is generally low, and margins on the basic services these users demand are low in developed markets, these segments are not attractive/profitable for MNO's. These user segments are therefore mostly served by MVNO's with a low extent of vertical integration (mostly SP MVNO's (Corrocher & Lasio, 2013)) and low extent of service diversity, which enables them to operate in a very lean manner, and allows them to be profitable on thin margins if their customer base is substantially large. Still, of the MVNO's targeting the low-cost segments, the majority is not amongst the most successful MVNO's. "This is due to the fact that the low-cost strategy is weak in terms of churn rate and differentiation: these MVNO's offer cheap rates at the cost of very basic services and their offerings are substitutes among each other, making customers migrate once a competitor lowers its prices" (Corrocher & Lasio, 2013, p. 1121). Still, some MVNO's in this segment have proven to be sustainable over a longer period of time. Most of the successful MVNO's in this segment achieved their success by combining their low-cost strategy with one of the supply-push strategies (e.g. the telecom operator KPN with Simyo (Chou, et al., 2013).

Another strategy which has proven successful in some cases is the youth strategy. MVNO's that use this strategy target teenagers and young people (under 25-30 years old) with low-cost packages of most appealing mobile services (i.e. voice, text messaging, and data) (Corrocher & Lasio, 2013). It should be noted that low-cost in this instance is different from the low-cost segment as previously described, mainly in terms of usage (young people are generally heavy users) and use more advanced services ((faster) data). The last demand-pull strategy that will be discussed here is a relatively new trend in the telecommunication sector and consists of offering data-only subscriptions. The demand for these sort of subscriptions arrived with the explosive growth of tablet uptake by consumers. For most MNO's in developed markets, data is, or is becoming, the largest source of income. However, the number of data-only subscriptions offered by them is generally low and prices are high (Korkmaz, et al., 2012). The demand for these sort of subscriptions is expected to strongly increase in all markets, because tablets are becoming increasingly more popular. Even in less developed markets, the number of (low-cost) tablets is rising steadily, mainly as a substitution product for PC's and laptops (Korkmaz, et al., 2012).

Conclusions

In conclusion, the most attractive market segment for MVNO companies in developed markets is the international/ethnic segment. Furthermore, the data-only is currently growing rapidly and offering large opportunities. However, as can be deduced from the examples above, the most successful MVNO's are those organisations that can leverage existing capabilities (preferably from related sectors), and/or combine demand-pull with supply-push strategies.

4.3.5 Implications for strategy

This paragraph will briefly combine (where applicable) the most important findings from the previous analyses and discuss their implications for strategy. Firstly, in the analysis of strategic groups it was concluded that there are generally little differences between VoIP service providers. VoIP providers are active in the same (all) markets, target the same customer segments, offer the same services and are (more or less) equally priced, their offerings are substitutes of each other, making customers susceptible to migrate once a competitor lowers its prices. This is comparable to MVNO's targeting the low-cost segment. Secondly, MVNO's targeting the international segment are considered the most successful MVNO's and this segment is also the largest MVNO segment. Although this is the largest MVNO segment, it is still growing in developed markets. The international segment is also the main target segment of VoIP providers.

Furthermore, the number of customers of VoIP service providers, is very low compared to the number of customers of MVNO's and trivial when compared with MNO customers.

These three findings combined, suggest that VoIP service providers should focus strategy towards MVNO's targeting the international/ethnic segment. By focussing their strategy on MVNO's, instead of on each other, they can easier enlarge their customer base, because the group of potential customers is much larger. Furthermore, for reasons explained earlier, VoIP service providers should be able to offer more competitive prices than MVNO's targeting the international segment. Another advantage that VoIP service providers have over MVNO's is that their service can be used as a complementary product to that of MNO's (because no SIM-card is needed for outgoing network access), thereby eliminating the need for customers to change operator (i.e. no customer switching costs). Furthermore, because VoIP service providers are already present in (almost) all markets, whereas MVNO's are not, they can reap first-mover advantages and enlarge entry barriers for MVNO's targeting the international segment. Lastly, the emergence of the data-only segment can also bring about an interesting opportunity for VoIP service providers, because their services can complement the data-only subscription. This will allow users with a data-only subscription to use their device (mostly tablets) also for calling (outgoing only).

5. Aggregation of findings

In this chapter the findings from previous chapters are aggregated in order to be able to answer the research- and sub-questions that were stated in chapter 2. These findings from previous chapters will be aggregated in two manners. First of all, the most important findings and conclusions will be aggregated in the proposed SWOT model. This model will allow for a relatively quick overview of the strengths, weaknesses, opportunities, and threats of RBN B.V. compared to competitors in this industry. Thereafter, these qualitative conclusions and findings will be combined into a tool with the quantitative data gathered, to be able to select the most attractive markets for RBN B.V. to expand to.

5.1 SWOT framework

The first step will thus be to aggregate the qualitative findings and apply them to the proposed model. Figure 12 depicts the result of this. As one can see from the figure, an enumeration of findings is given for each of the four categories. Most of the findings are related to each other (this is being depicted by numbers in brackets (e.g. (1)) behind the findings in the figure. Underneath the figure the different findings and the framework they originated from are discussed. In order to explain the relations between the findings the discussion will be grouped by following the bracketed numbers. After these groups have been discussed, the unlinked findings will be discussed.

SWOT analysis			
<u>Strengths</u>	<u>Weaknesses</u>	<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> • Business model is viable (1) • Technology employed gives competitive advantage (2) • Service can also serve as a complimentary product (3) • Flat organisation • Able to reach a large base fairly quickly 	<ul style="list-style-type: none"> • Dependent on one service (2) • Little customer knowledge (4) • Lack of marketing strategy (4) • No pro-active problem solving (5) • No clear procedures for employees (5) • Focus on iOS (6) 	<ul style="list-style-type: none"> • Roaming is unnecessary overpriced (1) • Competitive advantage over successful (MVNO) competitors (2) • Emergence of data-only segment (3) • Expansion to Windows mobile (6) • Explosion of mobile-broadband subscriptions 	<ul style="list-style-type: none"> • Lack of differentiation with other VoIP services (2) • High churn (4) • High dependence on employees (5) • Currency risk • ISP's traffic management • Government regulations on roaming • Emergence of free VoIP service

Figure 12: SWOT model applied to RBN B.V.

(1) Business model - During this project, enough evidence was gathered to prove that there is a need for the service they offer and the business model RBN B.V. uses, could be profitable.

The first finding which is listed under strengths is that the business model is viable. One might argue that that this should not be listed under strengths, since it is a necessity for any commercial organisation. However, since RingCredible is a start-up, a viable business model can be regarded as a strength. Furthermore, as can be concluded from the upward trend in the KPI's, consumers are increasingly interested in their service. This upward trend is (most likely) being fuelled by the fact that roaming is unnecessary overpriced. As was discussed in the PESTEL analysis, the prices for roaming are (a) significantly high, (b) have no linkage to domestic mobile prices, and (c) do not reflect costs. The percentage of international calls via RingCredible from March till September of 2013 was between 60% and 70% (thus 30%-40% national). This statistic, combined with high roaming prices, offers a huge opportunity for RingCredible.

(2) Technology employed - One of the main reasons why RBN B.V. can compete with, or even outperform, incumbents in this industry is the technology they employ.

That international calls offer a huge opportunity is also underpinned by the success of MVNO's that target the international segment and first seized this opportunity, as was discussed in the market segments

section of this report. Furthermore, because the technology that RingCredible employs is different from that of MVNO's, this opportunity is even larger for them. In the sub-chapter on strategic groups it was concluded that RingCredible is able to serve (almost) all markets with a very small organisation. This, in combination with a small extent of vertical integration and a limited service offering, allows for very low operating expenses compared to MVNO's. As was discussed in Porter's five forces analysis, RingCredible has lower purchase prices (compared to MVNO's with comparable volumes of call minutes) and competition in this industry is mainly focussed on price. The abovementioned competitive advantages enable RingCredible to offer their service at a (significantly) lower price than these (successful) MVNO's targeting the international segment. On the other hand, the technology RingCredible employs is also a weakness and can be a threat to the organisation. As was discussed in the sub-chapter on strategic groups, most VoIP service providers only offer one type of service; voice. This makes them vulnerable to (rapid) industry changes and/or changes in consumer behaviour. This is best illustrated when looking at the rapidly evaporating revenues from text-message the last couple of years. If an organisation was dependent on only these revenues, there was no chance that they would have survived. Furthermore, because almost all of the larger VoIP service providers are alike in both service offering, and the positioning of their services, competition will be mainly (or only) focussed on price. Because there are very low customer switching costs and economies of scale and scope are important to these organisations (as was discussed in Porter's five forces analysis) it is very likely that one or a few large organisation(s) will take the majority of the market in a specific country. On the other hand, in the sub-chapter on market segments it was discussed that companies focussing on the international segment benefit from first mover advantages. Thus, entering a specific market early (or in this case focus on one, or a few, currently underserved countries) might counter the competitive advantages of economies of scale and scope of the larger VoIP service providers by establishing a strong brand and a large customer base early.

(3) VoIP calling as a complementary product - Due to the type of technology employed, RBN B.V. does not have to compete with incumbents as a whole, but rather on specific services/niches.

Another opportunity for RingCredible lies in the emergence of the data-only segment (discussed in the market segments section) and the fact that RingCredible can serve as a complementary product, because there are no switching costs associated with using the service as was concluded in Porter's five forces analysis. The emergence of the data-only segment gives the opportunity of a unique value proposition for VoIP service providers, because they can enable consumers to turn their device (smartphone/tablet) into a phone (although with only an outgoing connection), without the need for an extra GSM connection and the accompanying subscription. Furthermore, VoIP services can also serve as a complementary product to normal cellular subscriptions, allowing consumers to call abroad (or from abroad) at a reduced tariff.

(4) Understanding (potential) customers - A thorough understanding of the needs of current, and potential, customers will be paramount to the survival (and prosperity) of RBN B.V.

The fourth group of findings addresses one of the most important issues of RingCredible; a lack of customer knowledge and lack of knowledge of consumer needs and demands. As is evident from the discussion on the capabilities of RBN B.V. during the analysis of the internal environment, there is little knowledge about the current customers of the service. Little to none is done with the information on customers already present within the databases, and no additional information is being gathered. Because of this, they are not certain which customers drive revenues, become recurring customers, or are insufficiently serviced. This could be the reason for the low level of recurring customers (high level of churn) witnessed in the last half of 2013 (as discussed in the analysis of the current situation). This lack in knowledge of customer demands and needs is also reflected in the fact that there is only one general service for sale (e.g. there are no bundles or subscriptions that allow users to call unlimitedly to a certain country or continent, an option that most VoIP service providers have), and the lack of marketing strategy. All marketing campaigns have been evaluated afterwards and successes have been copied, however the underlying reasons for the successes are mostly unknown, or at least unsubstantiated by data. In the sub-chapters on strategic groups and marketing segments the importance of (a) being able to retain customers, thus understand their needs,

and (b) the ability to reach a large customer base quickly, thus effective marketing, have been extensively discussed.

(5) Lack of organizational learning – Next to the improvement of the service itself, more attention should be devoted to organizational learning, especially to automated CEM processes.

Another group of findings that requires the attention of the management of RBN B.V. regards the manner in which the employees of RingCredible are working at the moment. As was discussed during the analysis of the internal organisation, there are no clear procedures or regulations that employees can use as a guideline. Partly, this is understandable since the organisation is still young and the organisation itself and its environment are evolving rapidly. On the other hand, as was discussed during the analysis of strategic groups, these sort of operations need to work as efficiently as possible in order to be able to remain competitive, and should automate as many processes as possible. The first step in the automation of processes is the development of clear procedures for recurring tasks and processes. Furthermore, since there is almost no documentation on the way that employees accomplish their tasks, a lot of critical knowledge resides with employees. This causes the organisation to have a high dependency on its employees and this forms a threat to the organisation. Especially if an employee is suddenly unable to work for an extensive period of time, survival of the organisation can be compromised. Furthermore, because of the lack of automated processes, clear procedures, and the rapidly changing environment a lot of the time of employees is going towards solving existing problems, and they are unable to engage in pro-active problem solving and improving the application.

(6) Inability to attract large numbers of Android users – RBN B.V. should focus more attention towards acquiring Android users, since they are the largest potential customer group.

The last group of findings regards the operating system of the devices on which RBN B.V. focusses. As can be concluded from the figures in the analysis of the current organisation, the majority of RingCredible customers is using the iOS operating system. The reason for this is to be sought in the success of marketing campaigns targeting this consumers group. Because the first marketing campaigns focussing on iOS were much more successful than those focussing on Android, the iOS campaigns were repeated in other markets. Of course, there is nothing wrong with repeating successful tactics, but the focus on iOS users is a weakness because the market of Android users is much larger (as was discussed in the PESTEL analysis). Furthermore, RBN B.V. targets its service towards price-sensitive consumers, whereas iOS devices are in the highest price segment. Android devices are available in all price segments and have a large array of cheaper (budget) smartphones, thus this might seem like a more natural target segment. In addition, the PESTEL analysis also highlighted the expected rise in market share of the Windows phone, and expanding their service to this OS is an opportunity.

Unlinked findings

Now that the groups of findings have been discussed, the separate findings that are not so directly linked to other findings will be discussed. The first one is the fact that RingCredible is a flat organisation. This can be considered a strength, because the direct link between the management and employees allows them to react and adapt fast to the changing environment. The ability to implement changes rapidly was listed as one of the critical factors to be successful in this industry. Another strength of RingCredible is their ability to reach a large customer base quickly. That they were able to do this is evident from the analysis of the current organisation, where after the launch of the new app the number of users and customers grew rapidly. The ability to attract a large number of customers in a short period was also mentioned as one of the most important characteristics of successful MVNO's. The reasons for this rapid growth was that their service is apparently appealing to consumers and the marketing campaigns they executed were successful. However, as was already mentioned previously in this sub-chapter, a lot of improvement can still be achieved on these topics.

During the PESTEL analysis it was discovered that the group of potential customers for RingCredible will expand rapidly over the coming years. The reason for this is the explosion of the number of mobile-broadband connections in the near future. It is expected that in 2018 there will be 6.5 billion mobile-broadband subscriptions and most of these subscriptions will be for a smartphone or tablet. This extreme expansion of the group of potential customers for RingCredible can be considered a huge opportunity. Lastly, the four remaining threats to the organisation, which were all discovered in the PESTEL analysis, will be discussed. The first of these can form a threat in the short and long term, whereas the remaining three are about possible threats in the medium to long run. First of all, RingCredible offers customers the ability to pay in their own currency. This can pose a threat to the continuance of the organisation if the Euro rapidly, and significantly depreciates. This is caused by the fact that purchased call credits are valid for six months and are, for users denominated in the user's currency, but for RBN B.V. collected in Euro's just after (on average about 3-4 weeks) the purchase.

Another threat for RingCredible is the fact that VoIP services are being blocked in some countries. In these countries VoIP services are being blocked by ISP's and/or government regulations. For now, this threat is not so large, because only a few countries are known to block these services (for a complete list see paragraph 1.2.1.7 in Appendix H: Detailed analysis of Porter's five forces model, for the specified industry). However, as was discussed in more detail in the PESTEL analysis, this can change as dynamics in the ICT markets change.

Thirdly, as was already discussed here previously, the prices for roaming are unnecessarily high. Currently, regulators are unable to reduce these prices because they have no authority to control and regulate the prices set in the countries where the roaming takes place. According to the ITU (2013), resolving the high prices for roaming will only happen through appropriate regional, bilateral and/or international agreements. This process has already started in the EU and it can be expected that more regions will follow in the coming years. As the prices for roaming will drop in these regions, the value proposition of RingCredible will become less attractive to consumers.

One last issue that can potentially change the market for (international) mobile calls is the development or rise of free VoIP services which are adopted by large portions of the market (e.g. comparable to services like WhatsApp and Line, which disrupted the SMS market). For now, no such service is in sight, however RBN B.V. should monitor developments regarding these sort of services.

5.2 Determining the most attractive markets

Now that the qualitative findings have been aggregated, it is time to combine them with quantitative data gathered in order to determine the most attractive markets for RBN B.V. to expand to. The tool that has been developed for this consists of two phases. The first phase is to select the most promising countries on the basis of a few variables. The second phase consists of a more in-depth review of the top countries selected in the first phase to determine whether these markets are really attractive to RBN B.V. and to determine the optimal strategy for the respective market.

5.2.1 Selection of the most promising markets

In this first phase, the most promising countries will be selected on the basis of five variables; Blockages, VoIP attractiveness, low-cost segment attractiveness, mobile penetration, and mobile-broadband price. In the previous analyses and aggregation it was concluded that the international and low-cost segment are the most attractive segments for RBN B.V. These variables were thus constructed to be able to measure, on country level, the attractiveness of the low-cost and international segment.

Each of countries was given a score from 1 to 5 on each of the five variables, where 1 is very attractive and 5 not attractive at all. The description of each variable, source(s) of used data and the relation to the analyses chapters are given below.

1. Blockages: On the basis of the information from Appendix H: Detailed analysis of Porter's five forces model, for the specified industry paragraph 1.2.1.7, each country received a score on this variable. Those countries where VoIP services are not being blocked received the score 1, those countries where services

are being blocked by ISP's received a 3, and finally those countries where VoIP are being blocked by the government received the score 5. The reason for the difference between blocking by ISP's and government is simple, most countries have several ISP's and not all of those block VoIP services.

2. VoIP attractiveness: As discussed in the PESTEL analysis, the most interesting markets for VoIP services are those that have relatively low prices for mobile broadband and high prices for calling. In order to be able to compare countries with each other on this statistic, the prices for mobile broadband and cellular calls were determined for each country. For both the price of mobile-broadband and the price of cellular calls for each country the tariffs from the (a) largest operator (in terms of subscribers), and (b) the most used tariffs were used, including taxes. The price for mobile broadband was calculated on the basis of the prepaid and post-paid mobile data subscriptions that were gathered by the ITU (both lists can be found in the appendices). The price for mobile broadband is denominated in percentage of GNI/capita. The price for cellular calls were calculated on the basis of six different tariffs (from the ITU database) of a local (i.e. national) one minute prepaid call. These six tariffs differed for three variables; peak/off-peak, on-net/off-net, and to mobile/fixed. These six tariffs were averaged to arrive at the average cost of a one minute national prepaid call. These tariffs were denominated in the local currency, so they were converted to US dollars. Thereafter the average price of a call was divided by the GDP/capita for each country to arrive at the percentage of GDP/capita that a national one minute prepaid call costs on average (this variable was multiplied by 1,000 to make it more comprehensible). Now that both the price of mobile broadband and the price of a one minute national prepaid call have been calculated relative to each countries income, the relative price of mobile broadband versus cellular calls was calculated by dividing the variable on mobile broadband by that of the one cellular call. The closer to zero this ratio is, the more attractive the country is.

3. Low-cost segment attractiveness: Since RBN B.V. is able to offer relatively low prices for national calls as well, a look was also taken to the attractiveness of the low-cost segment of each country. This was done on the basis of the average cost of a one minute national pre-paid call, as discussed previously. However, for this variable the absolute price was taken in US dollars for each country (instead of a percentage of GDP/capita). The higher the price per one minute call, the more attractive the country is for RBN B.V.

4. Mobile penetration: Next the penetration rate for each country was taken from the ITU database. This variable was included, because the higher the mobile penetration rate is, the more developed the market generally is (indication for 3G and 4G availability) and the more calls are being made (i.e. more phones leads to more calls). The higher the penetration rate of a country, the more attractive it is.

5. Mobile-broadband price: Lastly, the mobile-broadband price as a percentage of GNI/capita was used as an indicator of mobile-broadband usage. The analogy behind this is that lower mobile-broadband prices lead to higher penetration rates. Therefore, the lower the mobile-broadband price, the more attractive the market is for RBN B.V.

Now that all five variables have been stated, the values for each country on each variable were calculated. This resulted in data on 204 individual countries. However, because for not all countries all data was available, the countries with one or more values missing were excluded. The result of this was a list of 128 countries. In order to maximize differences between countries, the values for each variable were grouped into groups of equal sizes. Finally, the attractiveness of each of the 128 countries was determined by averaging the score of the five variables. This resulted in the table that can be found in Appendix E. Furthermore, for each zone the most attractive markets were selected to take to the second phase. In Table 15 the results are summarized to zone level and the most attractive markets are depicted per zone.

Table 15: The most attractive countries from each zone and average zone scores

Zone	Most attractive countries	Average zone score	Blockages	VoIP	low-cost	penetration	mobile internet
1	United Kingdom, Estonia, Belgium	2.1	1.00	2.36	2.80	2.55	1.86
2	Canada, United States	2.6	1.00	4.00	1.00	4.50	2.50
3	Uruguay, Argentina, Barbados	2.7	1.50	3.04	2.38	2.88	3.67
4	South-Korea, Japan, New Zealand	3	1.29	3.71	3.86	2.95	2.95
5	Tunisia, Bahrain, South-Africa	3.2	1.43	3.43	3.43	3.73	4.00

5.2.2 In-depth review of the most attractive countries

After the most attractive countries for each zone have been determined, a more in depth-review of these countries is undertaken in order to establish whether these countries are really attractive markets for RBN B.V. and what strategy best suits these markets. In order to streamline this process and be able to compare the different markets on the same statistics, five (groups of) variables were determined and the values of these variables were determined for each country. These five (groups of) variables are explained below.

Smartphone OS market share: First of all, for RBN B.V. it is important to know what the leading operating system of smartphones are in each market. This enables them to target their marketing at the most prominent groups. Therefore, for each market it was determined what the market shares for each of the four largest smartphone operating systems are (i.e. Android, iOS, Windows, and BlackBerry). It should be noted that this data was gathered from several different sources and is not a 100 percent reliable.

Immigration: For each of the 14 countries it was determined what percentage of the population is an immigrant. This data came from the UN website (United Nations - International migration, 2013) and is highly reliable. Furthermore, for each of the countries (where available) the largest 2-3 ethnic groups of immigrants were looked up, in order to give an indication about possible international segments to target.

Type of market competition: Another statistic that was researched for all of the 14 markets are the type of companies active in the market (MNO, and MVNO's). The number of MNO's and MVNO's (where applicable) are given in order to determine the level of competition in the market. As was discussed in earlier chapters, generally the heavier competition in a market (more MVNO's indicates more competition), the more developed the market and the lower the prices. Furthermore, the largest operator for each country was listed (this will be used for the next variable). The information of this was mostly gathered from (MVNO dynamics, 2014; Wikipedia, 2014) and is therefore not a 100 percent reliable. However, it does give a good indication of each country's market dynamics.

National call price: In order to be able to determine the attractiveness of the low-cost segment for each country, the price of a three minute prepaid call from the largest operator was looked up. For each country, rates from the most basic package and lowest top-up amount were taken. Furthermore, where applicable the connection fee was added, if there was a difference between calling fixed and mobile numbers the most expensive was taken, and for some countries (US, Canada, and Argentina the local (lower than nationwide) rate was taken). These rates were then compared to the RingCredible rate of a three minute call. For the RingCredible rate, also the connection fee was added and the most expensive connection (i.e. fixed vs. mobile) was taken. It should be noted that in the most developed countries (a good indication is the MNO/MVNO ratio below 0.5), generally the majority of customers of the largest operator have a post-paid subscription and prices for prepaid calls are extremely high compared to prepaid MVNO offerings. Thus, markets characterized by high MVNO presence will generally not be attractive with regard to the low-cost segment.

International call price: Lastly, a look was taken to international rates for calling to countries where the largest ethnic immigrant groups originated from. As was already stated several times in this report, roaming and international calling prices are unnaturally high. Therefore, there is no point in looking up the international tariffs for the largest operators (since RingCredible will be much cheaper anyway). Instead a look was taken to MVNO's present that target the international segment. Unfortunately, very little information on these type of companies is available and for the countries with high MVNO presence I was not able to find MVNO's targeting the international segment in Japan, New Zealand and Canada. For the remaining countries with high MVNO presence (UK, USA, and Belgium) the tariffs from Lycamobile for a 3 minute call were taken.

The values for each of the countries and groups of variables can be found in Appendix F. As one can see, for some countries not all information was found. In order to be able to acquire this information either access to detailed (and expensive) databases has to be acquired or data from the market should be gathered.

When analysing the gathered data for the 14 countries, conclusions on market attractiveness of specific target segments can be drawn. Per country these conclusions are given below, and are depicted in Table 16 below. The most attractive segments are filled green in this table.

United Kingdom: The UK market is not that attractive for RingCredible. This is mainly due to widespread presence of MVNO's who have targeted both the low-cost and international segment. Furthermore, the prices of these MVNO for the international segment are extremely low for the large ethnic groups present.

Estonia: Although Estonia does not have many MVNO's, prices for national calling are low compared to RingCredible. This is mainly due to the fact that RingCredible prices are high for calling to Estonia. If this price can be substantially reduced the low-cost segment could be attractive. Furthermore, Estonia has a high immigration rate, but as far as I could find no companies targeting these customer segments. If this is the case, the international segment could prove very attractive to RingCredible.

Belgium: National rates for Belgium are quite high (both for the MNO and MVNO researched). If this is also the case for other MVNO's active in the market, the low-cost segment is very attractive for RingCredible. When looking at the international segment, prices for calling to Italy (the second largest ethnic group present in Belgium) are very high compared to RingCredible, and thus might prove an attractive segment.

Canada: There are quite a lot MVNO's present in the Canadian market, and prices for local calling should be researched in order to determine if the low-cost segment is attractive. Furthermore, prices for nation-wide (i.e. not local) calls are extremely high and this could prove an attractive segment. Furthermore, it should be researched whether there are companies targeting the international segment, because immigration is high and this could prove attractive as well.

United States: The situation for local and nation-wide calling is comparable to that of Canada. MVNO prices for this should be researched in order to determine attractiveness of the low-cost segment. The international segment is already successfully being targeted for the largest ethnic groups, but there are a lot more sufficiently large ethnic groups present in the US to pursue. Prices for calling the countries where these groups originate from should be researched and compared to RingCredible prices in order to determine underserved segments.

Uruguay: Prices for national calls in Uruguay are high, probably due to the absence of MVNO's. However, the difference with the RingCredible price is not that large. If RingCredible is able to lower its price for calling to Uruguay, this could prove a really attractive segment. The international segment is not that attractive due to the low immigration rate.

Argentina: In Argentina the prices for local calls are high as well, probably also due to the lack of MVNO's. Furthermore, the price for nation-wide calls are even higher. Therefore the low-cost segment seems like an attractive target segment for RingCredible. Furthermore, the international segment could offer opportunities as well. Although the immigration rate is not that high in percentage, Argentina has a large population, so in absolute terms this could be an interesting segment.

Barbados: In Barbados the price for calling national and within the Caribbean area is already low compared to RingCredible, thus not offering any opportunities. Since the immigration rate is relatively high, this could offer some possibilities.

South-Korea: Prices for national calling are high in South-Korea when compared to RingCredible. Again, probably due to the lack of MVNO presence. This indicates a highly attractive low-cost segment to RBN B.V. Furthermore, the international segment could prove interesting for the two largest foreign ethnic groups. International trade is very important for South-Korea as well, so the international business segment might be an attractive target segment too.

Japan: For Japan the national prices of MVNO's should be researched in order to determine the attractiveness of the low-cost segment. The price of a national prepaid call with the second largest MNO are rather high, but as explained earlier, this does not mean that MVNO's also have high prepaid prices. Although immigration rates are not high, Japans economy is for a large part fuelled by international trade. Therefore, it should be researched whether there are MVNO's targeting the international (business) segments in order to determine the attractiveness of that segment.

New Zealand: Although the MNO/MVNO rating in New Zealand is significantly higher than in Japan, the same conclusion can be drawn on the attractiveness of the low-cost segment. MVNO prices should thus be

researched. Since New Zealand has relatively high immigration, this could pose as an attractive segment. However, it should first be researched in more depth whether there are MVNO's targeting these segments.

Tunisia: Although there are no MVNO's present, the prices for national calling of the MNO are much lower than that of RingCredible. Furthermore, due to the absence of high immigration rates the international segment is not attractive as well.

Bahrain: National call prices for Bahrain are not high compared to those of RingCredible. Furthermore, because the average wealth of citizens from Bahrain (excluding immigrants) is extremely high, the low-cost segment is not attractive. However, because of the extremely high immigration rate, the international segment seems very attractive.

South-Africa: Lastly, MNO prices for a national prepaid call in South-Africa are already low when compared to RingCredible. MVNO's probably offer even lower prices, thus the low-cost segment is not attractive to RBN B.V. Furthermore, the immigration rate is relatively low and besides that not concentrated in a few ethnic groups. Therefore the international segment does not seem attractive for RBN B.V. as well.

Table 16: Results from the in-depth review of the most attractive countries

	Low-cost segment attractiveness	International segment attractiveness	OS focus
United Kingdom	low	low	Android, iOS
Estonia	low	possibly	
Belgium	possibly	Italian community	Android, iOS
Canada	nation-wide	possibly	iOS, Android
United States	nation-wide	low	iOS, Android
Uruguay	medium-high	low	Android
Argentina	high + nation-wide	medium	Android
Barbados	low	medium (except for caribbean area low)	
South-Korea	high	possibly	
Japan	possibly	possibly	iOS
New Zealand	possibly	possibly	Android
Tunisia	low	low	
Bahrain	low	medium-high	iOS
South-Africa	low	low	Android

5.3 Improvements and additions to both phases

Now that for the most attractive markets from phase one, the most attractive market segments of these countries have been indicated, RBN B.V. should research these specified target segments in more detail. The easiest way to retrieve this information is by getting into contact with someone who has intimate knowledge of both the country and the telecommunications sector in that country. As was already discussed previously, some of the data needed for this is not freely available, reliable and/or very time consuming to gather. After these seemingly most interesting segments have been researched in more detail, and are still deemed attractive, RBN B.V. should try to start marketing in these countries and compare the results with earlier marketing campaigns in order to determine whether the tool actually pinpointed (the most) attractive countries and segments. It could for instance very well be that some of the variables from phase one are not significant, should be weighted to express the importance of each variable, or that important data is missing. Furthermore, this should be an ongoing process and, as more data sources and knowledge is available, the tool can be fine-tuned. The variables and processes described and conducted above should be considered the first step and might give a good indication on some attractive market segments.

For example, one variable which could greatly improve the selection of the most attractive markets for the low-cost segment in the first phase, would be the MNO/MVNO ratio for each country. Unfortunately no free and reliable data on all countries was available. Two other variables which could probably improve the effectiveness of the tool would be the ratio of prepaid/post-paid use and average app spending of smartphone users, to ascertain customers' willingness to pay for the service that RingCredible offers. A nice addition to the second phase would be the price of a national prepaid call from the largest MVNO (or the average price of a national prepaid call of all MVNO's) in those countries where MVNO's are present, for being able to more accurately predict the attractiveness of the low-cost segment.

6. Conclusions and recommendations

In this graduation and internship project, RBN B.V. asked to investigate what the most attractive markets for international expansion are and what the optimal competitive strategy for these most attractive markets is. This question arose because their service has proven successful in the Netherlands and in order to reach a larger customer base, expansion to other markets is a necessity. The goal was to develop a tool in which all markets could be compared and the best markets and market segments determined. In this chapter, an overview of the results is given and conclusions are drawn. Lastly, recommendations for further research will be made.

6.1 Conclusions

The first step in this project was to determine which elements encompass the strategic options of RBN B.V. This was based on academic literature, information residing with RBN B.V. and data gathered from the market. This resulted in the selection of five theoretical frameworks and the SWOT model that allowed for the determination of the strategic position of RBN B.V. and the strategic options corresponding to this position. This SWOT model was developed to combine the different theoretical frameworks, as depicted in Figure 5 in chapter 1. After the internal and external environment were analysed on the basis of the five theoretical frameworks, the most important findings were combined in the SWOT model, as graphically represented in Figure 13 below.

SWOT analysis			
<u>Strengths</u>	<u>Weaknesses</u>	<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> • Business model is viable (1) • Technology employed gives competitive advantage (2) • Service can also serve as a complimentary product (3) • Flat organisation • Able to reach a large base fairly quickly 	<ul style="list-style-type: none"> • Dependent on one service (2) • Little customer knowledge (4) • Lack of marketing strategy (4) • No pro-active problem solving (5) • No clear procedures for employees (5) • Focus on IOS (6) 	<ul style="list-style-type: none"> • Roaming is unnecessary overpriced (1) • Competitive advantage over successful (MVNO) competitors (2) • Emergence of data-only segment (3) • Expansion to Windows mobile (6) • Explosion of mobile-broadband subscriptions 	<ul style="list-style-type: none"> • Lack of differentiation with other VoIP services (2) • High churn (4) • High dependence on employees (5) • Currency risk • ISP's traffic management • Government regulations on roaming • Emergence of free VoIP service

Figure 13: Conceptual framework applied to RBN B.V.

By aggregating the qualitative findings from the different theoretical frameworks, it was possible to determine the strategic position, and the corresponding strategic options for RBN B.V. Furthermore, from the analysis of the external environment it became clear which characteristics attractive markets and attractive customer segments possess for RBN B.V. From these analyses it became clear that the most attractive strategic options for RBN B.V. are (1) to focus on the international segment, and (2) focus on the low-cost segment, depending on market specific circumstances (e.g. high cost of calling or high percentage of immigration). Based on these qualitative findings and quantitative data gathered from the market a tool was developed to select the most attractive markets and market segments to expand to for RBN B.V. This tool consisted of two separate phases. In the first phase all countries (with complete data sets) were assigned a score based on five (sets of) variables; Blockages, VoIP attractiveness, low-cost segment attractiveness, mobile penetration, and mobile-broadband price. Each country received a score (1 to 5) on each variable and these scores were averaged, where the lowest average scores indicated the most attractive markets. This first phase resulted in the selection of 14 countries, the three most attractive markets of each zone. In Table 17 the results of the first phase are summarized. Finally, after this first phase, for each of the 14 most attractive countries the second phase was initiated. This second phase consisted of an in-depth review of these countries to determine (a) whether they are truly attractive, and (b) if so, what the most attractive market segment(s) is (are) on which RBN B.V. should focus. In this second

phase of the tool, the countries where analysed on, again, five (groups of) variables: smartphone OS market share, immigration, type of market competition, national call price, and international call price. This last, in-depth, review resulted in the conclusions depicted in Table 18 below. In this table, the fields that are filled green are the most attractive markets segments in the corresponding, most attractive, countries.

Table 17: The most attractive markets of each zone and zone averages:

Zone	Most attractive countries	Average zone score	Blockages	VoiP	low-cost	penetration	mobile internet
1	United Kingdom, Estonia, Belgium	2.1	1.00	2.36	2.80	2.55	1.86
2	Canada, United States	2.6	1.00	4.00	1.00	4.50	2.50
3	Uruguay, Argentina, Barbados	2.7	1.50	3.04	2.38	2.88	3.67
4	South-Korea, Japan, New Zealand	3	1.29	3.71	3.86	2.95	2.95
5	Tunisia, Bahrain, South-Africa	3.2	1.43	3.43	3.43	3.73	4.00

Table 18: Results from the in-depth review of the most attractive countries

	Low-cost segment attractiveness	International segment attractiveness	OS focus
United Kingdom	low	low	Android, iOS
Estonia	low	possibly	
Belgium	possibly	Italian community	Android, iOS
Canada	nation-wide	possibly	iOS, Android
United States	nation-wide	low	iOS, Android
Uruguay	medium-high	low	Android
Argentina	high + nation-wide	medium	Android
Barbados	low	medium (except for caribbean area low)	
South-Korea	high	possibly	
Japan	possibly	possibly	iOS
New Zealand	possibly	possibly	Android
Tunisia	low	low	
Bahrain	low	medium-high	iOS
South-Africa	low	low	Android

Thus, based on the outcomes of the different theoretical frameworks, the aggregation of these findings in the SWOT framework, the developed tool, and lastly applying the gathered market data to this tool, it can be concluded that the most promising strategies and corresponding markets to expand to are:

- **Argentina**, low-cost segment and international segment targeting android devices
- **South-Korea**, targeting the low-cost segment
- **Uruguay**, targeting the low-cost segment and android devices
- **Bahrain**, the international segment and targeting iOS devices
- **Canada**, targeting the low-cost segment for nation-wide calls (i.e. not local)
- **United States**, also targeting nation-wide calls in the low-cost segment
- **Barbados**, targeting the international segment beyond the Caribbean
- **Belgium**, targeting the international segment, more specifically the Italian community

6.2 Further research and recommendations

Next to the conclusions of this project, insights were gained which resulted in recommendations for RBN B.V. These recommendations are stated next.

Additional data for the developed tool

The tool that was developed for the selection of the most attractive markets and market segments is a first draft. When RBN B.V. decides to actively pursue the suggested markets and customer segments, the results of these campaigns need to be analysed to determine if they are more successful than earlier campaigns. On the basis of these results the tool should be adjusted and fine-tuned. Weighing of the different variables in the first phase, could for instance lead to better results. Furthermore, if more data becomes available to RBN B.V., this can be added to the tool. Three variables which could be added to the first phase of the tool when the data becomes available are (1) the MNO/MVNO ratio, (2) prepaid vs. post-paid use, and (3) average app spending of smartphone users. For the second phase of the model, the average price of a

prepaid call of MVNO('s) (if applicable), and the presence of MVNO's targeting the international segment could be welcome additions.

Automate processes and focus on customer retention

RBN B.V. should focus on automating as many processes as possible within the internal organisation. This will allow them to (a) be able to cope with a quickly expanding customer base whilst keeping the number of employees low, (b) deliver the same quality of service to each customer, (c) detect problems and successes as they occur, and (d) make the organisation less dependent on a few employees.

Furthermore, RBN B.V. should focus at least as much attention on customer retention as on acquiring new customers. Most of the actual profit is derived from recurring customers, because they supply the organisation with a steady source of income, are the heaviest users of the service, and there are no acquisition costs involved with their purchases. Customer retention can be achieved by engaging in "perpetual real-time scrutiny of each customer's "mood" in order to be able to anticipate and prevent customer losses" (Talmesio & Tricarico, 2012, p. 7).

Focus on local distribution partners with intimate market and customer knowledge

One of the main sources of initial, and sustained, MVNO successes in this industry was their ability to reach a large base in a certain market quickly by the use of (extensive) existing distribution channels, combined with existing capabilities in (closely) related industries. Since RBN B.V. wants to compete on a global level from their offices in the Netherlands, they should search for local distribution partners in the most attractive markets. Furthermore, these local distribution partners should preferably also have intimate knowledge of the telecommunication market in that country and more specific knowledge of the target market segment(s). This intimate knowledge of the market and customer segment(s) will allow RBN B.V. to tailor its offering and pricing to the specific customer group(s). Also, the fact that RBN B.V. does possess this intimate market and customer knowledge for the Dutch market, could very well (at least partly) explain their success in this market. Lastly, because RBN B.V. sells almost solely in online distribution channels, the local distribution channel does not necessarily have to be a physical store or location. For example, when targeting a specific international customer segment, the local partner could be a website which is frequented by a significant portion of the target segment.

7. Discussion

During the literature study it was noticed that there are a lot of different theoretical models available to determine individual parts of an organisations position and strategy. Furthermore, these different theoretical models overlap each other on several instances, and more importantly seem in some instances even dependent on each other. In this report for example, a thorough understanding of industry dynamics and sources of profitability, as derived from Porter's five forces analysis was not possible without understanding the different types of companies present in the industry, which was analysed on the basis of strategic groups. Therefore, it would seem logical to develop a framework that eliminates these overlapping areas and emphasizes links and interdependencies of the different models used to determine the strategic position and the optimal competitive strategy.

Also, most of the theoretical models encountered during the literature study focus on the analysis on market level (e.g. on country level), whereas competition in a lot of innovative and high-technology industries is shifting more towards the global level (e.g. due to the emergence of online marketplaces, and online services). Most of the theoretical models do not take into account different circumstances in different markets, which means that the analyses should be repeated for every market in the scope of the analysis.

The abovementioned problem became especially apparent during the analyses of Porter's five forces analysis. This was mostly due to the fact that the industry which was analysed is changing rapidly at the moment. Not only has a different kind of player (MVNO's vs. MNO's) entered this industry in the last ten years, but moreover, due to the advancement in mobile broadband speed and stability, more cost-effective technologies (VoIP) are able to undercut the prevailing business model. Besides the fact that this technology is more cost-effective, it can also be deployed worldwide without the need for additional investments/infrastructure. All in all, this resulted in analysing the industry with Porter's five forces model for three different types of markets and three different types of companies, in order to be able to get a firm grasp of the underlying industry dynamics and the roots of the industry's current profitability. Furthermore, the ability to enter each market without the need for further investments, makes it difficult to determine whether a company with such a service (or product) has actually entered a specific market.

All in all, a lot of different theoretical models exist, and are useful, for determining (a part of) a company's strategic position, strategic option(s), and most attractive customer segments. However, these models are not linked explicitly to one another, whereas they are all needed (or at least some) in order to create a comprehensive understanding of a company's strategic position and be able to determine the most attractive strategic position. Furthermore, since most of these models are relatively old, they do not take into consideration technologies and phenomena such as the internet and online market places. Still, these can have a huge impact on the strategic position and strategy of a company.

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Appendices

Appendix A: Conversion funnel on country level

Table 19: Number and conversions per country (for countries with more than 10 customers over 2013)

Appendix B: World map with the five zones

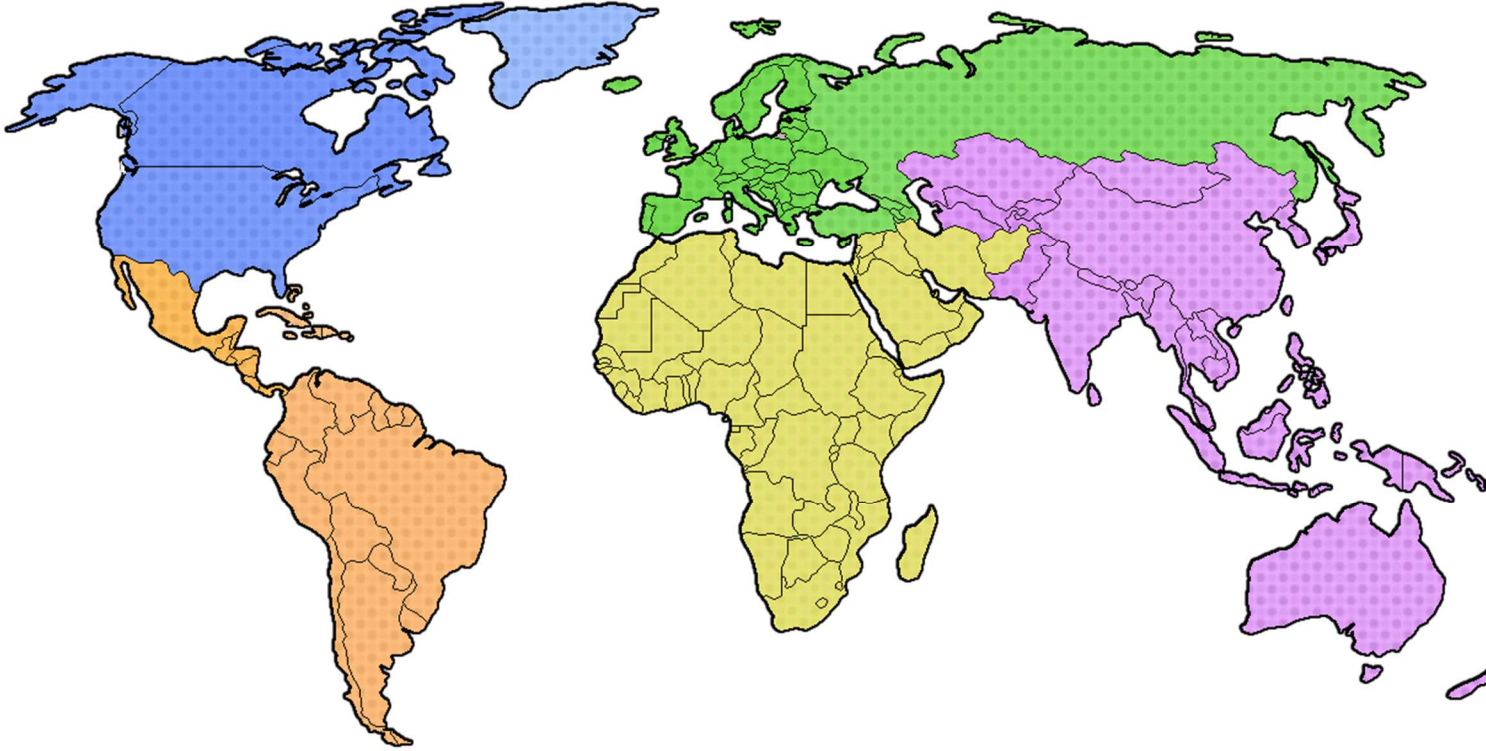


Figure 14: World map with the five zones in colour

Appendix C: ICT Development Index, Access sub-index

Table 2.6: IDI access sub-index, 2011 and 2012

Economy	Rank 2012	Access 2012	Rank 2011	Access 2011
Hong Kong, China	1	9.18	1	9.13
Luxembourg	2	8.93	2	8.72
Iceland	3	8.77	3	8.71
Switzerland	4	8.73	4	8.61
Germany	5	8.51	5	8.48
United Kingdom	6	8.46	7	8.30
Sweden	7	8.37	6	8.36
Singapore	8	8.31	9	8.21
Netherlands	9	8.28	8	8.23
Malta	10	8.28	11	8.16
Korea (Rep.)	11	8.28	10	8.19
Denmark	12	8.18	12	8.14
Austria	13	7.96	15	7.74
France	14	7.95	14	7.77
Macao, China	15	7.93	13	7.91
Japan	16	7.73	17	7.64
Norway	17	7.72	16	7.70
New Zealand	18	7.69	22	7.49
Belgium	19	7.67	18	7.58
Finland	20	7.66	20	7.55
Canada	21	7.65	19	7.58
Australia	22	7.64	21	7.55
Ireland	23	7.59	23	7.49
Israel	24	7.57	24	7.38
United Arab Emirates	25	7.31	35	6.73
Barbados	26	7.29	28	7.03
Estonia	27	7.27	29	7.00
Bahrain	28	7.25	34	6.82
United States	29	7.24	26	7.12
Slovenia	30	7.23	25	7.17
Italy	31	7.15	27	7.08
Qatar	32	7.10	32	6.88
Spain	33	7.05	30	6.99
Antigua & Barbuda	34	7.03	31	6.94
Portugal	35	7.00	33	6.83
Saudi Arabia	36	6.76	38	6.58
Russian Federation	37	6.73	39	6.53
Greece	38	6.69	36	6.58
Croatia	39	6.66	37	6.58
Czech Republic	40	6.60	40	6.49
Kazakhstan	41	6.60	47	6.14
Brunei Darussalam	42	6.55	42	6.35
Lithuania	43	6.47	41	6.44
Poland	44	6.46	43	6.32
Hungary	45	6.46	44	6.30
Cyprus	46	6.45	45	6.29
Belarus	47	6.41	53	6.01
Uruguay	48	6.38	49	6.06
Bulgaria	49	6.33	50	6.04
Slovakia	50	6.28	48	6.13
Latvia	51	6.25	52	6.02
St. Vincent and the Gr.	52	6.12	51	6.02
Seychelles	53	6.10	57	5.49
Malaysia	54	6.09	54	5.76
Lebanon	55	6.04	64	5.34
Argentina	56	5.88	56	5.59
Serbia	57	5.82	46	6.24
Romania	58	5.81	55	5.61
Moldova	59	5.81	60	5.45
Oman	60	5.74	61	5.42
Trinidad & Tobago	61	5.67	58	5.46
Chile	62	5.65	62	5.40
TFYR Macedonia	63	5.65	59	5.45
Maldives	64	5.62	63	5.38
Costa Rica	65	5.53	69	4.95
Panama	66	5.51	66	5.06
Brazil	67	5.49	65	5.18
Ukraine	68	5.27	71	4.88
Saint Lucia	69	5.20	67	5.04
Azerbaijan	70	5.17	72	4.84
Mauritius	71	5.17	70	4.91
Turkey	72	5.11	68	5.01
Georgia	73	5.06	74	4.65
Jordan	74	4.95	76	4.53
Suriname	75	4.90	73	4.79
Bosnia and Herzegovina	76	4.83	75	4.58
Iran (I.R.)	77	4.68	77	4.53
Morocco	78	4.67	78	4.39
Armenia	79	4.52	79	4.23

Economy	Rank 2012	Access 2012	Rank 2011	Access 2011
China	80	4.36	82	4.04
Colombia	81	4.35	84	3.99
Ecuador	82	4.34	81	4.05
Egypt	83	4.20	83	4.00
Syria	84	4.20	80	4.12
South Africa	85	4.14	88	3.90
Venezuela	86	4.13	87	3.91
Mexico	87	4.11	85	3.93
Mongolia	88	4.04	95	3.69
Viet Nam	89	4.04	89	3.87
Thailand	90	4.00	92	3.77
Tunisia	91	3.95	90	3.79
El Salvador	92	3.95	91	3.78
Jamaica	93	3.93	86	3.91
Fiji	94	3.86	93	3.76
Peru	95	3.85	94	3.74
Albania	96	3.73	96	3.53
Gabon	97	3.67	102	3.30
Indonesia	98	3.62	100	3.35
Paraguay	99	3.60	98	3.45
Algeria	100	3.60	99	3.43
Botswana	101	3.58	97	3.46
Cape Verde	102	3.46	101	3.32
Philippines	103	3.41	106	3.19
Sri Lanka	104	3.36	105	3.21
Dominican Rep.	105	3.35	103	3.30
Bolivia	106	3.27	108	3.06
Tonga	107	3.25	104	3.23
Guyana	108	3.18	109	3.01
Cambodia	109	3.14	112	2.72
Namibia	110	3.09	110	2.87
Honduras	111	3.05	107	3.11
Nicaragua	112	2.99	111	2.74
Kenya	113	2.73	123	2.35
Bhutan	114	2.68	116	2.46
Sudan	115	2.62	120	2.37
Senegal	116	2.59	121	2.37
Côte d'Ivoire	117	2.58	113	2.48
Mauritania	118	2.58	119	2.41
Pakistan	119	2.56	115	2.47
Zimbabwe	120	2.54	126	2.19
Lao P.D.R.	121	2.53	122	2.36
India	122	2.50	114	2.47
Mali	123	2.44	127	2.18
Swaziland	124	2.43	117	2.46
Gambia	125	2.42	125	2.26
Ghana	126	2.40	128	2.15
Uzbekistan	127	2.38	118	2.44
Benin	128	2.36	124	2.27
Lesotho	129	2.26	130	2.01
Zambia	130	2.12	133	1.89
Djibouti	131	2.11	129	2.08
Yemen	132	2.09	134	1.86
Bangladesh	133	2.03	138	1.81
Solomon Islands	134	2.02	131	1.97
Nigeria	135	1.99	136	1.85
Congo	136	1.99	135	1.85
Rwanda	137	1.96	141	1.78
Uganda	138	1.95	132	1.93
Cameroon	139	1.87	143	1.72
Tanzania	140	1.87	139	1.79
Burkina Faso	141	1.87	142	1.76
Comoros	142	1.87	137	1.82
Angola	143	1.83	140	1.78
Liberia	144	1.80	148	1.54
Malawi	145	1.72	144	1.72
Guinea	146	1.71	145	1.65
Mozambique	147	1.69	146	1.60
Niger	148	1.65	149	1.54
Ethiopia	149	1.64	147	1.60
Myanmar	150	1.62	150	1.53
Guinea-Bissau	151	1.49	154	1.32
Madagascar	152	1.48	151	1.48
Cuba	153	1.45	152	1.38
Chad	154	1.40	155	1.23
Congo (Dem. Rep.)	155	1.33	153	1.32
Eritrea	156	1.23	156	1.12
Central African Rep.	157	1.12	157	1.12

Figure 15: ICT development Index (source: (ITU, 2013, p. 46))

Appendix D: Mobile-broadband prepaid and post-paid prices (500 MB, 2012)

Rank	Economy	Prepaid handset-based prices (500 MB)			GNI p.c., USD, 2011 (or latest available)
		as % of GNI p.c.	USD	PPPS	
1	Austria	0.1	5.6	4.7	48'300
2	United Kingdom	0.3	9.6	8.8	37'780
3	Germany	0.4	13.9	12.4	43'980
4	Qatar	0.4	27.5	26.4	80'440
5	France	0.5	16.7	13.8	42'420
6	Italy	0.5	13.9	12.7	35'330
7	Bahrain	0.5	6.6	8.7	15'920
8	Australia	0.5	20.6	12.8	46'200
9	Estonia	0.7	8.8	11.7	15'200
10	Kuwait	0.7	29.0	25.3	48'900
11	Belgium	0.7	27.8	23.1	46'160
12	United Arab Emirates	0.8	27.0	28.5	40'760
13	Switzerland	0.8	50.7	30.9	76'380
14	Croatia	0.8	9.3	12.9	13'850
15	Poland	0.8	8.4	13.4	12'480
16	Slovakia	0.8	11.1	15.1	16'070
17	Portugal	0.8	14.9	16.9	21'250
18	Slovenia	0.8	16.7	18.9	23'610
19	Hungary	0.9	9.9	15.3	12'730
20	Norway	1.0	71.2	44.9	88'890
21	New Zealand	1.0	23.7	19.6	29'350
22	Kazakhstan	1.0	6.8	7.9	8'220
23	Macao, China	1.0	37.4	44.3	45'460
24	Netherlands	1.0	41.7	35.6	49'730
25	Tunisia	1.0	3.6	7.8	4'070
26	Uruguay	1.0	10.4	11.3	11'860
27	Belarus	1.1	5.5	14.3	5'830
28	Azerbaijan	1.1	5.1	7.4	5'290
29	Saudi Arabia	1.3	18.7	22.2	17'820
30	Ireland	1.3	41.7	35.7	38'580
31	Canada	1.3	50.5	40.6	45'560
32	Venezuela	1.4	13.8	16.3	11'920
33	Hong Kong, China	1.4	42.1	61.1	35'160
34	Albania	1.5	5.0	11.0	3'980
35	Sri Lanka	1.5	3.3	6.6	2'580
36	Spain	1.6	40.4	40.6	30'990
37	Cyprus	1.7	41.7	43.6	29'450
38	Trinidad & Tobago	1.7	21.4	33.2	15'040
39	TFYR Macedonia	1.7	6.8	16.0	4'730
40	Czech Republic	1.8	27.0	34.5	18'520
41	Barbados	1.8	18.5	27.0	12'660
42	Serbia	1.8	8.3	16.0	5'680
43	Mauritius	1.8	12.2	20.1	8'240
44	Malta	1.8	27.8	35.8	18'620
45	Greece	1.8	37.6	38.2	25'030
46	Denmark	1.8	92.2	63.3	60'390
47	Russian Federation	2.0	17.0	27.6	10'400
48	Turkey	2.0	17.3	28.9	10'410
49	Maldives	2.0	11.0	15.3	6'530
50	Chile	2.0	20.7	24.8	12'280
51	Viet Nam	2.0	2.1	4.8	1'260
52	Brunei Darussalam	2.1	55.6	83.6	31'800
53	United States	2.1	85.0	85.0	48'450
54	Cape Verde	2.1	6.3	6.8	3'540
55	Romania	2.2	14.6	26.3	7'910
56	Panama	2.3	15.0	27.4	7'910
57	Jordan	2.3	8.5	10.9	4'380
58	Indonesia	2.3	5.7	7.6	2'940
59	Mexico	2.5	19.0	28.8	9'240
60	Georgia	2.5	5.9	10.2	2'860
61	Bulgaria	2.6	14.2	28.9	6'550
62	Ukraine	2.6	6.7	13.5	3'120
63	Argentina	2.7	21.9	35.2	9'740
64	Lebanon	2.8	20.9	31.0	9'110
65	Antigua & Barbuda	2.8	27.8	35.6	12'060
66	Costa Rica	2.8	17.8	25.1	7'660
67	India	2.9	3.4	8.1	1'410
68	Bahamas	3.0	55.0	78.9	21'970
69	Pakistan	3.1	2.9	6.8	1'120
70	Peru	3.2	14.5	24.9	5'500
71	El Salvador	3.4	10.0	18.6	3'480
72	China	3.8	15.5	24.1	4'940
73	South Africa	3.8	21.9	29.9	6'960
74	Egypt	3.9	8.4	19.1	2'600
75	Brazil	4.0	35.8	33.3	10'720
76	Libya	4.1	42.5	70.2	12'320
77	Fiji	4.5	13.9	15.2	3'680
78	Suriname	4.7	29.8	33.8	7'640
79	Uzbekistan	4.8	6.0	11.1	1'510
80	Armenia	4.8	13.4	23.7	3'360
81	Jamaica	4.9	20.4	29.5	4'980
82	Moldova	5.2	8.5	14.7	1'980
83	Seychelles	5.2	48.2	108.8	11'130
84	Mongolia	5.7	11.1	17.2	2'320
85	Colombia	5.8	29.8	42.6	6'110
86	Philippines	6.3	11.5	20.1	2'210
87	Ecuador	6.3	21.8	40.5	4'140
88	Bolivia	6.4	10.8	22.9	2'040
89	Sudan	6.9	7.5	13.0	1'300
90	Cambodia	7.2	5.0	13.2	830
91	Paraguay	7.7	19.1	28.6	2'970
92	Guatemala	7.8	18.6	29.1	2'870
93	Kenya	8.2	5.6	12.0	820
94	Namibia	8.8	34.4	44.4	4'700
95	Iraq	8.9	19.6	21.8	2'640
96	Ghana	9.0	10.6	12.7	1'410
97	Botswana	9.0	56.3	95.7	7'480
98	Tanzania	11.3	5.1	14.6	540
99	Nigeria	13.0	13.0	22.7	1'200
100	Congo	14.0	26.5	32.9	2'270
101	Kyrgyzstan	15.8	12.1	27.4	920
102	Honduras	16.1	26.5	48.1	1'970
103	Bangladesh	16.8	10.8	27.3	770
104	Haiti	16.9	9.9	16.0	700
105	Rwanda	17.5	8.3	17.9	570
106	Samoa	17.9	47.5	61.4	3'190
107	Nicaragua	18.3	17.8	42.2	1'170
108	Mali	19.6	10.0	16.4	610
109	Morocco	20.0	49.4	80.7	2'970
110	Tajikistan	21.8	15.8	39.6	870
111	Zambia	22.3	21.6	24.6	1'160
112	Uganda	23.3	9.9	29.9	510
113	Dominican Rep.	26.1	154.1	274.1	7'090
114	Yemen	26.2	23.4	40.4	1'070
115	Angola	28.4	96.0	110.6	4'060
116	Lesotho	29.8	30.3	47.0	1'220
117	Afghanistan	30.9	7.5	18.0	290
118	Madagascar	35.1	12.6	26.2	430
119	Senegal	35.7	31.8	56.2	1'070
120	Malawi	45.1	12.8	31.8	340
121	Mozambique	65.9	25.8	47.4	470
122	Zimbabwe	101.3	54.0	N/A	640
123	Niger	106.0	31.8	62.1	360
124	Sierra Leone	109.1	30.9	68.2	340
125	Congo (Dem. Rep.)	126.4	20.0	32.5	190
126	S. Tomé & Príncipe	156.5	177.3	247.7	1'360

Figure 16: mobile-broadband prepaid handset-based prices (ITU, 2013, p. 118)

Rank	Economy	Postpaid handset-based prices (500 MB)			GNI p.c., USD, 2011 (or latest available)
		as % of GNI p.c.	USD	PPP\$	
1	Austria	0.1	5.6	4.7	48'300
2	Finland	0.2	6.8	5.2	48'420
3	Luxembourg	0.2	13.9	10.9	78'130
4	Italy	0.2	7.0	6.3	35'330
5	Australia	0.3	10.3	6.4	46'200
6	Lithuania	0.3	2.8	4.3	12'280
7	Hong Kong, China	0.3	8.1	11.7	35'160
8	Iceland	0.3	9.4	7.7	35'020
9	Qatar	0.4	27.5	26.4	80'440
10	Denmark	0.5	24.0	16.5	60'390
11	Netherlands	0.5	20.9	17.8	49'730
12	Korea (Rep.)	0.6	9.9	13.4	20'870
13	Macao, China	0.6	22.2	26.3	45'460
14	Kuwait	0.6	25.4	22.1	48'900
15	Sweden	0.7	30.6	22.2	53'230
16	Estonia	0.7	8.8	11.7	15'200
17	Belgium	0.7	27.8	23.1	46'160
18	Slovakia	0.7	9.7	13.2	16'070
19	Slovenia	0.8	15.3	17.4	23'610
20	Sri Lanka	0.8	1.8	3.5	2'580
21	Portugal	0.8	14.9	16.9	21'250
22	Brunei Darussalam	0.9	23.8	35.8	31'800
23	Hungary	0.9	9.9	15.3	12'730
24	Norway	1.0	71.2	44.9	88'890
25	Latvia	1.0	9.9	13.8	12'350
26	Spain	1.0	25.2	25.3	30'990
27	France	1.0	34.6	28.6	42'420
28	Canada	1.0	37.4	30.0	45'560
29	Kazakhstan	1.0	6.8	7.9	8'220
30	Bahrain	1.0	13.3	17.3	15'920
31	Cyprus	1.0	25.5	26.6	29'450
32	Tunisia	1.0	3.6	7.8	4'070
33	Uruguay	1.0	10.4	11.3	11'860
34	Switzerland	1.1	67.1	40.9	76'380
35	United Kingdom	1.1	34.5	31.7	37'780
36	Romania	1.1	7.3	13.1	7'910
37	Greece	1.1	23.4	23.8	25'030
38	Belarus	1.1	5.5	14.3	5'830
39	Azerbaijan	1.1	5.1	7.4	5'290
40	United Arab Emirates	1.2	39.5	41.7	40'760
41	Serbia	1.2	5.5	10.7	5'680
42	Saudi Arabia	1.3	18.7	22.2	17'820
43	Ireland	1.3	41.7	35.7	38'580
44	Venezuela	1.4	13.8	16.3	11'920
45	Japan	1.5	55.3	41.3	45'180
46	Albania	1.5	5.0	11.0	3'980
47	Panama	1.5	10.0	18.2	7'910
48	Poland	1.6	16.8	26.7	12'480
49	Trinidad & Tobago	1.7	21.4	33.2	15'040
50	Germany	1.7	62.6	56.1	43'980
51	TFYR Macedonia	1.7	6.8	16.0	4'730
52	Barbados	1.8	18.5	27.0	12'660
53	Mauritius	1.8	12.2	20.1	8'240
54	Turkey	1.8	15.8	26.4	10'410
55	Czech Republic	1.8	28.2	36.0	18'520
56	Bhutan	1.9	3.2	8.1	2'070
57	Russian Federation	2.0	17.0	27.6	10'400
58	Maldives	2.0	11.0	15.3	6'530
59	Mexico	2.1	16.0	24.3	9'240
60	Bosnia and Herzegovina	2.1	8.3	15.7	4'780
61	United States	2.1	85.0	85.0	48'450
62	Jordan	2.3	8.5	10.9	4'380
63	Indonesia	2.3	5.7	7.6	2'940
64	Peru	2.4	10.9	18.7	5'500
65	Andorra	2.4	83.4	N/A	41'750
66	Georgia	2.5	5.9	10.2	2'860
67	Antigua & Barbuda	2.5	25.6	32.7	12'060
68	New Zealand	2.6	63.2	52.3	29'350
69	Bulgaria	2.6	14.2	28.9	6'550
70	Ukraine	2.6	6.7	13.5	3'120
71	Colombia	2.6	13.5	19.3	6'110
72	Argentina	2.7	21.9	35.2	9'740
73	Lebanon	2.8	20.9	31.0	9'110
74	India	2.9	3.4	8.2	1'410
75	Bahamas	3.0	55.0	78.9	21'970
76	Moldova	3.1	5.1	8.8	1'980
77	Suriname	3.1	19.9	22.5	7'640
78	Malta	3.1	48.7	62.6	18'620
79	Sudan	3.1	3.4	5.9	1'300
80	Malaysia	3.2	22.2	35.9	8'420
81	Costa Rica	3.2	20.2	28.5	7'660
82	El Salvador	3.4	10.0	18.6	3'480
83	South Africa	3.5	20.5	28.1	6'960
84	Montenegro	3.5	20.9	39.4	7'060
85	Egypt	3.9	8.4	19.1	2'600
86	Syria	3.9	9.0	19.5	2'750
87	Brazil	4.0	35.8	33.3	10'720
88	Ecuador	4.1	14.0	26.0	4'140
89	Jamaica	4.2	17.5	25.3	4'980
90	Uzbekistan	4.8	6.0	11.1	1'510
91	Morocco	4.9	12.2	20.0	2'970
92	Lao P.D.R.	5.1	4.8	10.6	1'130
93	Chile	5.3	53.7	64.6	12'280
94	Armenia	5.7	15.8	27.9	3'360
95	Paraguay	5.8	14.3	21.4	2'970
96	China	5.9	24.1	37.5	4'940
97	Mongolia	6.1	11.9	18.5	2'320
98	Philippines	6.3	11.5	20.2	2'210
99	Namibia	6.3	24.7	31.8	4'700
100	Guatemala	6.7	16.1	25.1	2'870
101	Samoa	7.3	19.4	25.1	3'190
102	Fiji	7.4	22.8	24.8	3'680
103	Honduras	7.4	12.2	22.2	1'970
104	Kenya	8.2	5.6	12.0	820
105	Bolivia	8.4	14.3	30.2	2'040
106	Nicaragua	10.2	10.0	23.6	1'170
107	Ghana	11.3	13.2	15.9	1'410
108	Tanzania	11.3	5.1	14.6	540
109	Bangladesh	12.6	8.1	20.5	770
110	Nigeria	13.0	13.0	22.7	1'200
111	Kyrgyzstan	15.8	12.1	27.4	920
112	Haiti	16.9	9.9	16.0	700
113	Mali	19.6	10.0	16.4	610
114	Tajikistan	21.8	15.8	39.6	870
115	Lesotho	24.4	24.8	38.4	1'220
116	Dominican Rep.	26.1	154.1	274.1	7'090
117	Angola	28.4	96.0	110.6	4'060
118	Ethiopia	28.6	9.5	29.8	400
119	Madagascar	35.1	12.6	26.2	430
120	Mozambique	39.5	15.5	28.4	470
121	S. Tomé & Príncipe	50.1	56.7	79.3	1'360
122	Zimbabwe	101.3	54.0	N/A	640
123	Niger	106.0	31.8	62.1	360
124	Congo (Dem. Rep.)	126.4	20.0	32.5	190

Figure 17: mobile-broadband post-paid handset-based prices (ITU, 2013, p. 119)

Appendix E: Attractiveness of countries for RBN B.V.

Table 20: attractiveness on the five variables and average attractiveness for RBN B.V. for 128 countries

Country Name	zone	Blockages	VoIP segment	low-cost segment	penetration	mobile internet	attractiveness
Uruguay	3	1	1	1	1	1	1
United Kingdom	1	1	1	1	2	1	1.2
Estonia	1	1	1	2	1	1	1.2
Belgium	1	1	1	1	2	1	1.2
Luxembourg	1	1	2	2	1	1	1.4
Lithuania	1	1	1	3	1	1	1.4
Italy	1	1	1	3	1	1	1.4
Bulgaria	1	1	1	1	1	3	1.4
Austria	1	1	1	4	1	1	1.6
Korea (Rep. of)	4	1	1	2	3	1	1.6
Netherlands	1	1	2	1	3	1	1.6
France	1	1	1	1	4	1	1.6
Portugal	1	1	1	2	3	1	1.6
Switzerland	1	1	3	1	2	1	1.6
Greece	1	1	1	1	3	2	1.6
Argentina	3	1	2	1	1	3	1.6
Finland	1	1	2	4	1	1	1.8
Croatia	1	1	1	3	3	1	1.8
Slovenia	1	1	2	2	3	1	1.8
Tunisia	5	1	1	4	2	1	1.8
Japan	4	1	2	1	3	2	1.8
Albania	1	1	1	2	3	2	1.8
Romania	1	1	1	1	4	2	1.8
Barbados	3	1	2	1	2	3	1.8
Czech Republic	1	1	2	1	2	3	1.8
Antigua and Barbuda	3	1	3	1	1	3	1.8
Bahrain	5	1	3	4	1	1	2
Slovak Republic	1	1	2	3	3	1	2
Hungary	1	1	2	3	3	1	2
Azerbaijan	1	1	1	3	3	2	2
Ireland	1	1	3	1	3	2	2
New Zealand	4	1	2	1	3	3	2
Malta	1	1	3	1	2	3	2
Montenegro	1	1	2	2	1	4	2
South Africa	5	1	2	1	2	4	2
Iceland	1	1	2	3	4	1	2.2
Kazakhstan	4	1	3	5	1	1	2.2
Latvia	1	1	2	3	4	1	2.2
Saudi Arabia	5	1	4	3	1	2	2.2
Brunei Darussalam	4	1	4	1	3	2	2.2
Trinidad and Tobago	3	1	3	3	2	2	2.2
Panama	3	1	3	3	1	3	2.2
Cape Verde	5	1	1	1	5	3	2.2
Canada	2	1	3	1	5	2	2.4
Poland	1	1	3	4	2	2	2.4
Serbia	1	1	1	4	4	2	2.4
T.F.Y.R. Macedonia	1	1	2	4	3	2	2.4
Viet Nam	4	1	2	5	1	3	2.4
Bosnia and Herzegovina	1	1	1	3	4	3	2.4
Suriname	3	1	4	2	1	4	2.4
Brazil	3	3	2	1	2	4	2.4
Moldova	1	1	1	3	3	4	2.4
Seychelles	5	1	4	2	1	4	2.4
Guatemala	3	1	2	2	2	5	2.4
Nicaragua	3	1	1	1	4	5	2.4
Australia	4	1	4	3	4	1	2.6
Sweden	1	1	5	4	2	1	2.6
Macao, China	4	1	5	5	1	1	2.6
Hong Kong, China	4	1	5	5	1	1	2.6
Norway	1	1	5	3	3	1	2.6
Spain	1	1	4	3	3	2	2.6
Venezuela	3	1	3	3	4	2	2.6
Indonesia	4	1	2	4	3	3	2.6

Peru	3	1	2	3	4	3	2.6
Lebanon	5	1	3	2	4	3	2.6
Ecuador	3	1	3	2	3	4	2.6
Morocco	5	1	3	2	2	5	2.6
Mali	5	1	1	2	4	5	2.6
Germany	1	1	5	4	2	2	2.8
Belarus	1	1	3	5	3	2	2.8
Denmark	1	1	5	4	2	2	2.8
Mauritius	5	1	3	4	3	3	2.8
Maldives	4	1	4	5	1	3	2.8
United States	2	1	5	1	4	3	2.8
Mexico	3	3	2	1	5	3	2.8
Colombia	3	1	3	2	4	4	2.8
Fiji	4	1	3	2	4	4	2.8
Philippines	4	1	2	3	4	4	2.8
Cambodia	5	1	2	5	2	4	2.8
Bolivia	3	1	2	2	4	5	2.8
Madagascar	5	1	1	2	5	5	2.8
Qatar	5	5	4	3	2	1	3
Cyprus	1	1	4	4	4	2	3
Russia	1	1	5	5	1	3	3
Botswana	5	1	5	3	1	5	3
Sri Lanka	5	1	4	5	4	2	3.2
Turkey	1	1	4	4	4	3	3.2
Georgia	1	1	4	5	3	3	3.2
Ukraine	1	1	5	5	2	3	3.2
Armenia	1	1	4	4	3	4	3.2
Tanzania	5	1	1	4	5	5	3.2
Zambia	5	1	3	2	5	5	3.2
Lesotho	5	1	3	2	5	5	3.2
United Arab Emirates	5	5	5	5	1	1	3.4
Bhutan	5	1	3	5	5	3	3.4
Costa Rica	3	1	5	5	2	4	3.4
Bahamas	3	1	5	2	5	4	3.4
Malaysia	4	3	5	4	1	4	3.4
El Salvador	3	1	5	5	2	4	3.4
Chile	3	5	4	2	2	4	3.4
Jamaica	3	1	4	4	4	4	3.4
Mongolia	4	1	5	5	2	4	3.4
Namibia	5	1	4	3	4	5	3.4
Dominican Rep.	3	1	5	2	4	5	3.4
Senegal	5	1	4	2	5	5	3.4
Kyrgyzstan	4	1	5	5	2	5	3.6
Haiti	3	1	3	4	5	5	3.6
Uganda	5	1	3	4	5	5	3.6
Angola	5	1	5	2	5	5	3.6
Malawi	5	1	3	4	5	5	3.6
Mozambique	5	1	4	3	5	5	3.6
Congo (Democratic Republic of the)	5	1	4	3	5	5	3.6
Jordan	5	5	4	5	2	3	3.8
India	4	1	5	5	5	3	3.8
Sudan	5	1	4	5	5	4	3.8
Kenya	5	1	3	5	5	5	3.8
Nigeria	5	1	4	4	5	5	3.8
Afghanistan	5	1	4	4	5	5	3.8
Sao Tome and Principe	5	1	5	3	5	5	3.8
Uzbekistan	4	1	5	5	5	4	4
China	4	1	5	5	5	4	4
Ghana	5	1	5	5	4	5	4
Yemen	5	1	5	4	5	5	4
Paraguay	3	5	4	4	4	4	4.2
Bangladesh	4	1	5	5	5	5	4.2
Ethiopia	5	1	5	5	5	5	4.2
Egypt	5	5	5	5	3	4	4.4
Pakistan	4	5	4	5	5	4	4.6

Appendix F: in-depth analysis of most attractive countries

Table 21: In-depth analysis of the most attractive countries

	smartphone OS market share				Immigrants		Number of MNO's	Number of MVNO's	ratio MNO/MVNO
	iOS	Android	Windows	BlackBerry	% of population	large groups			
United Kingdom	27%	58%	11%	3%	12.4	Indian, Pakistani	5	90	0.06
Estonia					16.3	Russian, Ukranian	3	2	1.50
Belgium	26%	43%	11%	13%	10.4	Moroccan, Italian, Turkish	3	49	0.06
Canada	35%	40%	2%	20%	20.7	English, Chinese, Indian	11	30	0.37
United States	40%	52%	3%	4%	14.3	Mexican, Chinese, Indian	4	149	0.03
Uruguay	29%	58%	3%	2%	2.2		3	0	-
Argentina	10%	75%	7%	4%	4.5	Paraguayan, Bolivian, Chileian	3	1	3.00
Barbados					11.3		1	0	-
South-Korea					2.5	Chinese, Filipino	3	0	-
Japan	69%	30%	0%	0%	1.9	Korean, Chinese	5	300	0.02
New Zealand	13%	81%	4%	2%	25.1	Chinese, Indian, American	3	10	0.30
Tunisia					0.3		3	0	-
Bahrain	54%	11%	24%	6%	54.7		3	0	-
South-Africa	8%	22%	5%	36%	4.5		3	4	0.75

	Largest operator	prepaid price of calls from largest operator p/m	currency	price of a 3 minute prepaid call in euro's	Price of a 3 minute RC call in euro's	ratio MNO price/RC price
United Kingdom	EE	0.3	gbp	1.08	0.23	4.70
Estonia	EMT	0.05	eur	0.15	0.23	0.65
Belgium	Proximus	0.27	eur	0.81	0.23	3.52
Canada	Rogers	0.5	cad	0.96	0.08	12.00
United States	Verizon	0.25	usd	1.08	0.08	13.50
Uruguay	Antel	13.1	uyu	0.84	0.56	1.50
Argentina	Claro	3.3	ars	0.9	0.35	2.57
Barbados	LIME	0.46	bbd	0.51	0.8	0.64
South-Korea	SK Telecom	240	won	0.48	0.14	3.43
Japan	NTT docomo	90	jpy	1.89	0.26	7.27
New Zealand	Vodafone	0.49	nzd	0.9	0.2	4.50
Tunisia	Tunisie	0.16	tnd	0.21	1.13	0.19
Bahrain	Batelco	0.275	bhd	0.53	0.5	1.06
South-Africa	Vodacom	1.2	zar	0.24	0.35	0.69

	Price Lycamobile 3 minute call (local currency)				RC price of 3 minute call (eur)			ratio lycamobile price/RC price			
	national	group 1	group 2	group 3	group 1	group 2	group 3	national	group 1	group 2	group 3
United Kingdom	0.3	0.03	0.21		0.08	0.26		1.08	0.31	0.67	
Belgium	0.36	0.75	0.87	0.36	1.04	0.23	0.5	1.57	0.72	3.78	0.72
United States	0.08	0.11	0.05	0.05	0.14	0.08	0.08	0.70	0.55	0.44	0.44

Appendix G: Detailed analysis of the current situation of RBN B.V.

1. Analysis current situation

Most of the data that will be used during this project will be gathered from external sources. However, RingCredible has several databases available from which data about existing users can be downloaded and analysed. Furthermore, since November RingCredible advertises its service on Facebook and the data that is being generated by this can also be analysed.

The oldest data in the databases dates back to January 2012, but due to start-up problems, the data from the first year contains a lot of errors and is not representable for that period. Furthermore, on November 18th 2013, RingCredible has launched the new update of its application. Although it was called an update, the application was rebuilt from scratch by another software developer. As a consequence the whole infrastructure, as well as the way information about customers is stored, changed. Therefore, the data from the different sources first had to be merged together.

From the combined data set, a couple of different statistics will be analysed. First of all, it will be analysed in what way the conversion funnel (which is defined below) and kpi's (key performance indicators) evolved over 2013.

Thereafter, a look will be taken to the conversion funnel on country (for the countries on which enough data is available) and zone level, and OS (operating System).

Furthermore, it will be determined if there are differences in the conversion funnel for users that come from Facebook marketing campaigns and users that come from others sources (app stores, friend recommendations, internet searches, etc. (these users will be called 'organic' users in the remainder of this report)). However, this last analysis can only be made for persons that became a user after 18 November 2013, because the source from which the user originates is only recorded in the new application.

Finally, in the last paragraph of this chapter, the business model of RingCredible will be analysed.

1.1 Conversion funnel

In order to be able to track the performance of the application, RingCredible records data on all its users. For instance, it is tracked whether they ever made a call or bought call credits. One of the most important, although straightforward, performance measures is the conversion funnel. The conversion funnel displays, in percentages and absolute numbers, how many users transition to a higher state of usage. The conversion funnel of RingCredible consists of the following states: (1) Downloads, (2) Users, (3) Customers, and (4) Recurring customers. Downloads represents the number of people that downloaded the app in an app store. Users, are the number of people that have received a passcode through a text message, and successfully logged into the app. Customers are users that have purchased call credits, either in-app, through the web store, or via a voucher. Lastly, recurring customers are customers that have bought call credits more than once.

Customers and recurring customers are attributed to the month in which they became a user. Therefore, there is a time delay in this figure and it increases as months pass (e.g. a person that became a user January, may have bought call credits for the first time (made the transition to customer) in February and may have become a recurring customer only in May). Experience has learned that after approximately 2-3 months the transition to customer is more or less fixed, and for the transition to recurring customer this is approximately 6 months. The transition from download to user is more or less fixed instantly. Because of this time delay it is difficult to compare recent months with earlier months. Nonetheless, a trend can be witnessed in the conversion percentages.

Besides the statistics already given for the conversion funnel, there are a couple of other key performance indicators which are reported every month and which will be used in this analysis. These are: called minutes, cumulative customers, transactions, total sold call credits, sold call credits first purchasers, and sold call credits subsequent purchasers.

1.2 Analysis of monthly aggregates from 2013

As was already mentioned in the opening paragraph of this chapter, firstly a look will be taken to the conversions and kpi's of 2013. This will be done on the basis of monthly aggregated figures and corresponding conversion percentages.

1.2.1 Monthly conversions 2013

In Table 22 below, the download and user figures correspond to the actual month of downloading and verification of the user. The number of customers and recurring customers refers to the number of users from the corresponding month, which have bought call credits since they became a user. Therefore, there is a time lag in the conversion percentages and these are expected to improve for the most recent months. Those figures that are expected to increase in the near future are displayed with a blue filling in the table below. However, for months further in the past, less change is expected.

Table 22: Numbers and percentages of monthly aggregated conversions 2013

When examining the data in the table above, it is clear that there is a lot of variation between the months. Not only in absolute numbers, but also in conversion percentages. Because, this is the aggregated data (no distinction is being made for different countries, operating systems, and whether or not the user was acquired through a marketing campaign), it is difficult, if not impossible, to assign variations to one, or more, causes. Still, there are some general insights which can be gained from analysis of this data. For instance, it is clearly observable, from the number of downloads, in which months there were marketing campaigns (January, February, March, May, September, October, and December). Also, the conversion from downloads to users increased significantly in the last two months. This improvement can be attributed to the launch of the app-update, because the sign-up procedure and use of the app are more intuitive. Furthermore, when looking at the conversion percentages, some other interesting trends can be seen. Figure 18, below, graphically represents the conversion percentages for each month. As was already explained, the conversions to customer and recurring customer are lower for the most recent months. Nonetheless, the decline in the conversion to recurring customers in June and July is much more severe than one would expect. The same can be said for the drop in conversion to customer in July and August.

Figure 18: Conversions of monthly aggregated data 2013

On the other hand, a positive trend can be seen in the conversion from downloads to users. Especially compared to the first half of the year, the last two months show a huge improvement. Overall, the conversion to users shows a positive trend, the conversion to customers looks, more or less, stable with the exception of the first two months and June, and the conversion to recurring customers seems to have peaked in the second quarter of the year. Lastly, the months August, September, and October show significant drops in all conversions. Before trying to uncover possible causes for these abovementioned trends with more specific analysis in the next two sub-chapters, the next paragraph will continue with the monthly kpi's of 2013.

1.2.2 Monthly KPI's 2013

Besides the conversions for each month, other information is also recorded for each month. The numbers in Table 23 below show, for a couple of different statistics, changes over the months. Called minutes corresponds to the total number of minutes called that month, cumulative customers refers to the number of people that have bought call credits up to and including that month, transactions is the number of payments in that month, total sold is the total of call credits sold in the corresponding month, first purchases is the amount of call credits sold to first time buyers, and subsequent purchases refers to the amount of call credits which are sold to recurring customers.

First of all, the number of called minutes shows a strong growth over the months, only in November the amount of called minutes declined in comparison with the previous month. The number of transactions and first purchases shows a similar trend, although more volatile. When you include the number of downloads from Table 22 in the analysis of the total sold call credits and first purchases, it becomes evident that these

numbers are mainly driven by new downloads. This could indicate that a lot of customers only buy call credits once, and/or that it takes a long time for customers to make a subsequent purchase. However, the amount of subsequent purchases also show an upward trend over the year, so at least a portion of the customers makes subsequent purchases.

Table 23: Monthly key performance indicators 2013

1.3 Conversion funnels for OS, countries and zones

After having analysed the conversions for the monthly aggregates for 2013, this chapter will use the same data, but analyse it on different grouping variables, namely: OS, country, and zone. This is done in order to check whether differences exist between these groups of users.

1.3.1 Conversions per OS

First of all, it will be analysed whether or not differences exist between the OS's on which the RingCredible application runs. These different operating systems are iOS (Apple), Android (Google), and BlackBerry.

Table 24: Conversions per OS (data 2013)

It is clear from Table 24 that the majority of users and customers of RingCredible are using devices with Apple's operating system. The table also shows that the conversion from downloads to user is the highest for iOS. For most part, this higher conversion percentage can be explained by the differences between the operating systems and devices associated with them. Whereas Apple's and Blackberry's operating systems only run on devices produced by themselves, Google's operating system runs on a large variety of brands and models. Furthermore, Apple has produced only a handful of different models in the last couple of years, which furthermore, have more or less the same specifications (in regard to the system requirements of the RingCredible app). This ensures that the app will run smoothly on almost all models and iOS versions for Apple devices. Besides, devices with iOS versions that are not compatible with application, cannot download the application from the Apple app store. With BlackBerry, this is not the case. The BlackBerry OS runs on many different devices, which also differ largely in specifications. On some of these devices the application will not work, run with a lot of bugs, or network settings will have to be manually changed in order for the app to work. Furthermore, no conditions can be placed on system requirements for downloading in the BlackBerry World store.

For Android the situation differs even more. There are multiple versions of operating systems that run on hundreds of different devices, ranging from very basic to the most advanced smartphones. However, on average the RingCredible application is better compatible with android devices than with BlackBerry devices, and the Google Play store also offers more options to restrict downloading the application for devices that cannot run it.

Differences in the conversions to customer are somewhat surprising. Especially the gap between iOS and Android, in the conversion from user to customer, is unexpected. The first reason why this gap is unexpected is the fact that most optimizations in the app have been on the iOS platform. Therefore, (and because of reasons mentioned above) the application works best on iOS, thus a higher conversion could be expected. Furthermore, a large number of studies have proven that, although the Android app market is much larger, the Apple app store is more lucrative (e.g. (Dredge, 2013)). On the other hand, the gap between iOS and Android on user spending has been diminishing rapidly over the last two years (Michael, 2012), and it could be argued that the RingCredible application differs from most other apps in that it substitutes, or supplements, a service for which smartphone users (disregarding OS) already pay.

Lastly, the conversion from customer to recurring customer is similar across the three platforms. This indicates that the repeat-purchase decision (or the satisfaction of customers) is irrespective of the used OS. This was to be expected, because the service only differs in lay-out for the different OS's, and users who cannot use, or experience problems using, the app will not make the first buying decision.

1.3.2 Conversion funnel per country and zone

After having analysed the conversion funnel on the basis of OS's, next a closer look is taken to variations in conversions on country level. In the different databases there is information of users from 201 different countries. However, for some of these countries there are only a few (1-10) users and/or no customers. Because the conversion from user to customer is the most important to RBN B.V., it is chosen to only include countries in this analysis when there are at least 10 customers from a country. This resulted in 69 countries eligible for analysis. For these countries the following data can be found in Appendix B:

Downloads, Users, Customers, Recurring customers, the associated conversion percentages, and the zone to which the country is attributed (as defined in the research proposal).

Before taking a closer look at the data of these 69 countries, it should be noted that the data is not free of errors. One of the causes of errors in the data is the way in which the different systems calculate the country of origin of a download and user. The country to which a download is attributed is based on which country the user has registered in the app store. However, the country to which a user and customer is contributed is based on the prefix of the telephone number that is entered upon registration (e.g. the prefix for the Netherlands is +31). Differences in this can occur, for example, with expats who have an app store account registered to the country of origin, but a telephone number of the country in which they live. Besides errors from the manner of determining the country to which a statistic should be attributed, the data is also polluted by problems with the application or problems with delivering the text messages that are required to complete the registration. Problems with delivering the text messages have a direct influence on the conversion from downloads to users (i.e. the registration process cannot be completed). So far, there were known issues with delivering text messages to the United States, Mexico, and some African countries. All of these issues were attributed to routing issues of the external party handling the text message for RBN B.V.

Furthermore, there was one country related issue with the application (Mexico). Within Mexico, people are required to dial either a 1, for landline, or a 0, for mobile numbers, after the country prefix to establish a connection. However, this was not implemented in the application, which had the result that users were unable to call Mexican numbers from within Mexico. In turn, this caused a very low conversion from users to customers (on top of the low conversion from downloads to users in Mexico, due to the not received text messages).

At first glance, huge differences between countries, in the number of downloads and users, can be seen. These differences are mainly caused by the amount of marketing spend in each country. As will be discussed in the next paragraph, marketing campaigns can (negatively) influence conversion percentages. When sorting the conversion percentages from high to low for the 69 countries, no clear pattern can be detected. There seems to be little correlation between absolute numbers and percentages, between countries from different zones, and between conversions percentages within countries. This indicates, as should be expected, that merely analysing on country level is not sufficient to explain differences in conversion percentages and marketing effectiveness.

However, if the data is aggregated to zone level, a pattern does emerge in the conversion percentages. The data was aggregated to zones in two different ways, first of all it was done in absolute terms, and secondly it was done in relative terms (by averaging the conversion percentages of countries for each zone). The difference between these two methods was relatively small for zone 1 and 2, however not for zones 3, 4, and 5. This difference is (for zone 3 and 4) caused by the aforementioned problems with the delivery of text messages and calling problems in Mexico, which caused the marketing campaigns to yield poor conversions. The effect of the poor conversions was magnified in these zones, because the ratio of organic downloads to marketing downloads is very low (i.e. most users are acquired through advertising). The difference for zone 5, between the absolute and relative calculation, can be explained by marketing campaigns in the Middle-East (Saudi Arabia, Kuwait, Egypt, and United Arab Emirates) in March of 2013 which generated large quantities of downloads, but disappointing conversions.

In order to diminish the effect of these abovementioned disappointing results, it is chosen to display the relative conversion figures per zone in Table 25.

Table 25: Relative conversions per zone (data 2013)

From this table it can be concluded that zone 1 and 5 clearly outperform the other zones when looking at the conversion from downloads to customers and recurring customers. Furthermore, the conversion from customer to recurring customer, for zone 3, is significantly lower than for the other zones. This can be explained by the fact that most of the customers from zone 3 are relatively new (registered after 18th November 2013), thus may have not spend the call credits from their first purchase.

After the analysis for 2013 above, the same calculations were applied to more recent data (downloads after 18th November 2013), in order to be able to mitigate the effects of the old application (significantly lower conversions for all countries and steps), and effects over time. Although, the short time span of this data will lower the conversions to customer and recurring customer (as explained in 1.2.1) one can assume that the effect of this is evenly distributed over the different zones.

Table 26: Relative conversions per zone (data 18th November 2013 - 10th January 2014)

Table 4 clearly shows a different pattern than the one observed in table 4. Overall, the conversion from download to users has increased immensely across all zones. This in turn also improved the conversion from downloads to customers (although, as already mentioned, this number is expected to increase). However, whereas for the data over the whole year 2013 zone 1 and 5 were the top performers, in this segmentation the conversions are closer to each other. Nonetheless, when comparing both tables, a significant improvement is seen in zone 2, but zone 3 seems to be lagging behind (in zone 3 the most problems with the delivery of text messages were experienced).

All in all, when looking at the differences between zones over the whole year 2013, it can be concluded that there are slight differences, but that these differences can (for a large part) be explained by external circumstances. This is partly confirmed by the data in Table 26, which is compiled out of more reliable data and shows a more uniform situation over the zones.

However, as is shown in Appendix A, huge difference exists between the countries, and, as already mentioned, these differences are present in both percentages and absolute numbers. This indicates that there probably are country specific circumstances which influence the adoption decision of RingCredible. Multiple chapters later on in this report will try to identify and quantify these country specific circumstances. Subparagraph 3.4.2 will delve deeper into the effectiveness of marketing campaigns in different countries. Paragraph 6.3 will analyse the strength of competitors, determine the relative price level of telecommunication services in all countries, and tries to link other telecommunication indicators to the attractiveness of a country. Lastly, chapter 5 will attempt to find differences in the adoption decision between countries. Finally, in chapter 7 all the data and analysis mentioned here will be combined to create one overarching tool for determining the attractiveness of a certain market.

1.4 Conversions of organic downloads versus marketing downloads

The last analysis on conversions will be made on the difference between 'organic' downloads and 'marketing' downloads. Organic downloads are those individuals that downloaded the application not through a marketing channel, but for instance, through a recommendation or browsing through one of the app stores. Marketing downloads are those users that have downloaded the app through a marketing link. This can for example be from an affiliates marketing campaign or Facebook ads. At the moment there are six different sources of marketing downloads, however there is only one that has a substantial number of downloads; Facebook ads. Downloads from Facebook ads even account for the majority (75%) of total downloads in the last two months.

As was already mentioned in the opening paragraph of this chapter, this next analysis can only be done on data gathered after 18 November 2013, because from this moment on the referrals (registration of the marketing channel) could be linked to an individual user and/or customer.

Table 27: Difference in conversions for marketing and organic downloads (data 18/11/13 - 10/1/14)

Table 27 shows the figures of marketing and organic downloads for the specified period. The top row in the table, displays the combined figures. The figures in the table show that, for the conversion from user to customer, there is a small difference between marketing and organic downloads. Although the difference in conversions from user to customer is small, it is striking due to the fact that the prevailing view within RBN B.V. is that organic downloads are the most lucrative and achieve the highest conversion.

In contrast, the conversion from downloads to users does display a big difference. There are several explanations that could explain this difference. First of all, organic downloaders are generally more goal-oriented when they download the application. For instance, they initiate a search for VoIP calling, or get a recommendation from an acquaintance, and are therefore more persistent in completing the registration procedure. On the other hand, marketing downloaders came into contact with the application by chance. Even when they have clicked on the link to the download page and have downloaded the app, they are more prone to abandon the registration process and continue with their previous activity. Another explanation for the lower conversion to user could lie in the fact that a significant portion of the marketing downloads came from South-America (+/- 40%), and as mentioned previously, there were issues with the delivery of registration text messages.

The conversion that shows the largest difference is that of customer to recurring customer. Next to the conversion to customer, this is the most important for RBN B.V. unfortunately, it is difficult to draw conclusions from these conversions, because the data ranges over less than two months. As was already explained in paragraph 1.2.1 this figure is more fluid the more recent the time period.

Finally, when looking at the conversion from downloads to customers (last column), it is clear that organic downloads attain more customers. However, it could be the case that the difference in this statistic is mainly caused by to the low conversion to users (due to not delivered text messages), so this should be checked again on new data once all problems with text messages have been resolved.

In conclusion, some of the conversions give reason to believe that organic downloads convert to customers slightly better, however the time period used for the calculations is short and recent, and the difference are minute. All in all, the fact that differences are small is good news for RingCredible, since they plan to grow their customer base by advertising.

1.5 Business model

The business model of RingCredible is relatively straightforward. There is only one stream of income, namely the sale of call credits. Consumers buy pre-paid call credits, which they can use to make calls. There are several channels from which consumers can purchase call credits. These are: in-app purchases (either through Google or Apple), web shop purchases, and vouchers. All of these sales channels have different costs associated with them, and, depending on the origin of the customer, can be subject to VAT (Value Added Tax). Vouchers are not be included in this analysis, due to the (very) low number of vouchers sales and many different costs associated with different vouchers types.

When not taking into account the sale of vouchers, there are two types of costs that have to be deducted from the gross payments to arrive at the net payments, VAT and transaction fees.

Because RingCredible is headquartered in the Netherlands, they are subject to VAT for sales from within the EU (European Union). Strictly taken, they are also subject to tax in countries such as Japan, however when sales are below a certain threshold they are exempt from these taxes. The EU VAT rate for companies based in the Netherlands is 21%.

However, because in-app purchases are handled by Google and Apple, and they both have a subsidiary based in Luxembourg handling all transactions, the VAT rate for in-app purchases is that of Luxembourg, being 15%.

This means that the VAT rate for sales to consumers within the EU is 21% for web shop sales and 15% for in-app purchases. Sales to consumers originating outside the EU are, for now, exempt from VAT.

Besides the VAT, there is one more cost component associated with call credit sales for RingCredible, transaction fees. For in-app purchases, transaction fees are a broad concept. Both Google and Apple take 30% of all sales after tax. For web shop sales the transaction costs are significantly lower, and depend on the payment method of the customer (e.g. different costs are associated with a credit card and the IDEAL

payment system). On average the transaction costs of the web shop are calculated to be 6% of the gross payment.

1.6 Conclusions from the analysis of the current situation

All in all, some conclusions can be drawn from the analysis of the current situation. Furthermore, some of the insights from this chapter can serve as input for, and/or allow for a better understanding of industry and customer dynamics, in later chapters. First of all, as is evident from the (upward) trend witnessed in conversions over 2013, RingCredible has been able to improve its service, especially in the conversion from download to user. Secondly, when looking at the increase in downloads, users and customers (in absolute terms), and the only slight differences in conversions between organic and marketing downloads, it can be concluded that marketing is a viable manner for expanding the customer base. On the other hand, the fact that sales each month were mainly driven by new customers and the number of recurring customers is generally low could pose a threat. Lastly, the huge differences in conversions between countries and zones, warrants the assumptions that country-specific circumstances play an important role in the adoption decision. What these circumstances can be will be discussed in later chapters, but first the research model for this report will be discussed.

Appendix H: Detailed analysis of Porter's five forces model, for the specified industry

1.2.1 Threat of entry

Whenever a new competitor enters an industry, they bring extra capacity to the industry with the goal to gain market share, in turn, this pressures prices, costs, and the investment rate necessary to compete (Porter, 2008). The threat of entry puts a cap on the potential profit of an industry, because when this threat is high, incumbents must either increase investments, or hold down prices to deter new entrants. Whether the threat of entry is high, depends on the entry barriers present in the industry. According to Porter (2008) there are seven major sources of entry barriers, namely: (1) Supply-side economies of scale, (2) Demand-side benefits of scale, (3) customer switching costs, (4) capital requirements, (5) incumbency advantages independent of size, (6) unequal access to distribution channels, and (7) restrictive government policy.

The abovementioned barriers to entry are not necessarily all present, and/or present in the same magnitude, in an industry. Furthermore, the entry barriers should be judged from the perspective of capabilities of potential entrants (Porter, 2008). To determine the threat of entry in this industry, first the entry barriers are described for the global market. Thereafter, differences for specific markets and types of organisations will be discussed.

1.2.1.1 Supply-side economies of scale

These economies are present when firms that produce in larger volumes achieve a lower cost per unit. This effect can occur for a number of reasons: (a) being able to spread fixed costs over more units, (b) the use of more efficient technology, and (c) the ability to claim better terms from suppliers.

Supply-side economies of scale do play a role in this industry, however the reason depends on the type of organisation. For traditional telecommunications providers supply-side economies of scale occur, because they are able to spread their (large) fixed costs over more units. This entry barrier for this type of organisation can be regarded as high, because in most markets enough capacity is present. Thus, newcomers will first have to capture market share from incumbents in order to be able to produce at the same marginal cost. MVNO's can benefit from supply-side economies of scale, because they will be able to claim better terms from their suppliers with increasing volumes (network traffic). However, because these type of organisations have to buy network access from MNO's and they compete in the same industry, the economies of scale they can benefit from will be limited. As was already mentioned previously, VoIP service providers only have to buy the second part of the connection from MNO's. Therefore, supply-side economies of scale can primarily be achieved on the first part of the call for this type of organisation. All in all, this entry barrier for VoIP service providers can be considered low and for MVNO's they can be considered moderate.

Finally, small gains can be achieved by all types of organizations with the use of more efficient technologies internally. Because, there are global standards for the way in which calls must be transmitted and received, large efficiency gains in technology employed by a single organisation are not plausible.

1.2.1.2 Demand-side economies of scale

These benefits, which are also called network effects, arise when a buyer's willingness to pay for a company's product increases with the number of products sold by the company. Because subscribers from different providers are able to call each other, network effects do not play a major role in most markets of this industry. However, there are providers which let you call freely, or at a reduced tariff, to users with the same provider in the same region (or country). Especially in markets where the majority of market share is held by one or two providers, and those providers offer reduced tariffs for calls within their network, this entry barrier can be considered high. In the market for international calls, there is no such entry barrier.

1.2.1.3 Customer switching costs

Switching costs are (fixed) costs that customers face when they change suppliers. Whether, customers face switching costs in this industry, depends on the arrangement the customer has with the service provider.

Generally, there are two types of arrangement a customer can have with the service providers. Either they have a subscription, or they use pre-paid call credits. Whenever a customer uses pre-paid call credits, they generally have low switching costs. The only costs will be the loss of potential outstanding pre-paid credits, but often these can be used simultaneously with use of the new service provider.

On the other hand, a customer with a subscription to a service provider has high switching costs associated with changing suppliers. The switching costs are dependent on the duration of the subscription and the (often monthly) subscription fee. Generally, the switching costs for a customer with a subscription are very high, and customers will most likely wait with switching suppliers until their subscription is expired.

Furthermore, other switching costs can be associated with switching suppliers. A subscription can, for instance, be coupled to a free mobile phone for the customer. In some cases this phone can only be used on the network of the supplier offering the subscription for a specified amount of time (e.g. 1 or 2 years).

Also, a subscription can be coupled to, for example, a cheap data subscription or fixed telephone connection. The most important switching costs that is associated with switching to the service of a VoIP provider, is the need for a 'normal' subscription or active prepaid SIM-card, to be able to receive calls as well. The cost of this depends on the cheapest solution available in the specific country (e.g. in the Netherlands this can be achieved for around €1 per year). Another type of switching cost, which can be associated with switching to a VoIP service provider, is the cost of an internet connection. However, this can only be considered a switching cost if the customer does not already have access to an internet connection, or if the customer acquires a (mobile) data subscription specifically to make use of the service from the new entrant.

Lastly, some of the services offered can be used in addition to the regular arrangements described above. This is especially the case for services offered by VoIP providers, since they only offer outgoing connections. They, for instance, offer subscriptions that allow one to make unlimited calls to a certain country or region for a fixed fee, or offer cheap international calls. These services can be used simultaneously with the existing subscription of customers. If this is the case, no costs are associated with making use of the service from the new entrant. Although, one could argue that this cannot be regarded as the same product, but rather as a complementary product.

1.2.1.4 Capital requirements

Capital requirements can be an entry barrier when the industry requires large capital resources in order to compete. Especially when this capital is required to be invested in unrecoverable assets, it can be a high barrier to entry. For MNO's, the capital costs are very high. Not only is the equipment needed very costly, and in unrecoverable assets, also the radio spectrum frequency the equipment uses to broadcast and receive signals, needs to be leased/licensed from the authorities.

The capital requirements for organisations of the second and third type, when compared to those of the first type, are marginal. MVNO's use the infrastructure of organisations of the first type, for which they pay on the basis of usage, so no initial investment for this is required.

VoIP service providers, only partly use the infrastructure of the telecommunication providers (the 'last' part of the call). The 'first' part of the connection has to be facilitated by the organisation itself. This requires two to three types of investments of the organisation. First of all, the VoIP codec, which is used to convert an analogue voice signal to a digital encoded version, can be purchased (depending on the codec, free versions are available as well). Secondly, the software (application) that generates the traffic needs to be bought, developed, or licensed. Thirdly, the hardware (servers, etc.) that handles all traffic needs to be bought or leased. Still, the capital required for this does not compare to capital requirements of MNO's.

1.2.1.5 Incumbency advantages independent of size

In many industries incumbents have cost or quality advantages over new entrants. These advantages can stem from sources such as established brand identities, or proprietary technologies. In the industry under analysis, this type of entry barrier is relatively high. Especially amongst the traditional telecommunication providers, there are some globally established brands (e.g. Vodafone in Europe, and América Móvil in Mexico and Latin America). When looking at a smaller scale (country level), it appears that in most

countries there are 1 to 3 providers dominating the market. However, a more detailed analysis on market concentration will follow later in this report.

MVNO's, are often focussed on one market and usually branded towards very specific or the lower segments (price fighters), however they advertise as having the same quality of service like the aforementioned companies since they use the same infrastructure.

VoIP service providers are mostly founded in the last decade. Although these are young companies, some have managed to clearly establish their brand identity (e.g. Skype). Furthermore, established VoIP providers also has an advantage over new VoIP entrants in proprietary technologies and experience with VoIP services.

1.2.1.6 Unequal access to distribution channels

New entrants in an industry must secure distribution for its products. "The more limited the wholesale or retail channels are and the more that existing competitors have tied them up, the tougher entry into an industry will be" (Porter, 2008, p. 29). As was already mentioned previously, this industry used to be dominated by the traditional telecommunication providers (MNO's). These organisations have an extensive network of stores in which only their subscriptions are sold (i.e. they created their own distribution channel). Furthermore, there are independent mobile phone retailers (such as Carphone Warehouse) that sell subscriptions for most of the service providers, often in combination with a mobile phone. For new entrants this can pose as a significant entry barrier, since setting up a network of branded stores requires extensive investments, and in order to reach an agreement with the independent retailers, sales volume is needed.

However, in developed economies, where the market has matured, a decline in the number of retail stores is witnessed (F. Dickgreber, 2013). Besides the fact that these markets are maturing (i.e. growth rates have disappeared or have at least diminished), the decline in retail stores can also be attributed to emergence of new, online, sales channels.

Especially MVNO's and VoIP service providers have focussed their strategies towards online sales. Some of these organisations even go so far as only selling their services online. For these organisations, the entry barriers regarding distribution channels are non-existent.

1.2.1.7 Restrictive government policies

Governments can limit or foreclose entry into specific industries (e.g. by licensing requirements) or have policy in place that limits entry into a specific industry (e.g. patenting laws, environmental laws). However, government policy can also lower entry barriers, by for instance subsidies.

Telecommunication regulations differ significantly between countries and/or regions. Due to the fact that most countries have their own specific regulations and in some countries (a large) part of the market is controlled by state-owned companies (e.g. China, Ethiopia), differences between markets are too large to be described in this concise analysis of the industry.

Due to the importance for RBN B.V., a list of countries where VoIP services are known to be blocked is supplied hereafter. However, it should be noted that in some countries these services are not being blocked by government regulations, but by large ISP's (Internet Service Providers), although they probably have tacit consent for this. Furthermore, in most of these countries only the large VoIP services (e.g. Skype) are being blocked.

The following countries are known to block VoIP services by government regulations: China, Egypt, Guyana, Jordan, Kuwait, North-Korea, South-Korea, Oman, Pakistan, Paraguay, Qatar, Singapore, and UAE (ProVPN, 2014; BananaVPN, 2012; Noman, 2009).

In the following countries VoIP services are being blocked by ISP's: Belize, Brazil, Caribbean, Malaysia, and Mexico (ProVPN, 2014; BananaVPN, 2012; Noman, 2009).

1..2.1.8 Conclusions on threat of entry

The abovementioned barriers of entry are not the only factors that can deter a potential new entrant from entering. The expected retaliation of incumbents also plays a significant role in this decision. Potential new entrants are more likely to face retaliations when incumbents: (a) “have previously responded vigorously to new entrants”, (b) “possess substantial resources to fight back”, (c) “seem likely to cut prices”, and/or (d) “industry growth is slow, so newcomers can gain volume only by taking it from incumbents” (Porter, 2008, p. 29).

Whether incumbents will retaliate to new entrants also depends on the market they want to enter. For this last part of the analysis on the threat of entry, it is chosen to distinguish between three types of markets. This distinction will be made on how well developed the market is. This distinction is made, because the level of development of markets is related to the degree of competition and the price level.

Generally, three types of markets can be distinguished. First of all, there are (highly) developed markets, such as Japan, North-America and Western-Europe. On the other hand there are under-developed markets, like most sub-Saharan African countries, where especially the less densely populated and rural areas are being severely underserved. Lastly, there are markets, such as India and Peru, which are bridging the gaps between these two extremes. The degree of development of certain markets can be related to a couple of variables, but is mostly related to the GNI per capita of the country/region (where a higher GNI relates to a more developed market, mainly due to higher consumer needs). Furthermore, country/region specific circumstances, such as population density, government policies (e.g. capping mobile termination rates (MTR's) (Corrocher & Lasio, 2013)), or geographical issues (e.g. remote islands) can influence the degree of development. The sub-index Access, from the ICT Development Index (IDI), provides a good reference on the level of development of 157 countries (see Appendix C for this list).

Lastly, possible retaliation from incumbents also differs for the type of organisation that wants to enter a market. Generally, incumbents will retaliate more vigorously to direct competitors (i.e. organisations of the same type), because they tend to focus on the same customer segments.

(Highly) developed markets

The (highly) developed markets have matured, and are more or less in equilibrium. They are characterized by sufficient, and often even excess, network capacity and relatively low prices. Prices in these markets have dropped due to the emergence of MVNO's, who could offer lower rates due to slimmer business models and the availability of excess network capacity. Because these markets have matured, industry growth is low or null, so potential new entrants can only gain market share by taking it from incumbents. Furthermore, because the price level in these markets is already relatively low, profit margins are already low to non-existent (i.e. services are offered at cost-price).

For MNO's, entry barriers to (highly) developed markets are very high. These type of organisations have very high capital requirements, and because of the already sufficient network capacity and low profit margins, entry in these markets is highly unlikely. Entry barriers for MVNO's are also rather high due to the heavy competition and low profit margins. On the other hand, if these potential entrants are able to identify an underserved market segment, entry might be justified. However, if an organisation of this type decides to enter this type of market, retaliation from incumbents can be expected. Incumbents will not want to lose market share, and will most likely retaliate by cutting prices for the underserved market segment, or imitating the offer of the new entrant. In these markets, entry barriers for VoIP service providers are the lowest. Due to the different technology employed in the first part of the call, they are able to produce at (slightly) lower costs, thus being able to achieve higher profit margins at the same price level (or the same profit margin at a lower price level). By being able to offer lower prices, these potential entrants can form a threat to incumbents. However, because profit margins are already under pressure, they cannot retaliate by cutting prices directly. However, incumbents can cut prices indirectly. They can, for example, offer bundled products (data subscription, text messages, and call minutes) at a slightly higher price than the separate products (in most cases a data subscription) to give customers the feeling that calling costs them almost nothing extra.

Semi-developed markets

In semi-developed markets, entry barriers and retaliations from incumbents differ from those in (highly) developed markets. These semi-developed markets are currently in the process of becoming mature, but are at the moment still growing as penetration rates have not yet reached or surpassed 100%. In most of these markets there is excess capacity (in order to cope with expected future market growth) and MVNO's have, or are in the process of, entering these markets and causing prices to drop. Although prices have already dropped significantly in most of these markets during the past years, profit margins are still higher than in (highly) developed markets. This is caused by the fact that the market is still growing, allowing competitors to grow by attracting new customers, and furthermore causing costs per unit to decline as the market grows and no additional network capacity is required. However, because these markets are maturing, competition is intensifying and prices are dropping further.

Entry barriers for MNO's are generally high in these markets. Mainly due to the high capital requirements of these organisations and decreasing profit margins in the market. Only when (a) network capacity in these markets is insufficient to sustain the expected future growth, and/or if (b) the market is being dominated by one or two MNO's and is sufficiently large, entry barriers might be moderate. An entry by a MNO in these markets will most likely attract vigorous retaliations from incumbents, who are likely to cut prices even further and possess substantial resources to fight back (due to the profitability in these markets). For MVNO's, entry barriers, are moderate. The threat of entry of these organisations will depend largely on the amount of competition and profit margins present in the market. If these type of organisations do decide to enter a market (indicating that competition is not that fierce and/or profit margins are deemed high) retaliation (in the same form as described above) from incumbents is to be expected.

Lastly, threat of entry from VoIP service providers is high in these type of markets. Entry barriers for these type of organisations are low and because profit margins are higher than those in (highly) developed industries, the price difference that these organisations can offer to consumers are higher (i.e. enabling them to gain market share quickly). Although the threat of entry of these organisations is thus relatively high, vigorous retaliations by incumbents are not very likely. First of all, they can cut prices, however due to technicalities already explained previously, incumbents cannot produce at the same marginal costs. They will thus either have to sell their products at a loss, or will try to undercut prices indirectly by bundling.

Under-developed markets

Lastly, the threat of entry for the different types of organisations will be analysed for under-developed markets. These markets are characterized by low GNI/capita, low penetration rates, moderate to high growth rates, and a few large organisations that control the market. Often these markets are dominated by a large organisation MNO (often a formerly state-owned company) who has built the basic network infrastructure. Because these markets are small (relative to population), the costs of the network infrastructure were high, competition is low, and the price level (and margins) are high. Of course, these high margins will attract competition, thus depending on the size and expected growth of the market, MVNO's might be present (the more developed the market is, the higher the chance of their presence). However, almost none of the under-developed markets house MVNO's. The main reason for this is that these markets have almost no regulation (compared to more developed markets) which allows (or forces) MNO's to give MVNO's access to their networks. Threat of entry from MNO's will largely depend the amount of excess network capacity (also taking future growth into consideration), and the potential size of the market. Generally, entry barriers for this type of organisations are lowest in these markets. The threat of entry of MVNO's will depend mainly on the level of regulation, and thereafter on the level of competition in the market and the availability of excess network capacity. This implicates (assuming appropriate regulation is in place) that either the threat of entry of MNO's or MVNO's is greater, depending on the amount of excess capacity available in these markets. Of course, if an MNO enters a market (i.e. creating extra capacity), the threat of entry from MVNO's will increase.

Entry barriers for MVNO's are often high in these markets (due to the absence of (appropriate) regulation). However, when regulations are in place, entry barriers are rather low because there are a lot of potential

new customers (i.e. no customer switching costs). Both MNO's and MVNO's can expect retaliations from incumbents, often in the form of undercutting prices. However, these will most likely be less rigorous than in the other type of markets, because incumbents can easier retain (or enlarge) their market share by attracting new customers.

For VoIP service providers that want to enter the market, the situation is quite different than that in the other types of markets. Whether this type of organisation pose a threat to incumbents, is first and mostly dependent on the availability and cost of fast enough (mobile) internet connections for consumers. When a significant portion of consumers in these markets has access to an internet connection, the threat of entry of these organisations is large. Furthermore, incumbents will most likely not react to entry from these type of organisations, because if they will react by heavily cutting prices (which would be needed to compete with these organisations in these markets) they will lose a significant part of their profits from their current customer base. On the other hand, if most customers in these markets do not have access to fast enough internet connections, the entry barriers for these organisations will be high. This is caused by high customer switching costs (i.e. customers will have to first get access to the internet in order to switch services).

In conclusion, the threat of entry into the analysed industry is represented in Table 28 below, for each market and the three type of organisations. Also, in the last row the threat of entry from all types of organisations is given. The results depicted in this table are generalised for the market types and organisation types. In order to be able to determine the threat of entry for a specific market, far more detailed analysis is required.

The signs (e.g. +, +/-) in the table below, indicate the effect of threat of entry for the corresponding type of market and type of organisation, as viewed from the incumbent. For example, the sign -- indicates that the threat of entry is large. Lastly, where the threat of entry in the cell is depicted as '+/-', there are market specific circumstances (as explained above) that greatly influence the threat, and more detailed analysis of the specific market is required to determine the threat of entry.

Table 28: Threat of entry for different markets and organisation types, as viewed from the incumbent

	(highly) developed markets	Semi-developed markets	Under-developed markets
Organisation type 1	++	+	+/-
Organisation type 2	+	+/-	+/-
Organisation type 3	-	--	+/-
Overall effect of threat of entry on industry attractiveness	++	-	+/-

1.2.2 Power of suppliers

Those who supply the organisation, with what they need to produce their product or service, are called suppliers. Suppliers can come in many forms, and most companies depend on multiple, if not numerous, suppliers. Since most organisations have multiple suppliers, it is important to focus this analysis on the most important suppliers. This can either be those suppliers that account for most of the costs, those that supply the most critical commodities, or those suppliers which are the only one that can supply a certain commodity. A few examples of commodities that companies can need to produce are: raw materials, equipment, sources of finance, and labour. Powerful suppliers have the ability to capture more of the value for themselves, because they can charge higher prices, shift costs to industry participants, and/or limit quality or services (Porter, 2008).

The power of suppliers is likely to be higher if (a) the group of suppliers of a certain commodity is more concentrated than the industry that is sells too (Johnson, et al., 2008). (b) The group of suppliers is not heavily dependent on the industry for its revenues (Porter, 2008). (c) There are high switching costs associated with switching suppliers (Johnson, et al., 2008). (d) Suppliers offer differentiated products (Porter, 2008). (e) There is no alternative supplier for the commodity in question (Porter, 2008). (f) The supplier can credibly threat to integrate forward into the industry (Johnson, et al., 2008).

As is already discussed in the previous paragraphs, there are huge differences between the types of organisations and markets in this industry. Therefore, the number of suppliers, the amount of power these suppliers can exert, and what they supply also differs enormously for specific organisations. In addition, as is already explained previously, MNO's can also be suppliers to MVNO's. Due to the overwhelming differences in suppliers between types of organisations, organisations of the same type, and disclosed agreements between incumbents and suppliers, it is not possible to thoroughly analyse the power of suppliers in this industry.

However, all of the organisations that compete in this industry have one type of supplier in common; wholesale carriers of telephone calls. These wholesale carriers (Verizon, At&T, iBasis, BT, etc.) form the backbone of the international telecommunication network and allow connections between different service provider networks to be made.

Although these wholesale carriers are referred to as suppliers here, in essence they are a sort of brokers, because they sell network capacity to the outgoing party, which they buy from the receiving party. Take, for instance, a call from a consumer in the Netherlands (with KPN as service provider and outgoing party) to a consumer in the USA (with T-Mobile as service provider and receiving party). These, wholesale carriers are thus not only suppliers to MNO's, but also buyers from MNO's. For MVNO's and VoIP service providers they are merely suppliers.

On the one hand, one could consider this group of suppliers as powerful, because they are much more concentrated than the group that it sells to. On the other hand, these suppliers are also heavily dependent on the industry for its revenues. Generally, the power of these type of suppliers depends mainly on the size of the incumbent, where the larger organisations can demand lower prices due to higher volumes, and interdependencies between the two organisations.

1.2.3 Power of buyers

Similar to powerful suppliers, powerful buyers can capture more value by forcing down prices, demanding better service or quality, and playing industry participants off against each other (Porter, 2008). Buyers can be considered powerful if they have negotiating leverage over industry participants. They can achieve this if one, or a combination of, the following situations occurs. (a) If the buyers are concentrated, i.e. if a few customers order quantities that are large compared to the sales of a single vendor, this effect is amplified for industries with high fixed costs (Johnson, et al., 2008). (b) The products in the industry are undifferentiated or standardized (Porter, 2008). (c) If there are low switching costs and buyers can thus easily switch between suppliers (Johnson, et al., 2008). (d) Buyers can credibly threaten to integrate backwards into the industry (Porter, 2008).

Sometimes powerful buyers can have so much bargaining power that there is hardly any profit margin left in the industry. This is especially the case if the buyer is price sensitive (i.e. it exerts its buyer power only to drive down price). There are a few situations in which buyers tend to be price sensitive, these are: (1) if the product acquired from the industry represents a large fraction of its cost structure, (2) the buyer is under pressure (e.g. the buyer is low on cash) to cut its purchasing costs, or (3) the quality of the buyer's product is not affected (or only slightly) by the bought product (Porter, 2008).

Because the product of the industry under analysis is a consumer product, the buyer will in this case not be concentrated and cannot threaten to integrate backwards into the industry. However, this does not necessarily mean that the buyers in this industry are not powerful.

Overall, buyers can be considered powerful in this industry. This is mainly due to the fact that the service is undifferentiated (i.e. a call is a call), thus competition in the industry is mainly price driven and buyers are price-sensitive. As was mentioned earlier in this chapter, many incumbents offer bundled products and differentiate their offerings in this manner. However, because the offering of bundled products or, for instance, unlimited calling subscriptions is more closely related to differentiated customer needs and segments, this will be analysed in the next two sub-chapters; 6.3.3 Strategic groups, and 6.3.4 Customer segments. Furthermore, even though incumbents bundle products, most incumbents offer the same sorts of bundles or subscriptions, thus competition will again be mostly focussed on price.

More specifically, the power of buyers is dependent on the degree of development of the market in which he resides. As explained previously in the threat of entry, generally, the more developed a certain market is, the broader the offering (i.e. number of competitors), the lower the prices, which results in a more powerful position for the buyers.

Furthermore, buyer switching costs are generally low. Buyers might be stuck to a subscription or network for a period of time, but even then they can easily switch between suppliers for, in example, excess usage or long-distance calls.

The abovementioned explanation of buyer power in the different types of markets is summarised in Table 29 below. The signs in this table again indicate the effect of buyer power on industry attractiveness as viewed from the incumbent (i.e. a – indicates buyer power has a negative influence on industry attractiveness, thus buyer power is relatively high).

Table 29: Effect of buyer power on industry attractiveness for the different types of markets

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of buyer power on industry attractiveness	--	-	+/-

1.2.4 Threat of substitutes

A substitute is a product or service that can perform a similar function as the industries product or service, but in a different way. Substitutes are present in every industry and for every product or service, but they can be easy to overlook because they may appear to be different from the industries product (Porter, 2008). Furthermore, doing without the product, purchase it second hand, or make/do it yourself, also counts as a substitute (Porter, 2008).

When there is a high threat of substitutes in a certain industry, profitability will suffer (Porter, 2008). This is because substitute products place a ceiling on the prices, thus limiting the profit, and growth, potential of an industry. Industries can counter this effect by distancing themselves from the substitute through product performance, marketing, or differentiating.

The threat of a substitute can be considered high, if (a) it offers a better price/performance ratio than the industries product (Johnson, et al., 2008), and (b) the switching cost for the buyer are low (Porter, 2008). As was already discussed in the PESTEL analysis, there are substitutes who offer their service for free (e.g. Skype, Rebtel). These type of substitutes can be considered the biggest substitute threat to the industry. There are no switching costs associated (assuming the consumer has access to fast enough the internet) with the use of these substitutes, and the price/performance ratio is infinitely better than that of regular calls, when you define performance as the call quality (and again assume access to fast enough internet). However, the pitfall of these services is that they work on the basis of closed user groups (i.e. both parties need to be online on the same network in order for a connection to be established). Thus, you need to be signed in to the service to be able to receive calls. When a consumer makes an appointment to be online at a certain time, this is of course no problem. However, in order to use it in the same manner as the GSM network, one would need to be online at all times, which takes a significant toll on memory, data, and battery usage of mobile devices. This is the case, because applications like Skype have to constantly interact with the server to indicate user availability and check for incoming calls and messages. Because the more developed markets typically have higher internet speeds/bigger data bundles available and more consumers with the newest phone models, these markets are more exposed to this threat.

Furthermore, the benefit from the use of these services only accumulates to the outgoing party (i.e. they call for free), whereas the receiving party is required to invest extra effort (i.e. be online). The previously mentioned obstacles of these services are relatively high at this moment, but are not insurmountable in the future, as was demonstrated by the text message market takeover by services such as WhatsApp and Line (who also work on the basis of closed user groups). All in all, these type of services will very likely further change the shape of the telecommunications sector in the coming decade. However, nowadays these services are mostly used to make pre-agreed upon (long-distance) calls, and/or are used when fixed internet is available.

Besides the free VoIP services mentioned above, one more substitute service will be described here shortly, fixed-line calls. Fixed-lines are the predecessor of mobile phones, but still widely used. The call quality is more or less equal (depending on the connection of the mobile phone), but costs differ under circumstances and subscriptions. Although there are numerous kinds of subscriptions that combine internet or cable television with free national calling, the use of fixed-lines is declining steadily over the years (The Economist, 2009). This decline can be solely attributed to the rise of the mobile phone, and it is expected that all fixed-lines will be disconnected sometime in the near future (as soon as 10 to 20 years for western markets). Since the use of this substitute is diminishing, this substitute product is no threat, but rather a source of market growth. Put differently, mobile phone calls were a substitute for fixed-line calls, and have won the battle.

In conclusion, the threat of substitute for this industry is relatively high in the long run. However, when looking at the threat of substitutes in the medium run (+/- 3 years), it is very difficult to predict the adoption of the free VoIP services. Taking into consideration the medium and long run, the threat of substitutes for the industry and different markets, as viewed from incumbents, is summarised in Table 30 below.

Table 30: Effect of threat of substitutes on industry attractiveness for the different types of markets

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of threat of substitutes on industry attractiveness	–	–	+/-

1.2.5 Rivalry among existing competitors

The more competitive the rivalry in an industry is, the worse the situation is for incumbents within the industry. Besides the four discussed forces, there are additional factors that directly affect the degree of rivalry in an industry. Rivalry is most intense if: (a) There are numerous competitors and they are more or less of equal size (Johnson, et al., 2008). (b) The industry growth rate is low or negative (Porter, 2008). (c) Firms are not able to read each other's signals well (Porter, 2008). (d) There are high exit barriers (i.e. a lot of sunk costs) (Johnson, et al., 2008).

Besides the intensity of competition in a certain industry, the dimension of this competition is also a major influence on the profitability (Porter, 2008). If the dimension of competition is mostly on price, this is especially destructive for industry profitability, because this transfers profits directly to the customers. Price competition is most likely to occur in the following situations: (1) Products or services are (almost) identical, and there are little switching costs for buyers (Porter, 2008). (2) The industry has high fixed costs and low marginal costs (Porter, 2008). (3) Extra capacity can only be added in large increments, thus temporarily disrupting the supply-demand balance (Johnson, et al., 2008). (4) When the product is perishable (Porter, 2008).

When competition is on another dimension than price (e.g. features, support services, etc.) it is less likely to eat away profitability, and in some cases can even increase profitability industry wide. This can be the case when competitors aim to serve different market segments, and in that way increase the size of a market segment because their needs are better served.

First of all, as was already discussed in paragraph 6.2.3, price is the main dimension of competition. This is, for the largest part, caused by the undifferentiated (identical) service offered. Another reason for the competition on price is that MNO's also have high fixed costs and low marginal costs, and these organisations are a necessity for the presence of organisations of the second and third type (i.e. no network infrastructure means no calls). Lastly, for this industry it also holds true that extra capacity can only be added in large increments.

Whereas the dimension of competition (price) is largely the same for all types of markets, this is not the case for the intensity of rivalry. Because large differences exist in the intensity of rivalry between markets, the different type of markets (as described in 6.3.1) will be discussed separately.

(Highly) developed markets

First, a look will be taken to the (highly) developed markets. In these type of markets, rivalry between competitors is generally the most intense. Most of these markets are characterized by the presence of several (2 to 5) MNO's, who together hold the majority of the market. Within these markets, the size of these organisations is in the same order of magnitude, and competition is mainly focussed on each other. Besides these traditional telecommunication providers, these markets have MVNO's that make up for most (or all) of the remainder market share (averaging 10% to 20% in Western Europe and North-American markets (Chou, et al., 2013) (Shin & Bartolacci, 2007). Typically, these organisations are targeting their services at the lower segments, and again competition is mostly aimed at other MVNO's. However, the size (as percentage of the market) and number of these MVNO's differs largely for specific markets. Also, in some of these markets VoIP service providers have established a steady customer base.

Furthermore, as was already mentioned previously, these markets exhibit low growth rates, which further intensifies rivalry among the different competitors. Finally, for MNO's the exit barriers are very high (due to high investments in infrastructure and radio spectrum frequency rights), which puts even more pressure on these organisations to retain their markets share.

The abovementioned circumstances in these markets, in combination with the fact that price is the main dimension of competition in this industry, leads to very intense rivalry between competitors.

Semi-developed markets

The situation in semi-developed markets is comparable to that of more developed markets, although rivalry between competitors is generally less intense. The reason why competition is less intense in these markets is mainly due to the moderate growth rates and higher profit margins. Incumbents are able to increase their customer base not only by taking customers from their rivals, but also by attracting new customers. Furthermore, there are viewer competitors (especially less MVNO's), and size differences between organisations are often larger, because different organisations are trying to establish a foothold or have just entered the market.

Lastly, as time passes in these markets, growth rates will decrease and the dimension of competition will focus more and more on price. This will continue till the point where the market can be seen as a (highly) developed market.

Under-developed markets

In under-developed markets the rivalry among existing competitors is generally the lowest. Growth rates in these markets are moderate to high, profit margins are relatively high and there are few competitors (mostly only MNO's). These few competitors are furthermore large (in terms of market share) compared to more developed markets, and have considerable power.

Whereas in the more developed markets the level of service and quality of competitors has more or less converged (or at least passed a certain threshold). These under-developed markets are still evolving, and the dimension of competition is not only focussed on price, but can also be focussed on service or quality (e.g. nationwide coverage). Over time, these circumstances will attract new entrants, and prices and profitability will drop. Eventually a point will be reached where the market can be considered semi-developed.

Overall, the rivalry among competitors in this industry, for the different types of markets is summarised in Table 31 below. Again, the signs in this table indicate the effect of the rivalry on industry attractiveness as viewed from the incumbent

Table 31: The effect of rivalry among competitors for the different type of markets in the industry

	(highly) developed markets	Semi-developed markets	Under-developed markets
Effect of rivalry among competitors on industry attractiveness	--	+/-	++