

Mobile Telecommunications in Cambodia: Aspects of Competition and Consumer Behaviour

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Abstract

Once Cambodia opened its economy for international investment and business, many companies entered promising sectors as competition flourished and, in some cases, became destructively intense. This has occurred in the mobile telecommunications industry, which the Cambodian government opened freely to international investors because it realized the importance to economic development of national broadband infrastructure but lacked the resources to build it. This paper explores the interaction between the services provided under these conditions of competition and those which are demanded by consumers through a quantitative survey of 400 respondents in four different urban environments. It is shown that there is a discrepancy between the cost-based offerings generally available and the network externality benefits in which consumers are most interested.

Keywords:

Cambodia, Competition, Consumer Behaviour, Internet, Mobile Telecommunications

Introduction

Cambodia is a country aiming to put its tragic, conflict-ridden past behind it by embracing a version of the Factory Asia Paradigm: import-substituting, export-oriented manufacturing with low labour-cost competitiveness provided by a combination of drawing people from agriculture or the household sector into the industrial sector and the use of force to prevent those same workers organizing themselves and demanding an appropriate salary for their role in rapid economic development. As the labour force grows, it contributes to the national demand for consumer goods such as mobile telecommunications. Providers of the hardware and services in this sector have reached the life cycle stage of maturity in neighbouring countries such as Thailand and so seek the benefit of economies of scale by expanding into Cambodia while also potentially gaining early mover and customer loyalty benefits. The government of Cambodia attempted to demonstrate its commitment to free market capitalism by opening the relevant sector to all kinds of foreign investment. In doing so, it recognised the importance of a national grid for mobile

telecommunications in terms of its impact not just in satisfying consumer demand but in reducing inequalities and the digital divide, promoting social stability during a period of significant internal labour migration, poverty eradication and the campaign for transparent online governance. Since the government lacks the resources to create the network through its own efforts, it has encouraged the private sector to fill the void and, in particular, international investors. It has taken the view that the more international investors are involved, the more incentive there will be for the national network to be constructed and, hence, the more that benefits for the state will accrue overall. This has led to a situation of intense, perhaps over-intense competition in which no investor has been able to establish a profitable market position. This research study uses a quantitative approach involving 400 completed questionnaires aiming to investigate consumer behaviour in this sector so as to determine the ways in which service providers can move beyond relentless price competitiveness as a means to encourage brand loyalty and, hence, the market development process that will encourage consumers to pay premium prices for added value services.

This paper continues with a literature review that outlines existing knowledge and demonstrates the gaps in knowledge that exist and which will be addressed by the hypotheses that are tested in this research study. This is followed by a description of the methodology employed to obtain the research results, a description of the findings and then a discussion of the implications of those findings. The paper is finished with a conclusion that includes some suggestions for future research.

Literature Review

The Cambodian Economy

The Cambodian economy remains primarily an agricultural one, with now some islands of urban development and places of production as described previously. As part of the monsoon region, farmers rely on rice production, typically harvesting twice per year. Rice growing is dependent to a considerable extent on irrigation but very little of this exists or has survived from the period of warfare (a Khmer society has, on the other hand, exhibited a mastery of water management over the course of many centuries (Mithen, 2013). Rice growing is supplemented by growing traditional fruits and vegetables and raising some animals, mostly chickens, cattle or buffaloes and pigs. These are tended and used in somewhat traditional and old-fashioned ways. The general lack of market development in the country has meant that attempts to encourage farmers to grow other items with higher added value have generally failed because there is little or no demand in local markets for items that consumers do not recognise or know how to use. The well-stocked markets of Phnom Penh contains products almost

entirely imported from Thailand and Vietnam (Lovichakornতিকুল, Ngamsang and Walsh, 2013).

Some attempts have been made to incorporate Cambodian actors into regional value chains and export consortia but success in these ventures has, to date, been limited. What has been more significant has been the linking of local communities and land to international markets through the awarding of large-scale land concessions, often to foreign investors and occasionally in ways which seem to explore the limits and letter of the relevant laws condemned (Üllenberg, 2009). To this has been added the phenomenon of contract farming, by which apparently some farmers have signed contracts to produce goods (e.g. cashew nuts) which they do not even recognise (Padwe, 2011). These changes mirror the ways that Cambodia was linked to international markets during the French colonial period when rubber plantations were introduced and the country became the home of the plantation so notably denounced by Tran TuBinh in *The Red Earth* (1985).

To date, modernization of distribution and retailing has been limited and the few small supermarkets of Phnom Penh contain few items with any notable domestic input. By contrast, the creation of a garment manufacturing industry has helped provide a significant boost for the fashion sector, particularly for women's fashion and contemporary international styles can now be found across the Kingdom. The opening of the country has also led to the large-scale importation of mobile telephones and related devices and these now appear to be ubiquitous, particularly in urban settings. The spread of mobile telephones has been hastened by two additional factors. First, a culture of self-improvement has been established in Phnom Penh in particular and many people are learning additional languages and skills in the hope of travelling abroad to work or else finding an attractive position with an inwardly investing firm (Kaveevivitchai, 2013). Second, large numbers of Cambodians already do migrate across borders to work, especially in neighbouring Thailand and so the mobile telephone has become an indispensable instrument for keeping in touch with family and friends and for managing personal business affairs. In addition to these factors, of course, is the issue of the limitations of the landline system and its limited spread and availability across the country.

Cambodian Consumers

Cambodia is a post-conflict society and many of those directly involved in these events are still deeply scarred by them and are not assisted by a society in which (in common with other East Asian societies) discussion of mental health issues is effectively a taboo (Kamm, 1998). However, the overall level of population is increasing and new generations of young people have escaped the worst of the dead weight

of history compressing their brains and have their own dreams and aspirations of a happy and improving life. The majority of these young people can be characterized as relatively typical members of a globalizing society and are happy to take advantage of the functional and lifestyle benefits of mobile telephones, coffee shops and the means of personal mobility. Nevertheless, traditional values and cultural practices do still exist and can present a discordant response to the desire for consumption.

The first of these is the need for deference to the elderly and to all people in positions of authority. There is also a strongly gendered dimension to this sense of deference which is summarized by the Cambodian proverb that 'men are made from gold, women are made from cloth,' which indicates that a man's internal worth will survive a little surface distress, which would be sufficient to ruin a woman completely (Walsh, 2013). Cambodia is the most strongly Indianized of the Mekong Region states, which is indicated by the nature of the religious artistry employed at the Angkor Wat temple complex and elsewhere. To this is added elements of Confucianism and Buddhism, which both also formalize social relations between people and prioritize one part of the relationship above the other. Although some of this cultural capital was destroyed or displaced by the years of warfare, power relations and patronage networks have survived and are being rebuilt as the country attempts to reach normalcy.

Telecommunications

The mediascape is one of the principal forces that will shape the future structure and nature of society (Appadurai, 1996)

and telecommunications is central to that flow of events, content and interaction. Consumers increasingly obtain their awareness of the world around them through their personal telephones, tablets and similar devices. These devices mediate between people and the world around them and are considered a particularly important part of the modern urban environment (Townsend, 2000). They are also important in bridging the gap between rural communities and assist in connecting migrant workers with their families back home (e.g. Thompson, 2009). They provide the ability for people to be constantly available and this has had various revolutionary impacts on contemporary life, not the least of which is the breaching of the line between people being on duty and not on duty (Gant & Kiesler, 2002).

Cambodian consumers are not alone, then, in exhibiting considerable interest in obtaining their own mobile telephones and using them for keeping in contact with friends, family members and work colleagues and, increasingly, to use data services to obtain news in a country where censorship persists, as well as for entertainment and educational purposes. The use of the internet depends on various factors, including personality traits (Hills & Argyle, 2003) and market conditions. The idea that telecommunications form a natural monopoly that should be administered by the state has become somewhat old-fashioned. Instead, competition has been embraced in most countries (Laffont & Tirole, 2001), including Cambodia (see Table 1 below), which has often led to some improvements in access and pricing.

Table 1: Existing Operators with Licenses both in Operations and Non-Operations

Mobile Phone Existing Operators in Operations/Services

1. Mfone (Thai/Singapore)
2. Mobitel (Sweden)
3. Meffone (Vietnam)
4. Hello (Malaysia)
5. Smart
6. QB (Saudi Arabia)
7. Beeline (Russia)
8. NTT (Japan)
9. EMAXX (Australia)
10. SKT (South Korea Telecom)
11. Creig Telecom (USA)

It is competition that has enabled the increase in the range of services provided to users of mobile telephones. In the case of Cambodia, service providers have benefited from a base in Thailand, which has a much larger population and a higher level of economic development and that represents the ability for economies of scope and scale. To protect consumers and ensure a suitable level of competition in the market, a suitably resourced and skilled telecommunications regulator should be established (Waverman&Sirel, 1997). However, it is evident from observation of the industry that such a regulator is not acting appropriately and competition is rampant and cutthroat in nature.

Research Methodology

The data has been collected from both the primary and the secondary sources. The primary data has been collected from the interviews mobile phone subscribers. The secondary data will be sought from the text books, journals, magazines, newspaper and internet.

For the purpose of this study, the locations of the study are the cities representing Central, North and West area; namely Phnom Penh, Siem Reap and Battambang provinces. One hundred questionnaires were completed at each of these locations. The sampling size is limited to 400 persons. This is determined by the Yamane equation which demonstrates that for a 95% level of confidence and a population of many thousands or millions of possible observations, a sample of 400 will suffice, as long as precautions are taken to ensure that there is sufficient heterogeneity exists within the sample and some nod towards stratification has taken place.

The sample was collected by segmenting the mobile phone subscribers on basis qualifications of sex, age, marital status, education, occupation, monthly income and family size. The questionnaire was created in English and verified by consultation with independent experts in the field before being translated into Khmer and then given a pilot test, to discover whether any issues relating to comprehensibility or question ordering existed. No such problems were found to exist and so the survey went ahead as planned. There is no reason to think that a significant problem exists with respect to non-response bias but it is true that, as the following chapter demonstrates, the sample obtained has a significantly different demographic profile to that of the population as a whole.

Questionnaire Development

The research team has a number of years of experience in the telecommunications market and in working in Cambodia (as well as in two other Mekong Region countries, Thailand and Myanmar) and spent some time making ethnographic observations of customers in the market in Cambodia. These observations were used to design an initial questionnaire and

to frame the hypotheses outlined in the first chapter. The questionnaire was subsequently examined by qualified experts for the purpose of validation and then translated from the original language of composition, English, into Khmer. This was followed by a pilot test to determine whether there would be any problems with understanding and answering the questions – in fact, no such problems were identified.

Once the questionnaires had been collected, using interception techniques in public spaces, they were coded and then entered into the computer spreadsheet programme (SPSS) prior to checking and then the statistical analysis, which included descriptive statistics, as well as cross-tabulations (chi-squared tests), one way analysis of variance (ANOVA) and linear regression.

Quantitative research of the type described in this thesis is commonly used to identify answers to the research objectives specified previously. Since little information about the telecommunications market in Cambodia currently exists, the research is partly exploratory in nature. However, since the telecommunications industry is much more well-developed elsewhere, not least in neighbouring Thailand, it is possible to create and polish a research instrument based on knowledge of that existing development. This means that it is possible to make some predictions about how the industry will develop and change over the course of time.

Findings

A total of 400 questionnaires were completed by respondents. This number was selected with reference to the Yamane equation, which indicates that, for a large sample size (e.g. the population of a country) and a 95% level of confidence, a total of 400 questionnaires will be sufficient (Yamane, 1967:866).

Four locations were selected for research, which were the four principal urban developments in the country: Phnom Penh; Battambang; Siem Reap and Sihanoukville. Respondents were randomly selected in retail and public space within the cities concerned and care was taken to try to promote heterogeneity in the sample by choosing both women and men at a variety of ages. For the sake of convenience and convention, only two gender categories were offered. A slight majority of the sample was male (54.5%, n = 400) and 10.8% were aged 16-20, 52.3% were between 21-30, 19.8% were aged 31-40 and the remaining 17.1% were 41+ (n = 400). Among the sample overall (n = 400), 33.0% had high school education, 41.8% had an undergraduate degree, 2.8% had a graduate level degree, 3.5% had no education at all and the remaining 19.0% had a different level of education (e.g. primary school level or partial high school). In terms of occupation, 32.3% of the

sample (n = 400) were students, 19.0% were employees, 34.8% had their own business or were own account workers, 5.5% were government workers and the remaining 8.5% were in the other category. There were no significant differences between the genders in terms of age or education but there was a significant difference in terms of occupation (χ^2 test, $p = 0.000^{**}$, $n = 400$), in which women respondents were more likely to be students than men but less likely to be employees or government officers. In short, therefore, the sample appears to have captured quite a good representation of contemporary urban Cambodia, with a young age profile, with above average levels of education and, presumably, disposable income.

The great majority of the people (98.3%, $n = 400$) used a mobile telephone and the average expenditure per month was less than US\$2 for 18.5%, \$2-5 for 48.3%, \$5-10 for 13.3% and more than \$10 for 22.0% ($n = 400$).

Further analysis indicated that there were statistically significant distribution in terms of amount of money spent and age, occupation and education (χ^2 test, $p = 0.000^{**}$, $n = 400$ in both cases). As might be expected, older people and those with more education and higher-paying occupations

tended to spend more than the others.

Respondents were asked how many sim cards they had, since it had been observed previously that many consumers seemed to have more than one and that they would switch them around in order to take advantage of short-term price changes or promotions. The research confirmed this as only 47.8% had one sim card (or zero) and 43.0% had 2, 7.0% had 3, 1.8% had 4 and 0.5% had 5 ($n = 400$).

However, in this case, further analysis revealed that there were no statistically significant differences in terms of gender, age, occupation and education. It would appear, therefore, that a factor other than possession of money that determines this form of behaviour. Additional analysis indicated (χ^2 test, $p = 0.001^{**}$, $n = 400$) that people with more than one sim card were more likely to spend more on mobile telephony but this was not automatically the case.

The sim card is most commonly bought (88.3%, $n = 400$) rather than obtained for free (11.3% and 0.5% other). The sim card primarily used by each respondent is shown in the table below.

Table 2: Primary Sim Card Used; **source:** Original Research ($n = 400$).

Name	%age
Cell Card	23.3
Mfone	11.3
Hello	20.3
Meffone	34.5
Beeline	2.8
Smart	8.0

Respondents were then asked to rank each type of sim card in terms of various criteria that the initial qualitative research had suggested was important. These were coverage area, indoor signal, call charge, promotion, friends and families group and mobile data. Of course, not all respondents could give opinions on these criteria for all

types of sim card based on personal knowledge and instead may be answering in terms of image or perception. The results have been analysed to provide a mean ranking score, with the lower scores (ranging from 1 to 6) indicating a more preferable result. This provided the following results.

Table 3: Relative Importance of Different Mobile Telephone Features; **source:** Original Research ($n = 400$).

Variable	Mean Score	Ranking (1-6)	Standard Deviation
Coverage area	2.50	2	1.405
Indoor signal	3.69	5	1.429
Call charge	3.02	3	1.188

Promotion	3.34	4	1.435
Friends and families	2.34	1	1.580
Mobile Data	4.69	6	1.778

It is evident from these figures that it is the ability to be able to communicate with friends and family, followed by coverage area. This is an aspect of what has been termed a 'network externality' (Liebowitz & Margolis, 1994). That is, customers of a particular network gain value when the network is large and, in this case in particular, if it also contains various friends and family members important to the individuals concerned. This makes large networks very popular for new customers and small networks very unpopular. This is evident in the wider world, since enormous social networks can suddenly seem to explode when a sufficiently large and critical mass of people have already joined, as has happened with Facebook and Twitter, for example. However, achieving success does not mean that the success will automatically be sustained. MySpace, for example, indicates how a social network will achieve a

very large number of users through the competitive advantages of network externalities and specialized technology. When better technology became available elsewhere, early adopters of that technology switched to another network and the dynamic of network externalities rapidly changed (Rushe, 2011).

Behind the two main factors is a group of three variables which are of medium importance: call charge, indoor signal and promotion. The least important variable in this battery is data services. As will be seen later, these are not used by a majority of the sample.

By cross-tabulating the preferred sim card with the importance of different features of service, it is possible to identify different patterns of satisfaction among customers, as the following table indicates.

Table 4: Mean Importance of Product Features by Preferred Sim Card; source: Original Research

Brand	Coverage Area	Indoor Signal	Call Charge	Promotion	Friends and Families Group	Mobile Data	N
Cellcard	2.41	3.54	3.28	3.68	2.63	4.61	93
Mfone	2.58	3.42	2.96	3.60	2.40	4.53	45
Hello	2.47	3.77	2.84	3.16	2.36	4.79	81
Metfone	2.45	3.72	3.21	3.22	2.16	4.79	138
Beeline	2.45	3.27	3.36	2.27	2.27	4.36	11
Smart	2.97	4.34	2.94	3.31	2.13	4.50	32
N	400	400	400	400	400	400	
P	0.012*	0.009**	0.004**	0.000**	0.063	0.244	

Four of the six variables tested in this case have yielded statistically significant results and this indicates that attention should be paid to the results. The managers of each of these brands can examine the results and consider whether those factors considered more important by their customers are in fact the features to which most attention has been given.

Respondents were asked about possible information sources

with respect to mobile telephones. These included friends, family, leaflets at dealers, newspapers, radio, television, call centres and customer services. This set of possible sources was established by the initial qualitative research and the ethnographic observation of the industry in action. Since respondents were asked to rank each source in terms of importance from 1 (very high) to 8 (very low), it has been possible to calculate an average ranking, as demonstrated in the table below.

Table 5: *Importance of Different Information Sources for Mobile Telephone Services; source:Original Research (n = 400).*

Source	Mean Ranking	Position
Friends	3.01	2
Family	3.74	3
Leaflets at Dealer	3.75	4
Newspapers	4.88	6
Radio	3.89	5
Television	2.78	1
Call Centres	5.16	7
Customer Service	5.62	8

It is evident from these results that television is the most important source of information, followed by friends and family. Since call centres and customer services are ranked so poorly, it appears either that respondents do not trust these sources or else that they do not have much access to them or interaction with them. By contrast, leaflets at dealers are ranked comparatively highly and so these places may be seen as more objective and reliable. These are clear implications for the ways in which marketing and promotion

of mobile telephone services should be conducted here.

Further analysis of these results revealed that there were very few, if any, statistically significant results based on gender, age or education in this context. However, occupation repeatedly showed statistically significant results when analysed using first χ^2 tests and then One Way Analysis of Variance (ANOVA) tests, as shown below.

Table 6: *One Way Analysis of Variance of Information Sources with Occupation; source:Original research (n = 400).*

Variable	F Score	Significance Level
Friends	2.322	0.056
Family	4.854	0.001**
Leaflets at Dealers	4.283	0.002**
Newspapers	6.013	0.000**
Radio	3.419	0.009**
Television	2.695	0.031*
Call Centre	4.490	0.001**
Customer Service	6.773	0.000**

These results indicate that means are significantly different for different categories of the occupation variable and so careful attention should be paid to the ways in which the occupational groups interact with and consume information sources. To some extent, it will be possible to segment the possible information sources with respect to different groups of respondents. For example, consumption of television programmes varies as people change their lifestyles. On the other hand there is only limited ability of local players to affect television advertising, product placement and scheduling as a large proportion is imported from external sources.

Respondents were invited to rank the service provided with a five point Likert-type scale. A five-point scale was selected because experience suggests that asking members of the general public to provide an opinion on a subject with which they are not highly engaged can provide spurious results. In any case, the five point scale is rather traditional in management research. It allows for the calculation of an average score which means that variables within a battery of variables may be compared directly with each other. The results of this can be seen in the table below.

Table 7: Mean Scores for Various Service Providers; source:Original Research (n = 400).

Service	Mean Score (1 low to 5 high)	Ranking	Standard Deviation
Mobitel	4.00	1	0.701
Metfone	3.83	2	0.759
Mfone	3.46	5	0.717
Hello	3.50	4	0.746
Smart	3.64	3	0.705
Beeline	3.38	6	0.711
QB	3.02	7	0.802

The range of scores is comparatively narrow, from a low of 3.02 for QB to a high of 4.00 for Mobitel. Further, the standard deviations range from only 0.701 to 0.802 and this indicates that there was comparatively little variation of opinion among the sample as a whole. Overall, then, the results vary from fair to poor and no service provider is considered to be very good and none considered weak or very weak. There is scope, therefore, for a provider who can consistently deliver excellent service to achieve a market leadership position which can then be used to develop brand loyalty. To date, excessive volatility in the marketplace has acted to prevent brand loyalty among consumers and, as the results for the number of sim cards demonstrates, they have developed butterfly characteristics, flitting from one product to another in response to minute changes in the environment.

Further analysis of these results by demographic variables did not reveal any coherent patterns and so this is not included here.

Respondents were next asked a series of questions about data services, which includes use of the internet and other value added services. First, it was found that the majority (58.3%) of respondents used short message services (SMS) (n = 400). Usage of SMS varied significantly by occupation (χ^2 test, $p = 0.000^{**}$, $n = 400$) and by education level achieved (χ^2 test, $p = 0.000^{**}$, $n = 400$). In this case, students and employees were much more likely to use SMS than others and so too were those with a university degree. This might result from the different ways in which people prefer to communicate with each other (i.e. it is not convenient to call one's friends in class or while working) or it might relate to a literacy issue, in which some people are not so confident in using written forms of language as other people.

The use of mobile internet services was not as popular as was that of SMS. Only 41.3% of respondents reported that they used mobile internet service (n = 400). These results were statistically significant with respect to several demographic variables, as the following table indicates.

Table 8: Demographic Variable Analysis of Use of Mobile Internet Services; source:Original Research (n = 400).

Variable	P	N	Effect
Gender	0.025*	400	Men are much more likely to used mobile internet services than women
Occupation	0.000**	400	Students and, particularly, employees are much more likely to use mobile internet services than people in other employment categories
Education**	0.000**	400	The higher the level of education the respondent has received, the more likely s/he is to use mobile internet services

Respondents were also asked whether they thought mobile internet services were important and 59.3% answered that they did (n = 400). It is not surprising that there were close

and statistically significant relationships between those who considered mobile internet use to be important and those who actually used it. This suggests that, for short-term

market share increase, marketers should focus on those segments which tend to value the use of mobile internet services but currently do not do so or cannot afford so to do. In the longer term, market development of those who do not yet value mobile internet services through education and stressing the benefits to be enjoyed from their use will enable new segments of the market to be obtained and exploited.

Of those who do use mobile internet services ($n = 165$), most (106 or 64.2%) use the service every day, which is considered to be a suitable working definition for regular usage. Again, occupation and education variables produce statistically significant results in this regard (χ^2 test, $p = 0.000^{**}$, $n = 400$ in both cases). Employees, in particular, are more likely to use the service on a daily basis (presumably they have more money to do so than students, who would need to ration their use or else have access to the internet through their educational institutions). Those with degrees are also more likely to be daily users and, again, there is likely to be some correlation between education level received and present employment category.

Internet users were more likely to use it for surfing (53.9%) than for email (46.1%, $n = 165$) and, for those who use it every day, 50.9% do so mostly for surfing and 48.1% for email ($n = 106$).

Hypothesis Testing

As described previously, a set of hypotheses was created as a means of interrogating the data and structuring the exploration of the subject. These hypotheses are as described below, along with their null forms. The null hypothesis (i.e. that there is no relationship between the two (sets of) variables) is tested and, if a statistically significant result is obtained (at the 95% confidence level), then the null hypothesis can be rejected and, according to the logical positivist method favoured in this research, that means the original hypothesis is supported.

H1: demographic factors have an effect on mobile telephone use

H2: mobile telephone usage is related to product features

H3: mobile telephone usage is related to information sources

H4: there is a relationship between demographic factors and importance of product features

H5: there is a relationship between demographic factors and information sources

These hypotheses may be evaluated by means of χ^2 tests. The results of which are shown in the following tables, which include the p scores in each case. As is conventional, one asterisk is used to denote a result that is statistically significant (i.e. $p \leq 0.05$) and two asterisks used to denote results that are highly significant (i.e. $p \leq 0.01$).

Table 9: Testing Sub-Hypotheses of Hypothesis 1; source: Original research ($n = 400$)

Variable	Spending on Mobile Telephones	Preferred Service	Number of Sim Cards
Gender	0.047*	0.186	0.664
Age	0.002**	0.007**	0.310
Education	0.000**	0.000**	0.318
Occupation	0.000**	0.000**	0.470

It is evident that a null hypothesis based on spending alone would be dismissed but one based on number of sim cards could not be. However, in the majority of cases, 7 out of 12,

significant results have been observed and so, it is concluded that demographic factors have a relationship with mobile telephone use for this sample of Cambodian respondents.

Table 10: *Testing Sub-Hypotheses of Hypothesis 2; source: Original Research (n = 400)*

Variable	Spending on Mobile Telephones	Preferred Service	Number of Sim Cards
Coverage area	0.256	0.000**	0.047*
Indoor signal	0.001**	0.161	0.006**
Call charges	0.035*	0.032*	0.028*
Promotion	0.007**	0.003**	0.712
Friends and families	0.034*	0.304	0.000**
Mobile data services	0.282	0.181	0.001**

It is evident that statistically significant results have been found in 12 of the 18 tests conducted for the testing of hypothesis 2. It is concluded, therefore, that the null hypothesis can be rejected and there is support for the

hypothesis that there is a relationship between product features and the use of mobile telephone services in this sample.

Table 11: *Testing Sub-Hypotheses of Hypothesis 3; source: Original Research (n = 400).*

Variable	Spending on Mobile Telephones	Preferred Service	Number of Sim Cards
Friends	0.004**	0.067	0.488
Family	0.012*	0.087	0.017*
Leaflets at distributors	0.000**	0.051	0.198
Newspapers	0.001**	0.426	0.164
Radio	0.120	0.128	0.014*
Television	0.017*	0.408	0.019*
Call centres	0.111	0.022*	0.476
Customer service	0.005**	0.084	0.313

Evaluation of these results reveals that there are statistically significant results in 10 out the 24 tests conducted for this hypothesis. This, it is concluded, is insufficient to reject the

null hypothesis overall and so it can only be concluded that there is no relationship between the use of mobile telephone services and information sources.

Table 12: *Testing Sub-Hypotheses of Hypothesis 4; source: Original Research (n = 400).*

Variable	Gender	Age	Education	Occupation
Coverage area	0.166	0.191	0.106	0.131
Indoor signal	0.615	0.064	0.000**	0.000**
Call charges	0.636	0.619	0.062	0.050*
Promotion	0.804	0.641	0.001**	0.000**
Friends and families	0.460	0.036*	0.905	0.008**
Mobile data services	0.279	0.291	0.060	0.000**

Evaluation of the results indicates that only 6 out of 24 tests conducted for this analysis produced statistically significant results. Consequently, the null hypothesis cannot be rejected and it is, therefore, assumed that there is no relationship

between product features and demographic factors. However, as previous sections will have indicated, occupation is the variable that is best used to explore marketing strategies and development for the future.

Table 13: *Testing Sub-Hypotheses of Hypothesis 5, source: Original Research (n = 400).*

Variable	Gender	Age	Education	Occupation
Friends	0.419	0.129	0.272	0.006**
Family	0.094	0.938	0.133	0.005**
Leaflets at distributors	0.991	0.608	0.016*	0.000**
Newspapers	0.555	0.626	0.307	0.059
Radio	0.878	0.938	0.366	0.005**
Television	0.903	0.887	0.524	0.183
Customer Service	0.119	0.948	0.446	0.006**

It is evident from analysis of these results that only 8 out of 32 tests conducted resulted in statistically significant results. Consequently, the null hypothesis overall cannot be rejected and so it must be concluded that there is no relationship between demographic varieties and information sources.

The null hypotheses in the first two cases were rejected – so there a relationship between mobile telephone use and demographic factors and between product features and mobile telephone use – but not for the other three hypotheses. However, it is also evident that two varieties in particular are strongly influential in explaining actions and behaviour of respondents and these are mean monthly expenditure on mobile telephone services and occupation. There is an epistemological issue here with respect to identifying causes and symptoms in that the former variable would appear to be a symptom and the second a cause. However, it is difficult to be certain about this with the current dataset. One of the recommendations for future research will be to investigate this issue and try to establish the train of causation, possibly through structural equation modelling (SEM).

One way of investigating this issue is through linear regression. Since it is posited that spending on mobile telephones (monthly mean) is an important means of understanding the data, it is possible to set a test whereby variables might be considered to contribute to this variable. This can be approached, first, through considering the influence of demographic factors on expenditure:

Gender + age + education + occupation + intercept => monthly expenditure on mobile telephone services

This procedure resulted in an inconsequential result, with the demographic factors explaining only very small amounts of variance in the dependent variable. It is recommended, therefore, that additional research be undertaken.

Discussion

Statistical analysis of partially exploratory research is not designed or intended to be able to reveal all the issues relevant to a study of issues such as those described here. Nevertheless, it has been found that there are certain influential variables which go a long way towards explaining consumer behaviour in this context. It was noted below that there is a great deal of volatility within the market and this has the effect of the network externality. As explained elsewhere, this situation has, to a considerable extent, been caused by government actions which have promoted one view of the marketplace (and, hence, stimulated various forms of behaviour by market participants) and then taken another course of action, with deleterious effects on investment and production decisions whereby made by existing investors. Eventually, this will result in a more or less stable environment as there will be some investors who will withdraw from the environment and this will simplify the situation for those willing to remain.

Recently, it has become increasingly apparent that previous models of overseas investment, which have featured extensive capital investment and heavy commitment to the overseas market have become unsustainable because of changes in the environment which have brought about low cost communications and travel and meant that opening an overseas office (which has been, of course, facilitated by reduction in the bureaucratic processes necessary to open an overseas office by most states) has become much easier and less expensive than before. This has also meant that withdrawing from an overseas market no longer represents a defeat and definite withdrawal (Walsh, 2010). Indeed, it means that a low-cost tactical withdrawal can be followed by re-investment at a later date and this can recur again and again.

Foreign investors in a country nearly always complain about the situation in which they find themselves and have a lengthy list of changes they would make to improve their business environment. This is not surprising since, in addition to the stressful aspects of living and working overseas, executives are under pressure from their headquarters and their shareholders if any to return profits. They may also find it difficult to make their home office understand the situation they face. In such circumstances, then, it is not surprising that executives find many actions of the government to be insufficient or even to hamper their chances of commercial success. Nevertheless there are certain issues emerging from the interviews conducted that should be considered here.

The first and perhaps most notable issue concerns the absence of regulations in the marketplace. While the government as proclaimed the market open to all-comers, in fact it has simply created a vacuum in which no laws or regulations currently exist but which might exist in the future. This has led to a situation of uncertainty among the investors, who argue that although they can currently do pretty much anything they want from a business perspective, they can be reluctant to sanction significant investment because they fear that it will in due course fall foul of new regulations. The absence of regulation also, somewhat paradoxically, does not always lead to transparency in decision-making by authorities. Executives regularly spoke of the corrupt practices that they felt it necessary for them to perform in order to achieve their various objectives. They wondered what other benefits and bonuses rival firms would be able to obtain by such means and they speculated about political and diplomatic issues that might have an impact. In particular, it is difficult to ignore the presence of the rising power of China and the relevance of the often problematic relationship with Vietnam. It was certainly felt that companies from outside the region would find it very difficult to compete.

A particular lack is the absence of an effective telecommunications regulator, which would operate with a specific, rational and public set of regulations concerning competition and governance issues in the market. Having a regulator of this sort is standard practice in more developed economies and it helps with determining complex issues relating to interconnectivity and its fees and with new mobile data services. Perhaps the vital feature of such a regulator would be the constraint of arbitrary actions by officials and the presentation of a flexible approach to a competitive and dynamic market (cf. Levy & Spiller, 1994).

By opening the market without providing it with regulation, the Cambodian government has contributed to the excessive competition in the marketplace that has given rise to the high level of volatility there and the difficulties, as a result, of achieving any level of profitability. Investors thought there would be casualties in the future and this is indeed what has happened. The importance for respondents in the quantitative survey of the network externality feature combined with the inability of any company to establish a stable and growing group of brand loyal customers has meant a lower level of consumer satisfaction and that has served to reduce loyalty even further.

Overall, then, investors were wary of future events and this concern was particularly noticeable when it came to future investments in mobile data services and next generation services generally. Average revenue per user (ARPU), which is considered to be the critical measure in the industry, remained stubbornly low and prospects for increasing it were not very bright. Many of the investors wondered whether their companies would be among those required to divest and, if this were the case, how or whether they would return to the country in the future.

Conclusion

This paper has attempted to explore the nature of the consumer behaviour of Cambodian people who use mobile telecommunications and data services during a situation of hyper-competition. Even though most providers have responded to this situation by resorting to continual price competitiveness, results show that consumers have been more interested in the benefits of network externalities. Companies able to provide such externalities are likely to be able to claim an early mover advantage which they could then exploit to build loyalty and lock out competitors. At the time of research, more of the companies involved had been able to secure that advantage and continue to be locked in cut-throat competition that will, presumably, be resolved by discovering which company has the deepest pockets and can, therefore, drive out rivals while absorbing losses incurred. During this process, convenient personal relationships with government officials represent an often significant competitive advantage because high-level

officials have had discretionary powers to waive taxes or license fees and other, similar advantages. These relationships can, it is believed, be of critical importance. However, it is evident that they represent a form of market failure because it has encouraged service providers to waste money in reducing costs for consumers (causing losses to providers concerned) when that is not their primary concern.

Clearly, there is a need for subsequent visits to the same market to try to understand the changes in consumer behaviour over the course of time and in response to changes in market conditions. When it comes to the consideration of limitations, plainly the constraints of time and space are most evident. There is no reason to believe that non-response bias exists or that respondents had any reason to be conservative in telling the truth openly about their opinions.

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