Determining Suitable Monetization Approaches for Mobile Phone Applications within the Smart Phones Industry

by

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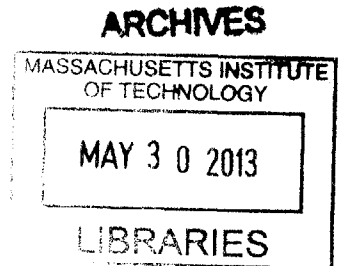
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Abstract

Smart Phone Ecosystems revolve around developers, applications and users. One of Nokia's own platforms, the S40, targets the low end of the smart phone market. Nokia's Content & Ecosystem Sourcing group is constantly looking for ways to help its developers of the S40 platform create more successful applications. This paper attempts to do so by examining the different monetization approaches for different application categories across all regions. While paid applications still constitute a majority of the revenue generating applications, the S40 marketplace has experienced a significant increase in the number of Try & Buy and In-App-Purchase applications in recent years. Try & Buy has been proven to be a dominant force in gaming categories, albeit with some differences across the regions. In-App-Purchase has also shown promise within games and some other categories, but the acceptance of this monetization approach varies greatly by region. Two new metrics, Revenue per Product View and Downloads per Product View, are proposed to evaluate application performance independent of download volume and monetization approach. Utilizing these new metrics, we found the applications utilize the Try & Buy approach to perform equally as well, if not better than, the applications utilizing the paid approach. The new metrics will enable the group to track the performance of applications from a holistic perspective and more easily identify those developers who have created successful applications. Additionally, the Downloads per Product View metric enables tracking of the reach of the applications, an indicator of the health of the overall ecosystem. The specific knowledge will enable Nokia's Content & Ecosystem Sourcing group to provide more input to developers on monetization approaches during the early stages of development, thereby increasing their chances of launching successful applications, ultimately helping the entire S40 ecosystem.

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Acknowledgments

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1 Introduction

1.1 Overview

As hardware technology advanced, cell phone makers sought to incorporate the advancements to provide more features for the consumers. Cell phones began to have a plethora of functionalities on top of calling and texting, starting with the simplest games (Snake) and later on evolving to contain full navigation packages and sophisticated software to provide information on a variety of topics. As the market grew, it became apparent that developers of these mobile software, or applications, played an increasingly important role. Consumers were attracted to platforms with large amounts of applications available, and the developers were attracted to platforms with a lot of users. The interactions between the device owner of the platform, the developers and the consumers shaped the smart phone platforms that we see today.

1.2 Nokia and Nokia Platforms

1.2.1 Company History

Nokia began focusing on the cell phone market in 1992, following a strategic decision to concentrate solely in telecommunications. The subsequent surge in popularity of the mobile phones created enormous demand across the world, and Nokia took advantage through developing products customers wanted and streamlining their logistics and supply chain in order to meet the demand. At the peak, Nokia dominated the market with 40% of the world wide mobile phone sales and more than 50% of the industry profits in 2007. It was one of the main backers behind the Symbian platform that was utilized by all Nokia smartphones for a long time, and took advantage of the scale to keep costs down.

However, competitors came out with new products that won consumers over, beginning with the Apple's iPhone in 2007. Other companies, such as Samsung, LG, Motorola and HTC, took advantage of Google's free sourced Android mobile operating system to launch their own series of smart phones. The

intense competition has resulted in a significant erosion of Nokia's market share, especially within the lucrative smart phone segment.

Nokia changed leadership teams in Sept 2010 and the new CEO Stephen Elop communicated a strategic change in adopting the Windows Phone platform for the high end smart phone segment while focusing on the S40 platform on the low end. As a result, the Asha line up, which includes the newly released Asha 200/201, 302, 303 and 311 becomes part of Nokia's core strategy to grow.

1.2.2   Windows Phone and Asha S40 Platforms

Despite Nokia's commitment to only Windows Phone for its high end products, the Windows Phone platform is not wholly owned by Nokia. It is owned by Microsoft and there are many other hardware makers who are also creating devices for the Windows Phone. Both Microsoft and Nokia have invested heavily in an effort to create additional applications to encourage users to adopt the platform.

The S40 platform, however, is wholly owned by Nokia and Nokia manages direct relationships with the developers for the platform. Nokia is the sole investor in the platform and owns all of the relevant data surrounding application performance, including metrics surrounding application views, downloads, and revenue data.

1.2.3   Applications and Ecosystems

The Nokia platform is one of the oldest platforms in the mobile market. It began with the Symbian platform, allowing developers to create applications for Symbian phones. Rebranded from Ovi to Nokia in 2011, the platform enabled developers to make applications available to the users of Nokia devices (excluding those with the new Lumia Windows Phone devices).

1.2.4   Competitive Landscape of Various Mobile Ecosystems

Currently within the marketplace, several platforms dominate the majority of the market share. On the application front at the time of writing, Apple's iOS platform, developed and wholly owned by Apple, has more than 700,000 applications for mobile devices, along with more than 275,000 applications for its

tablet. The Android platform, backed by Google, is catching up fast with 600,000 plus applications. Meanwhile, the Windows Marketplace, supported by Microsoft, recently surpassed the 120,000 application count mark, surpassing RIM's BlackBerry App World's 60,000 application count. Nokia Store also has well over 110,000 applications, but due to the various phone platforms it supports (Symbian, S40, and MeeGo) the true set of applications available for any phone is much smaller.

With regard to phones and applications, Nokia operates in a multi-sided platform. A multi-sided platform is a market where there are distinct groups for which the network effects are extremely strong. eBay, for example, is a two-sided platform. The two groups, the buyers and sellers, are both attracted to the platform because of the high number of existing sellers and buyers, respectively, already on the platform. As such, the network effects of eBay is extremely strong in attracting new buyers/sellers and retaining existing buyers/sellers. Similarly, Nokia's phone business has expanded past a simple hardware to user model. Users now care about more than how well the hardware was built, they also care about the applications that are available for the phone, as well as other users they can interact with through the platform. In this case we have a multi-sided platform, with Nokia's hardware, application developers, applications and users all affecting one another. The applications and application developers are attracted by a large user base, as they are looking to reach a wide audience with the same amount of effort, while users are looking for not only good hardware for the phones but also the high number of existing applications available as well as the prospects of new and upcoming applications being developed for the platform. The two-sided platform has been studied extensively by Eisenmann, Parker and Van Alstyne in their paper published in the Harvard Business Review. One of the conclusions reached by the authors is that these platforms possess winner-take-all dynamics, and with Android and iOS already in drivers' seats, Nokia faces a clear uphill battle to gain users and market share.

1.3   Research Methodology

As mentioned previously, Nokia Store has well over 110,000 applications. Within these, many were developed more than a few years ago, a long time in the mobile application industry. If the developer has not kept the application up to date, many of these applications become obsolete. In order not to examine obsolete applications, only applications with activities within the past 18 months were considered.

As we narrowed down to active applications, we still had a substantial list of over 14,000 active free applications and over 9,000 active paid applications. Two of the other monetization methods, Try & Buy and IAP, were more recent developments in the Nokia Store and had only 800 and 150 applications respectively. As such, random samples of 300 free and 300 paid applications were drawn from the active application population for analysis. The sample application category breakdowns were then compared to the population application category breakdowns to ensure proper representation.

The sample data from free and paid applications were then combined and analyzed with all available IAP and Try & Buy data due to the small population sizes of these monetization approaches. The combined data set was then evaluated by category, by region, and also by monetization method to determine key insights regarding the effectiveness of the different approaches in different regions for specific categories of applications.

The actual geographical regions have been anonymized as Regions A, B, C and D in order to preserve the confidentiality of the Nokia data used in the thesis. For all of the graphs with regional data, the region order has been preserved in order to ensure consistent representation of the data. Monetization approaches and application categories have not been altered.

Due to the price differential that exists between the different regions, the revenue numbers were normalized by assigning equal weighting to the total amount of revenue per purchases in the region. This allows for comparisons that largely eliminates the effect of price differences.

The normalized revenues per purchases are compared by category across the different regions to determine effective or ineffective methods of monetization. These key insights provide basis for recommendation to the sourcing department. Additionally, these also provide data points of consumer willingness to pay for applications.

1.4 Thesis Outline

The thesis will go over the current industry and competitive landscape for the mobile phone market and the ecosystems surrounding mobile phone applications. It will then delve into the different monetization approaches currently utilized by developers in the industry, and analyze selections of applications utilizing these approaches. The analysis will be broken down by categories of applications utilizing these metrics, as well as the geographical regions that these applications have been made available for. The willingness to pay for the different regions is compared to one another to draw some assessments on the prioritizing the market deployment given constraint resources.

The application download flow is explained and a model for application downloads over its lifespan is proposed and the key drivers discussed. The assumptions and limitations of the models will be explored as well as the insights derived from the model to drive application download growth.

General findings as well as specific implications from both management and operational perspectives for Nokia will be presented. Following the implications, recommendations for both Nokia and future areas of research will be provided, and ends with a conclusion of the important findings.

2 Current Monetization Approaches within the Smart Phone Industry

There are many incentives for developers to create applications. Many of the first applications were created because developers themselves were looking for an easier way to accomplish a task, and decided that their product could prove beneficial to other users too. As the ecosystems evolved and

matured, others saw the opportunity to launch a hit app as an avenue of self-promotion and marketing. One of the major incentives present for application developers is the potential revenue that the applications can bring. Another incentive was for developers to prove themselves in an open market hoping to get noticed, which could lead to being hired or even the entire company acquired.

The current market uses four general approaches towards generating revenue for the developers. There are some additional variations based upon having multiple characteristics, but the number of these applications is relatively small and will not be considered in this study.

The monetization approaches are: Free (ad-supported), Paid, Try & Buy, and In-App-Purchase (IAP).

2.1 Monetization Approach – Free

The free applications represent a significant chunk of the overall application market. These applications encompass a variety of categories, from simple calculator/timers to sophisticated software trying to keep track of expenses to entertainment apps that create all sorts of noises.

Some of the free applications do not have any ads, while some has built-in ads for the user to click or press through in order to generate revenue for the developer. The online/mobile advertising market is potentially an interesting thesis topic on its own, and it has been extensively studied by Teh in his paper and also by D'Vorkin in an article in Forbes. As noted by both authors' papers, the variation in ad performance depends on a great deal of other factors. As the topic has been studied extensively in other papers, we will not be studying the free monetization approach in great detail here.

2.2 Monetization Approach – Paid

Paid applications also make up a significant portion of the overall application market. The paid monetization approach generates the bulk of revenues for developers. However, their effectiveness varies

across regions as well as categories, and this section will present the findings of the most effective regions for each application category.

2.2.1 Paid Applications
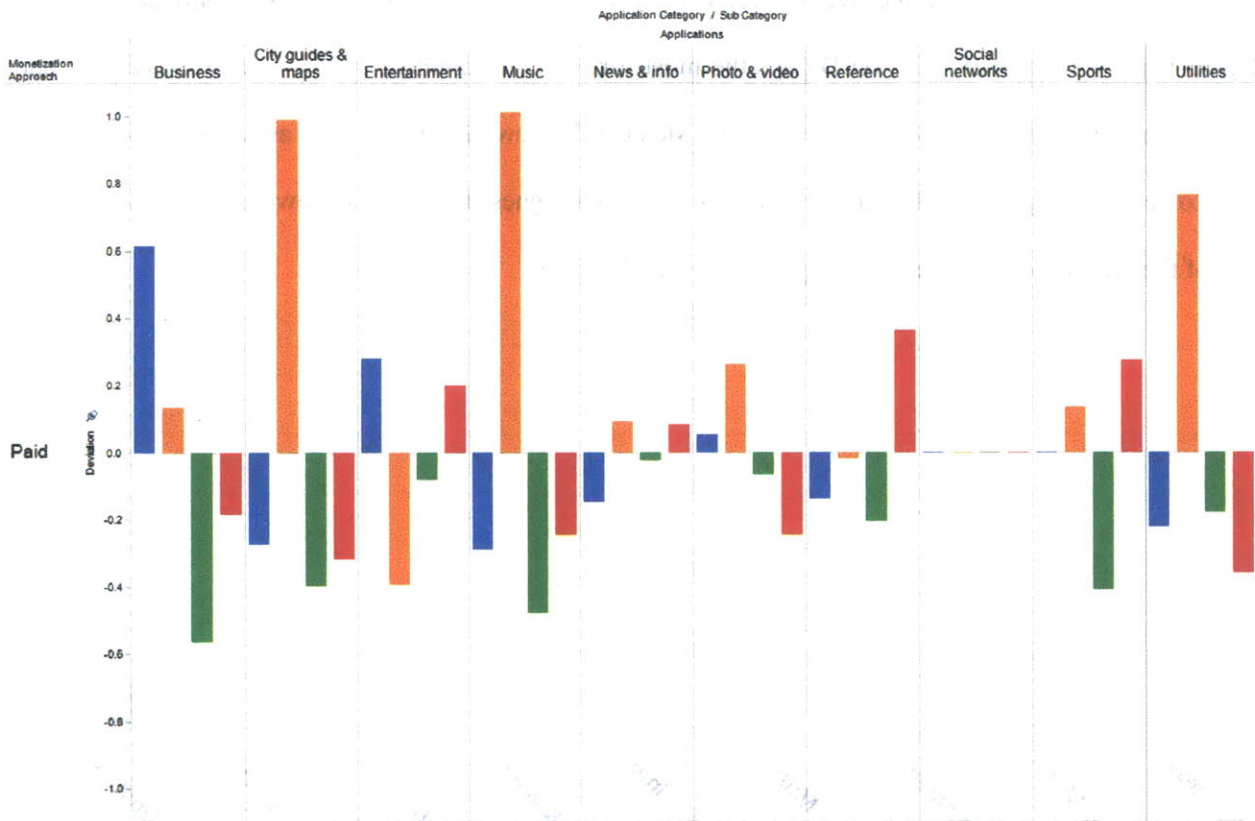
Figure 1 Paid Application Price Difference by Category

Figure 1 shows the regional willingness to pay for applications in these categories. The values were produced through comparing the different revenues generated by the applications by region, and then divided the total revenue by volume of downloads for all apps, generating the average price paid per app download. Then, the data were normalized by the lowest regional average price paid (set equal to one), with the remaining regions reflecting a multiplicative factor greater than 1. This allows us to eliminate some of the potential pricing effects due to regional income differences. The normalized values were then compared to the average of the four regions and shown in the figure above. The same methodology

was used for all subsequent analysis, i.e. the same multiplicative factors per region are held constant throughout the analysis. Some of the highlights of the regional differences include Region A paying the most (62% above average) for business applications and region C paying the least (56% below average). Region B pays almost twice the average for City Guides & Maps as well as music applications while Region C pays about half. Region D pays the most for reference applications (36% above average) and also Sports applications (28% above average). Meanwhile, news & info as well as utilities applications seem to be region-agnostic when it comes to consumer willingness to pay. As shown in Figure 2 below, a bulk of the sample revenue came from paid utility applications.
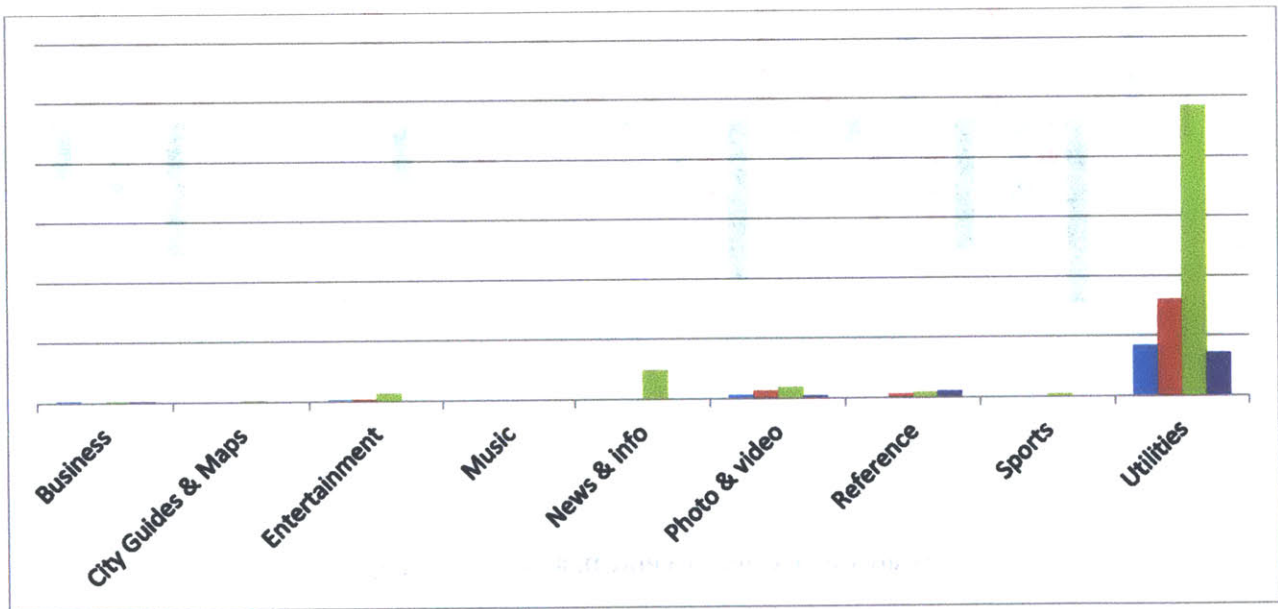
Figure 2 Revenue from Paid Applications across Different Regions

2.2.2   Paid Games

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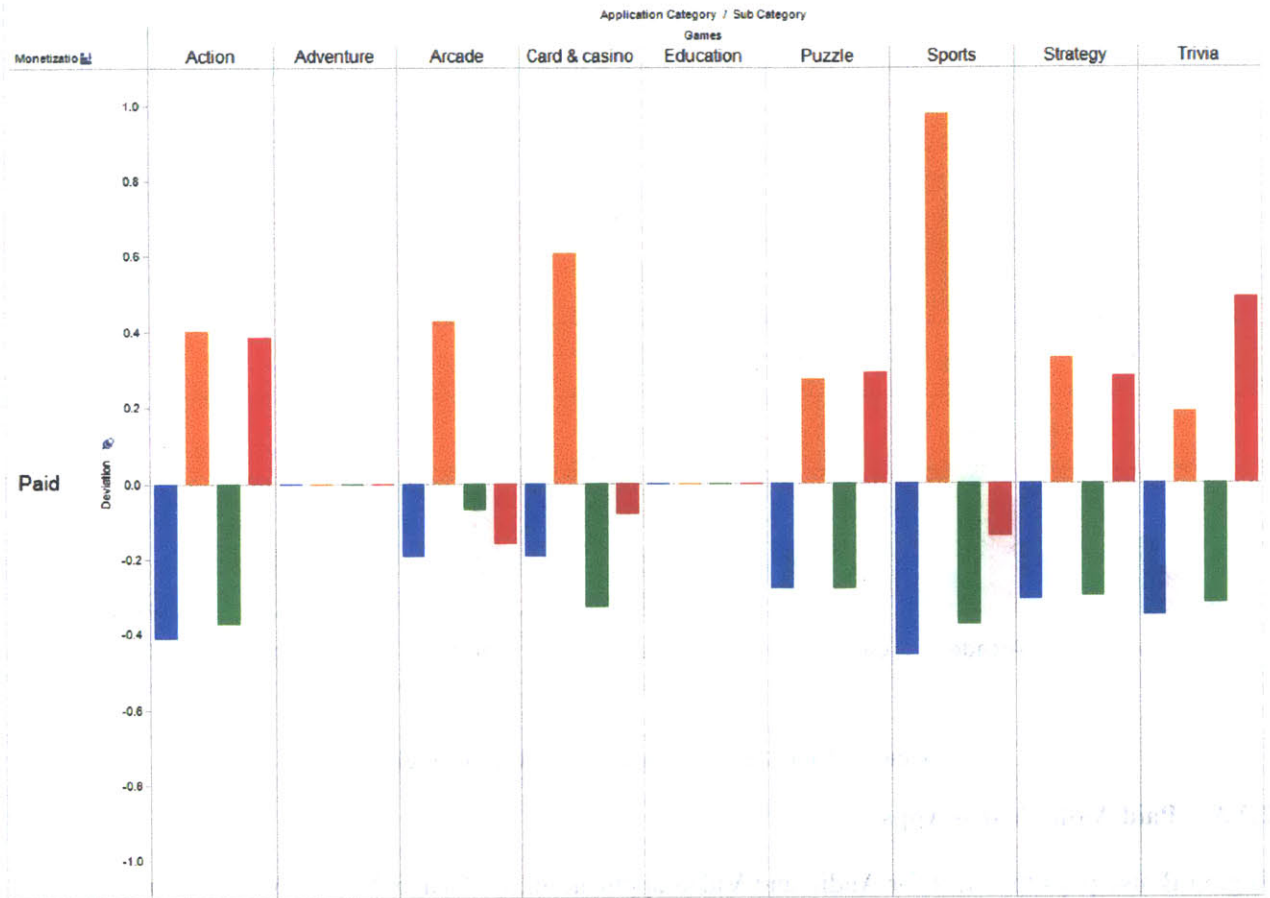
Figure 3 Paid Games Price Difference by Category

Region B consistently pays more for games, as shown in the graph. The only category it does not pay the most is for puzzle games and trivia games, where Region D pays the most. There were no educational games in the sample.
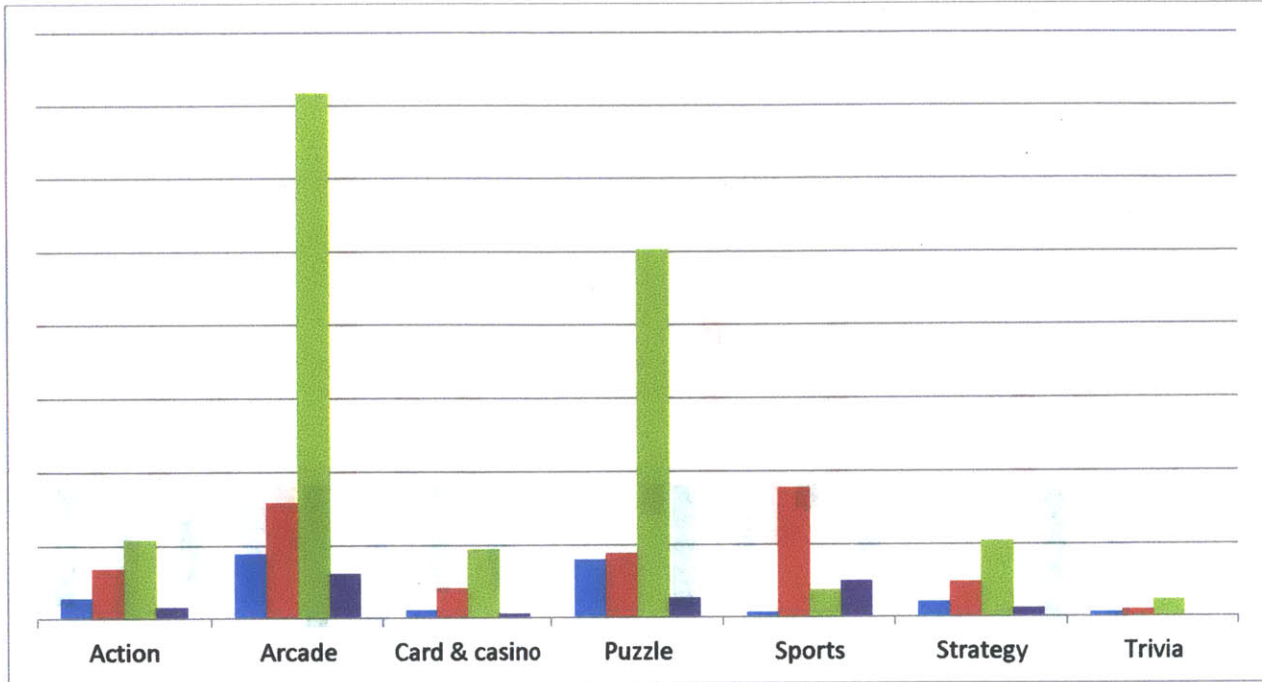
Figure 4 Paid Games Revenue across Different Regions

2.2.3 Paid Audio Video Apps

Region B also pays the most for Audio and Video applications, (57% and 76% above the average prices, respectively) and Region A pays the least (slightly more than half the average price). The difference could be attributed to the fragmented nature of the music industry in some of these regions and the presence/absence of popular free music applications that are established in a few of the regions.

2.2.4 Paid Personalization Apps

Region D pays the most for theme apps and also wall paper apps (30% above average and 42% above average, respectively). Ringtone applications appear to be region-agnostic. That region may see cell phones as more of a status symbol than just an accessory, and are willing to pay more to make it look nicer.

2.3 Monetization Approach – Try and Buy (Try&Buy)

Try&Buy is a relatively new approach within the application monetization space. It is a variation of the free with ads vs. paid versions approach by launching a completely free app without ads but with limited

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functionality and/or features. Try & Buys are mostly found within Games, but are also seen in some of the other application categories.

2.3.1 Try&Buy Applications

For business applications, Try & Buy generates the most revenue in Region A and least in Region C (+33%, -36% respectively). Region A pays the most for Try & Buy reference applications and Region D pays the least (+38%, -36%, respectively). Try & Buy model performs poorly in Maps and City Guides, failing to generate a single purchase in any region. Try & Buy Sports applications fare equally as bad, with zero purchases in any region outside of Region D.
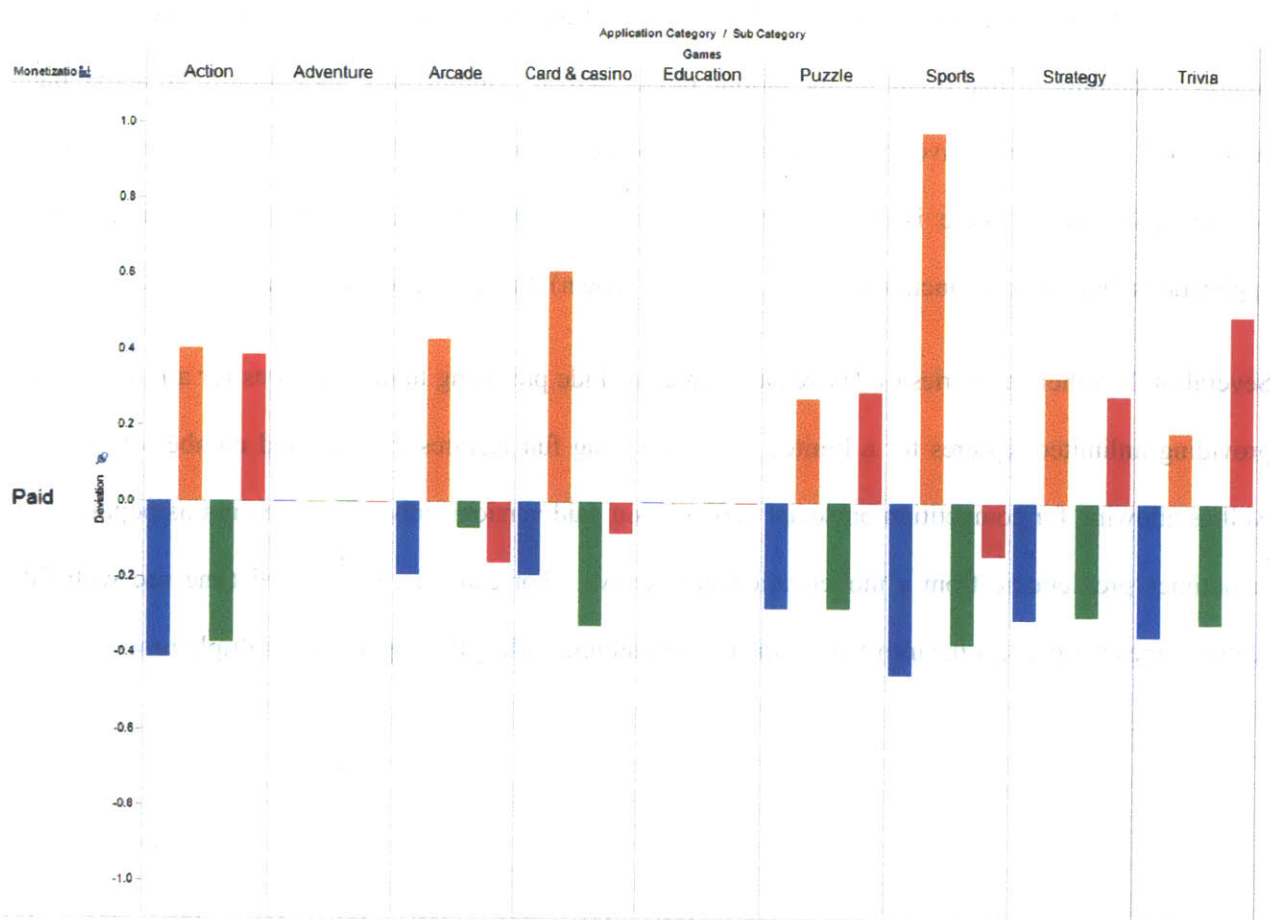
Figure 5 Try & Buy Applications Price Difference by Category

2.3.2 Try&Buy Games

Despite the regional differences in the paid games, Try & Buy games appear to be largely regional agnostic. The only notable exception is card & casino games for Region B, where they pay 28% above average. Cultural preferences may have played a factor in creating the only notable deviation in this case.

Within Try & Buy games, there are many different categories. However, even within Try & Buy games a few categories dominate the majority of the games. For example, over 60% of the Try & Buy games utilize limited features to lure the consumer into purchasing the full version of the application. Approximately 20% utilizes advertisements within the free version of the application. Most of these advertisements are placed in prominent locations either at the top of bottom of the screen and occupies a significant amount of real estate on the mobile device screen. Additionally, they require an active data connection in order to receive the advertisements. Some applications will display old advertisements or no advertisements if there is no internet connection (i.e. airplane mode, etc.), but there are also applications that will not function (i.e. shut down on its own) if no active internet connection exists.

Several of the other categories of Try & Buy games include providing limited features for a limited time, providing unlimited features for a limited time, providing full features for a limited number of uses, as well as allowing for competition on social networks on paid versions only. These are not as popular and sometimes problematic from a monetization perspective. For example, the limited time use with full features does not prevent the user from uninstalling and reinstalling the application multiple times.
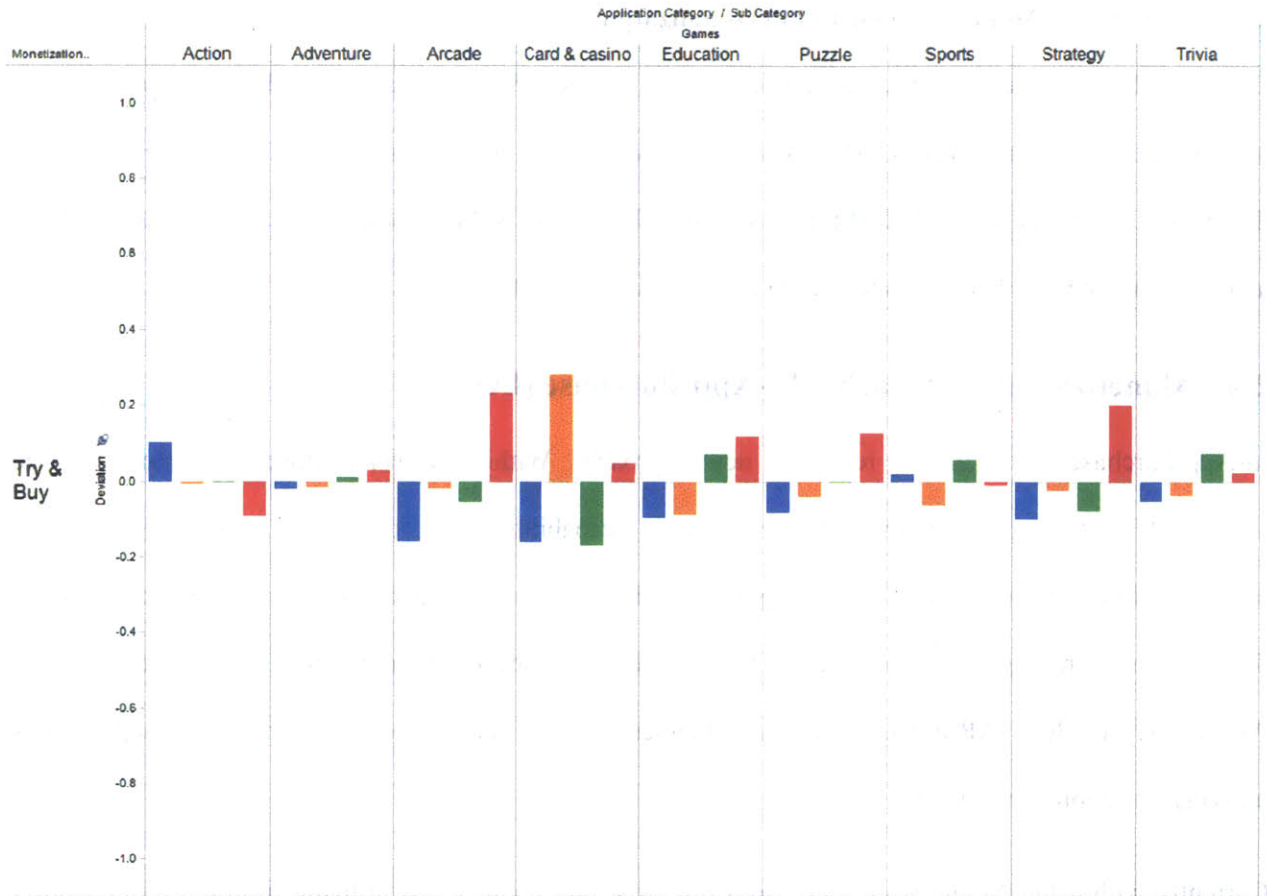
Figure 6 Try & Buy Games Price Difference by Category
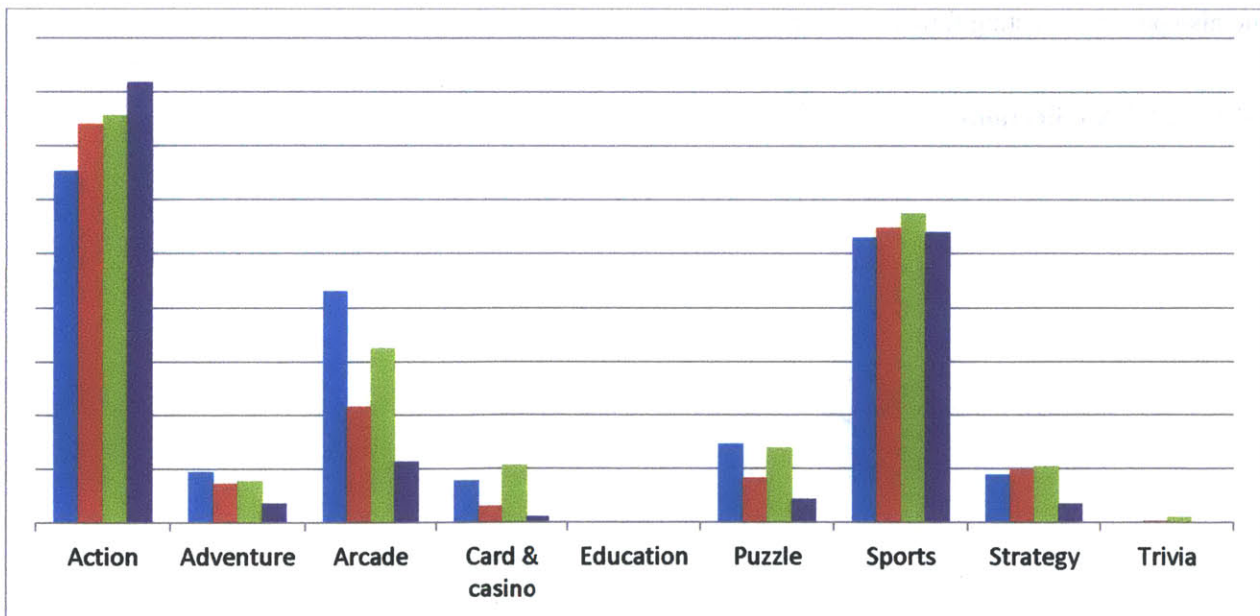
Figure 7 Try & Buy Games Revenue by Category across Different Regions

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2.3.3 Try&Buy Audio & Video and Personalization

Try&Buy does not seem to attract developer interest in Audio Video; no developer has decided to pursue an application in those spaces. The existing applications in personalization has yet to generate any downloads despite being published for some time. Therefore, Nokia should discourage developers from actively pursuing Try & Buy monetization approach in these categories.

2.4 Monetization Approach – In-App-Purchase (IAP)

In-App-Purchase is yet another relatively new approach. Within the Nokia Store, the history is quite short, with the first application with In-App-Purchase capability launched less than 14 months ago. The idea behind In-App-Purchase is very straight forward: within an application, the user can make purchases for additional virtual goods or services. The more the users spend, the more profit the company makes. As with Try & Buy, IAP is found mostly in Games although there have been some other applications utilizing this approach as well.

Currently within the Nokia Store there does not exist any applications utilizing multiple monetization approaches, i.e. paid application with IAP or Try & Buy with IAP. This greatly simplifies the analysis and also poses interesting future areas of research.

2.4.1 IAP Applications
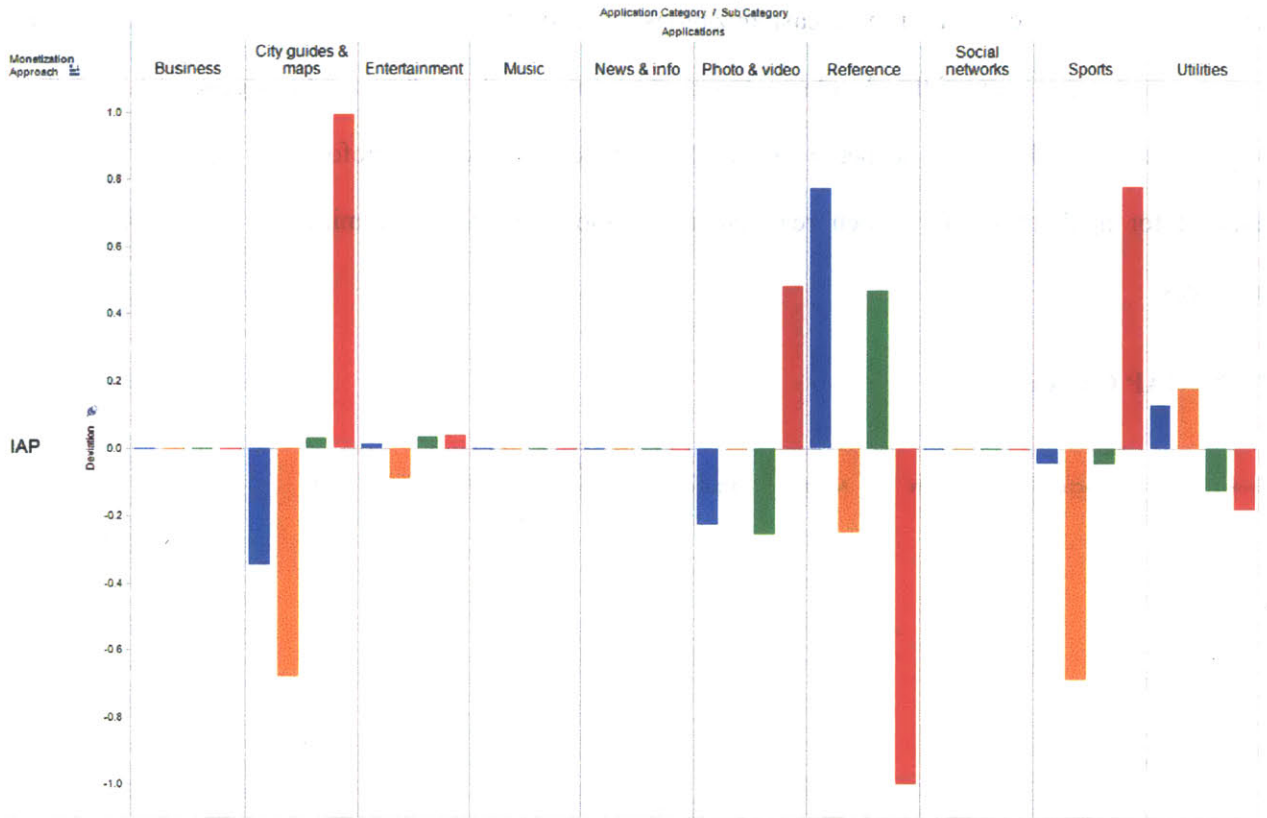
Figure 8 IAP Applications Price Difference by Category

IAP City guides and maps are most effective in Region D and least effective in Region B (+99% and -68% deviation from average, respectively). Entertainment and Utilities IAP applications appear to be region agnostic. Meanwhile, Region A pays the most for reference applications and Region B pays the least (+33% and -44%, respectively). Region D pays the most for IAP sports applications while Region A pays the least (+78% and -69%, respectively). Nokia should encourage developers to pursue the regions with the highest earning potentials and discourage developers from creating IAP applications for the regions where the demand are not as high.

While every application developer would prefer to launch their application across all of the markets at once, there are many limitations. Putting aside specific applications that only applies for a small region (i.e. an application to provide New York Subway Times), many of the applications require regional and/or

language customization. All of these customizations demand additional resources that the developer may or may not have. Even if the developer has these resources, depending on the urgency of the other projects on hand, they may be better allocated for different tasks. Therefore, the findings are most relevant for applications for which regional and/or more granular customization require substantial resources.

2.4.2 IAP Games
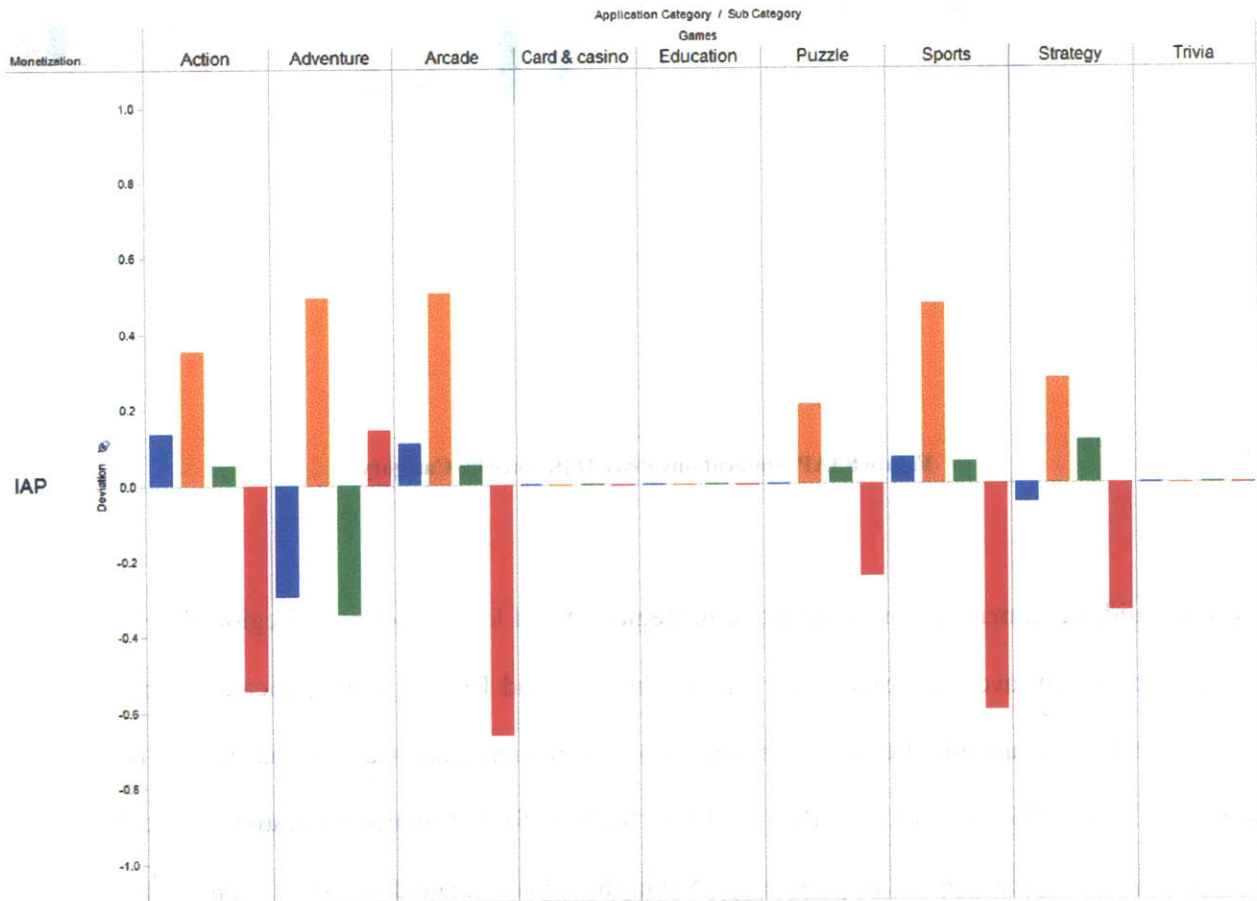
Figure 9 IAP Games Price Difference by Category

Once again we see that Region B demonstrates a higher willingness to pay for games, in this case IAP games of almost all categories. Region D demonstrates the least willingness to pay for games utilizing IAP. Developers would do well to avoid IAP games for region D while pushing for these for Region B. Additionally, as shown in Figure 10, IAP Arcade games have generated the most revenue, especially in

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Region B. This further strengthens the argument to push for IAP in region B, and even more so for Arcade games.
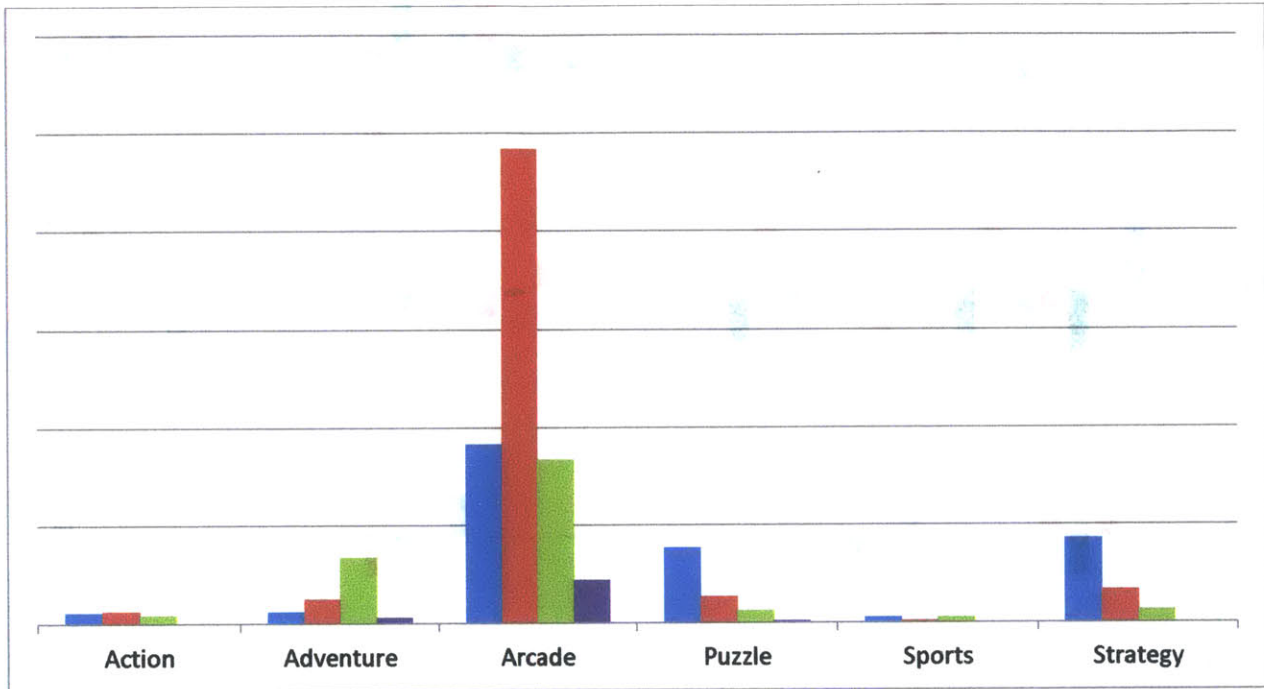
Figure 10 IAP Games Revenue by Category across different Regions

2.5 Monetization Approach Analysis

2.5.1 Monetization Approach Analysis – Applications
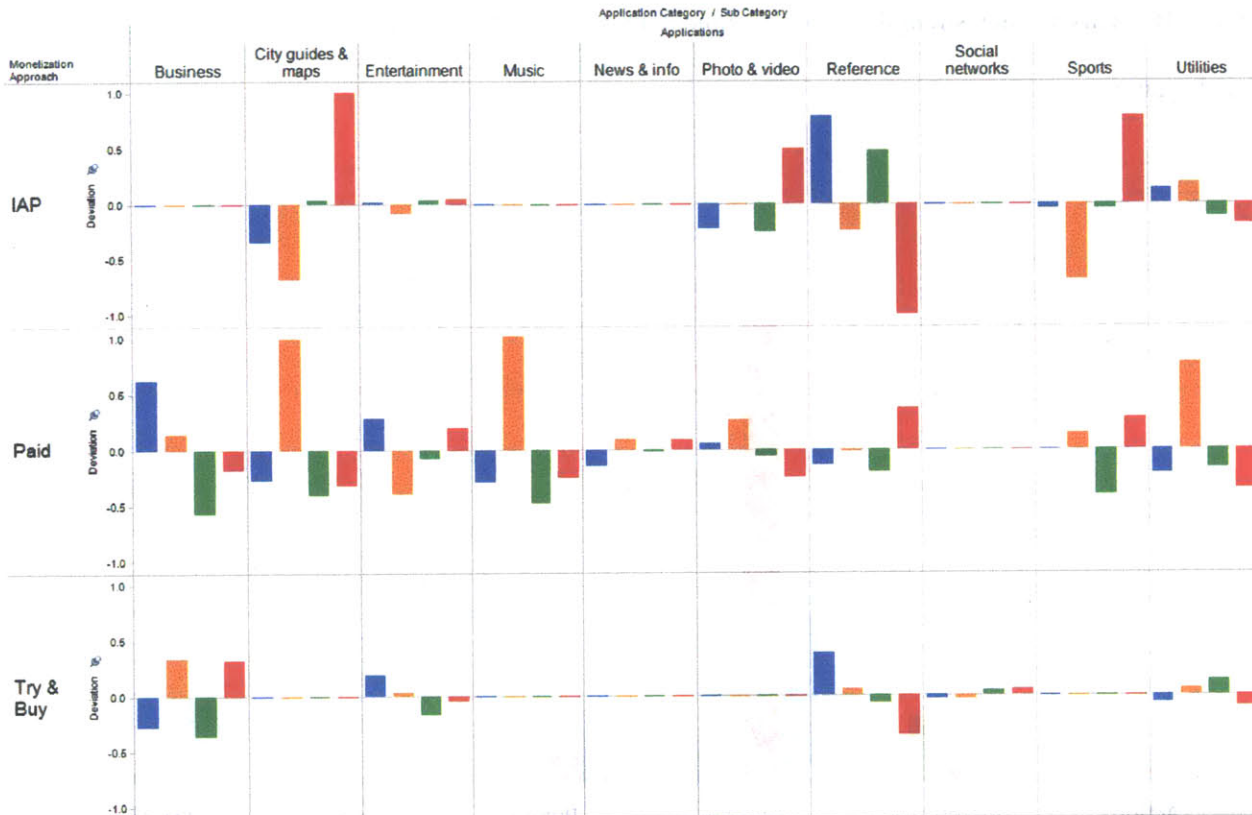
Figure 11 Price Differences for Applications across Monetization Approaches

2.5.2 Monetization Approach Analysis – Games

When we compare the data between the different monetization approaches on a pure revenue basis, we see that Try & Buy completely dominates the Games market. Within the top 100 Games in terms of revenue generated so far in 2012, 95% utilize the Try & Buy monetization approach. Needless to say, this comprises of a significant portion of the overall revenue generated in this marketplace.

It is also interesting to note that the significant regional differences that exist between Region B and the other regions almost disappear when it comes to Try & Buy games. This finding is important for developers looking to create games for a specific region in determining whether Try & Buy would be a suitable monetization approach for that category.
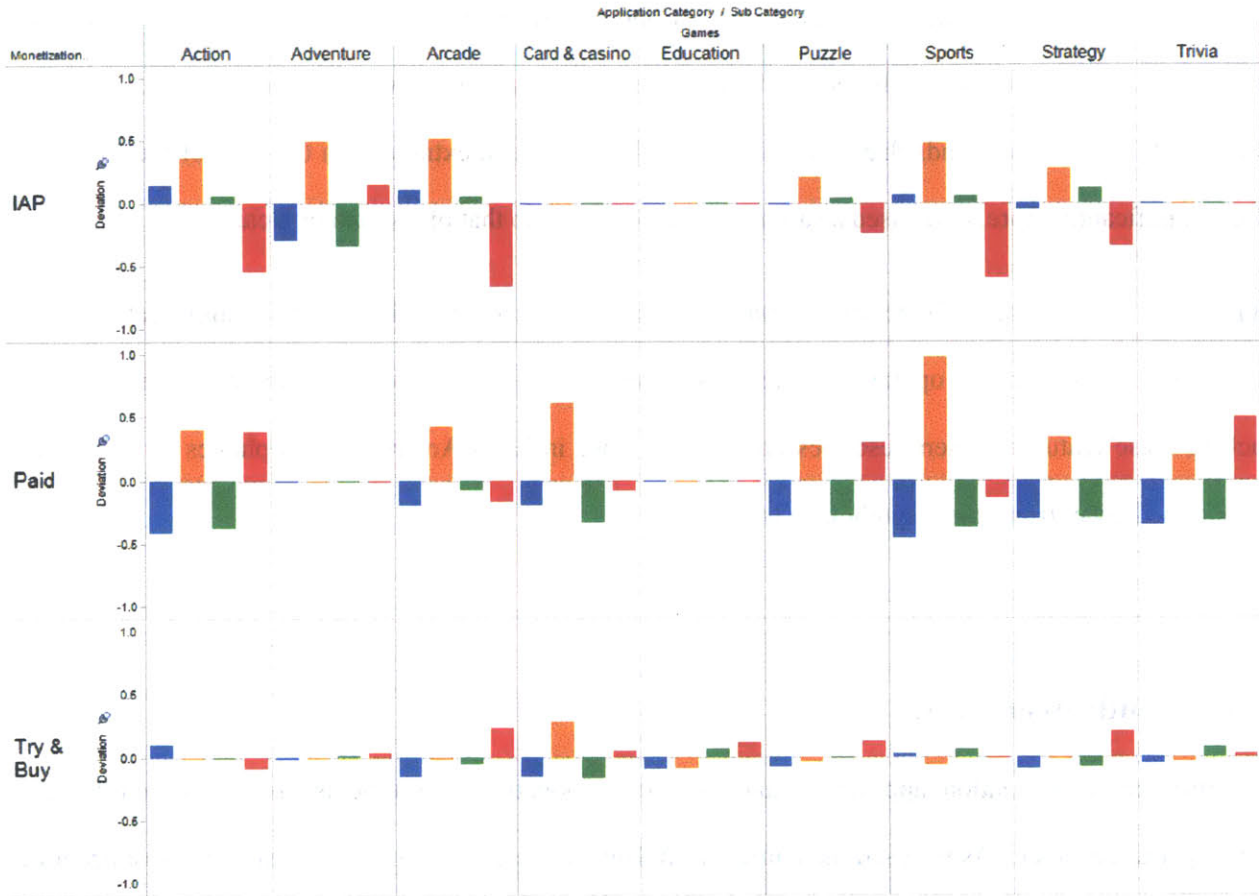
Figure 12 Price Differences for Games Across Monetization Approaches

2.5.3 Monetization Approach Analysis – Audio & Video

Within Audio & Video, it appears that Region A demonstrates the least willingness to pay for these applications. Region A does include some of the more developed nations in the world where many of the music applications are free. Applications such as Pandora, Spotify all have free trials, and on Nokia Lumia devices Nokia Music offers free streaming of popular playlists. Within other regions, these applications tend not to include the local popular music and thus these regions are more willing to pay for these applications.

2.5.4 Monetization Approach Analysis – Personalization

Within Personalization, Region D seems to be spending the most amount of money, after normalization. One could theorize that since that region includes emerging parts of the world, the cell phone is seen as

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more of an status symbol rather than an accessory and people are more willing to spend a bit in order to make it unique to their own. The phenomenon is described by Cuneo in her article about the Motorola Razr. In the article, she finds that consumers are willing to spend extra, and in the case of the Motorola Razr, significantly more, to be used as a status symbol similar to that of a watch or a car.

With other regions, smart phones are becoming more customizable and the personalization features tend to be included within the operating system itself and no longer requires an individual application to include these features. Jelen describes one specific case in Latin America as cellphones in the region transitioned away from status symbols in his article.

2.6 Trends over Time

The different monetization approaches and how they monetize over time is also important for the developer to consider. As we used the entire Try & Buy application pool, it is perhaps the most accurate representation of the price erosion that occurs as applications come onto the market and subsequent competing applications also arrive on the scene some time later. It is interesting to note, however, that In-App-Purchase actually increases its monetization ability over time. When one considers the nature of IAP, it is not surprising that over time these games can generate increasingly more revenue, especially as the goods/services being sold through these tend to be consumables that are used up in the process of playing the game. In order to keep up with friends and/or competition, users will continue to purchase and an increase in the user base can also have a tendency to increase the purchase per user.
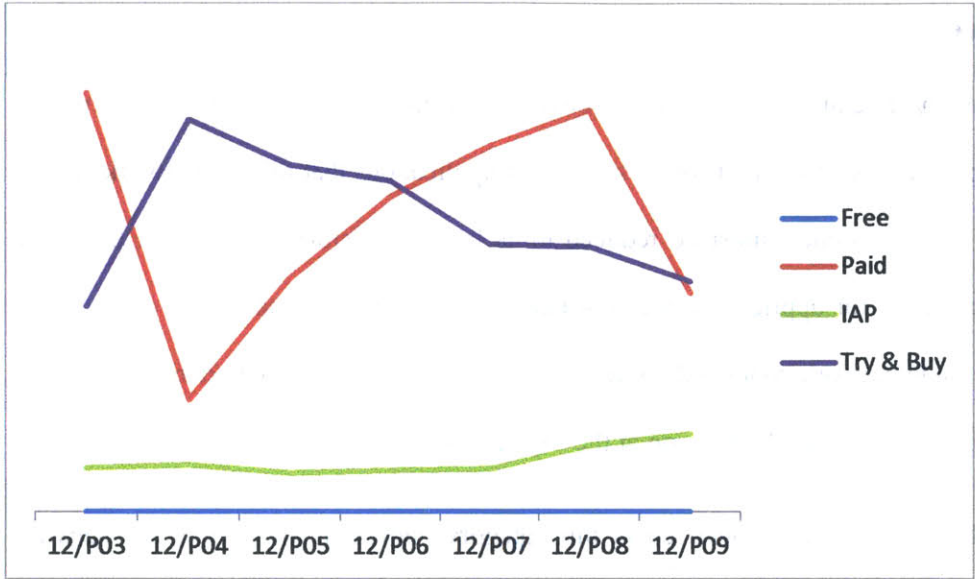
Figure 13 Revenue Per Download Trend over Time for different Monetization Approaches

When looking at the trend over time through a proposed metric, the Downloads / Product View, the Try & Buy applications have been doing very well, scoring the highest conversion percentage within the different monetization approaches. This is an important metric to monitor as it highlights the ability for applications to reach potential customers, without monetization considerations.
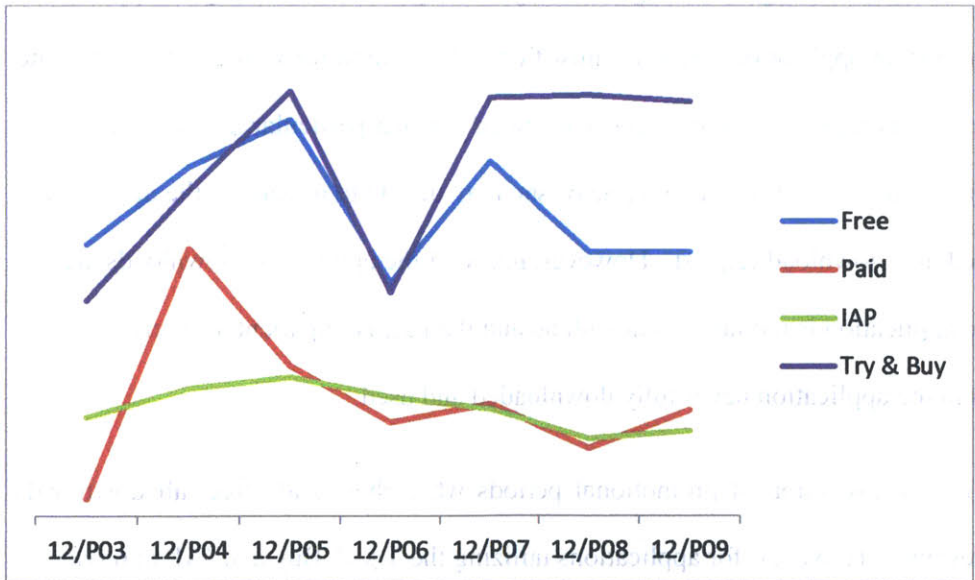
Figure 14 Downloads Conversion Trend over Time for different Monetization Approaches

2.7 Notable Absences

There are only Try & Buy and free applications for the social networking space. The notable absence of paid social networking applications shows that for these or other applications that rely on network effects in order to take off, the barrier to entry must be reduced to as low as possible. When one thinks of Facebook, and Twitter, charging for application does not make sense when the smartphone is merely a device used to access the huge network contained within these sites. However, one can demonstrate that monetization is still possible in this space by looking at the Try & Buy applications.

The Try & Buy model has successfully monetized in this category, indicating that while the network effects are necessary, developers can capitalize on potential user needs that are not met by the default applications and offering a trial version of these applications with improved functionality.

3 Download Flow and System Dynamics Model

3.1 Application Download Flow

The funnel diagram below illustrates the general stages users go through when obtaining an application. In order to find and download an application, the user must first either search for it or go straight to the product page. When that occurs a product view event is recorded for that particular application. If the user reads the description, any user reviews available, he or she may decide to download the application. That event is then recorded as a download request. However, many of the application downloads are not completed: sometimes the application is too large to download and the user is impatient, or there are other complications that results in the application never fully downloaded and used.

For paid applications, with the exception of promotional periods when they made free, all downloads result in a purchase and revenue. However, for applications utilizing the Try & Buy and IAP approaches, the purchase and revenue may come much later, and much smaller fraction of downloads convert to purchases relative to paid.
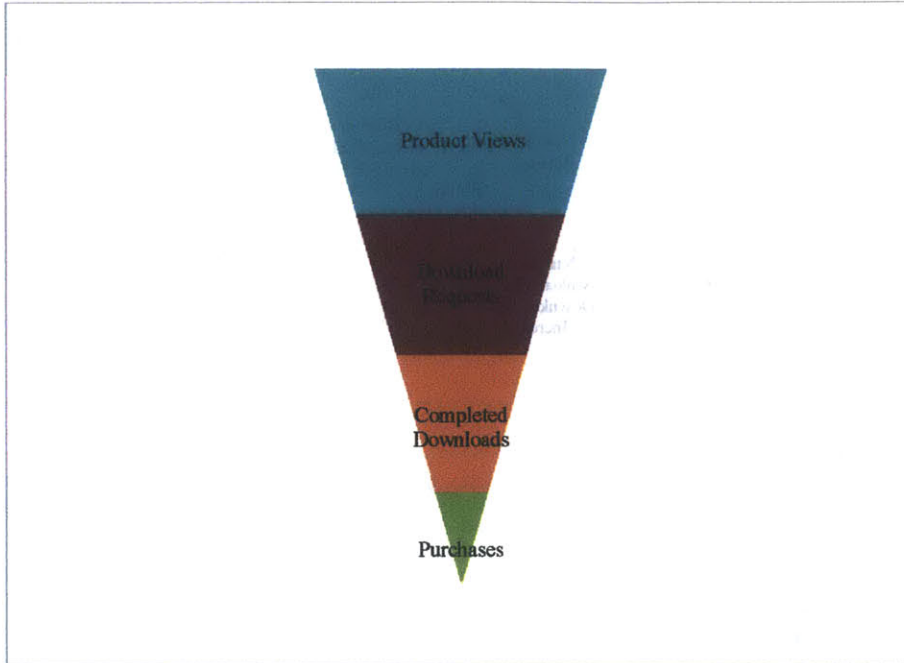
Figure 15 Conversion Funnel from User Views to Purchases

3.2 System Dynamics Model

When one thinks of the mobile application market, stand out applications such as Angry Birds or Farmville comes to mind first. However, most applications are not blockbusters and do not become hits. During an interview with CNN in June, 2012, Rovio's vice president of franchise development Ville Heijari, commented on the history of the company. Angry Birds was the company's 52nd published application and the first one to really take off. Times were so difficult prior to the success of Angry Birds that Rovio downsized from 55 or 60 people to 12 people.

When one examines the download patterns for most applications, it actually follows roughly in line with a logarithmic decay pattern. Below is a simple model using System Dynamics to determine the effects of Word of Mouth as well as how the performance of applications can affect the increase in user base.
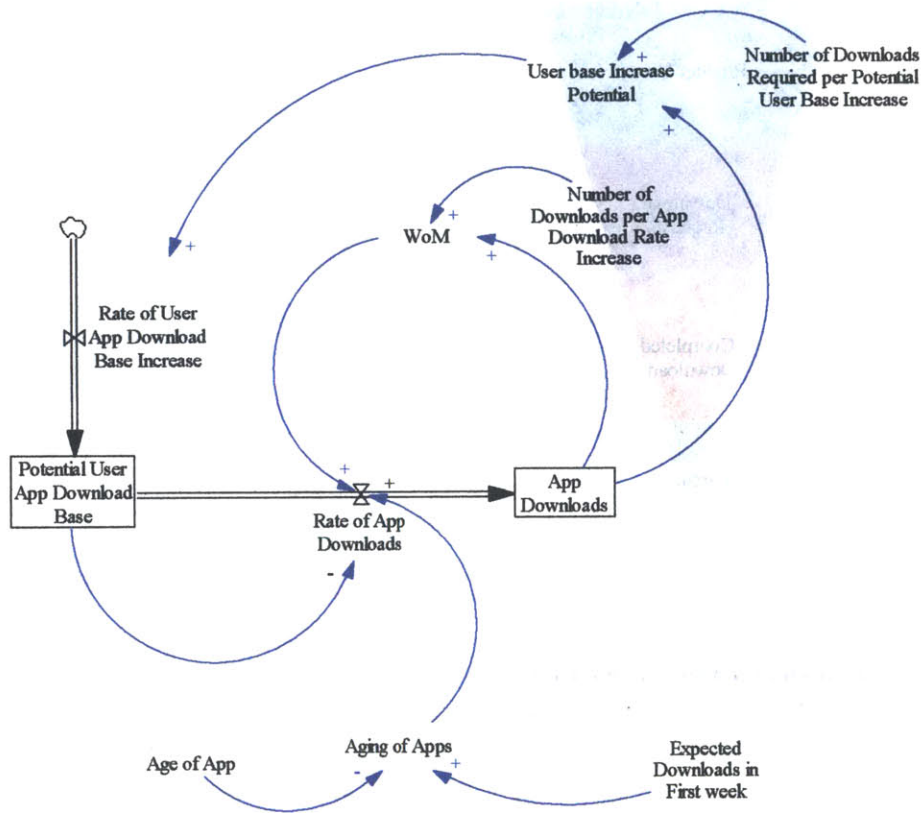
Figure 16 System Dynamics Diagram for Application Downloads

The diagram above illustrates two feedback loops. The smaller one is a reinforcing feedback loop for Word of Mouth, which is the effect of existing users having the application and convincing additional users into downloading this application.

The other loop describes the behavior of users adopting new devices as applications exclusive to that phone attracts new user bases. The additional user base then becomes potential users that may also download the application.

The growth of the total downloads is constrained by two factors: the application must have a successful Word of Mouth effect for the downloads to become reinforcing, and that the user base must also increase sufficiently fast in order to keep up with rate of the users who have download the application (and thus

sits in the App Downloads stock). All of this must overcome the effect that the age of the application has on the overall download rate. As most new applications receive marketing and advertisements simultaneous or prior to their launch, the boost from those effects disappears rather quickly as marketing diminishes and other application launches garner the users' attention.

Despite the exponentially growing number of applications in iOS, Android, and all of the other platforms, only a small number of applications generate the bulk of the revenue. This illustrates the difficulty of achieving and sustaining the positive feedback loop presented in the model.

4 Findings

The two new monetization approaches, In-App-Purchase and Try & Buy, are becoming more prevalent. In fact, on the new Windows Phones, almost all of the applications allow you to try it before actually paying for the full version, and that may be a contributing factor to why Windows Phone users spend more on average per month on apps than the other ecosystems. Research by Nielsen found that users of Nokia's first generation Windows Phone flagship, Lumia 900, spend twice as much as the average smartphone users per month (15 dollars per month versus 7.5 dollars per month).

Moreover, when we examine the overall revenue data generated by applications in 2012 so far for the S40 platform, we discover that 94 of the top 100 grossing applications are utilizing Try & Buy. Of the remaining, 4 are utilizing IAP and only 2 applications in the top 100 are utilizing the paid monetization approach. Angry Bird for S40, an application many may consider to be a blockbuster, comes in at a slightly underwhelming 25th in total revenue given the expectations. It is, however, the top paid application.

Given that all of Window's Phones applications are essentially Try & Buy, it is no surprise that that platform is able to monetize more efficiently than the other smartphone platforms.

What the detailed analysis revealed is that while these new monetization approaches are powerful, they are not a panacea by any means. While Try & Buy has proven to be effective methods of monetization within games, that has not been the case for some of the other categories. Within City guides & maps, Sports, ringtones and wallpapers, quite a number of Try & Buy applications were launched but during the entire application life span failed to generate any purchases or revenue. Given the poor performance for these categories, Nokia should discourage any developers from utilizing the Try & Buy approach for these categories.

Within IAP, the performance is also mixed, with good performance from the games and poor performance in other categories. When taking a closer look at the games that succeeded, it would appear that most of the games themselves that have successfully utilized IAP to monetize have a social element within them. The social elements contribute significantly as network effects of having users draw in even more users and the competitive elements within these games encourage users to spend money to do better than their friends.

4.1 General Implications

Given the success of the Try & Buy applications, especially within the Games category, a crucial driver for Nokia would be to identify applications with such success potential and the developers who worked on them. When looking at the existing dashboard, many of the metrics describe the effectiveness of monetization from a revenue-per-download perspective: metrics such as Average Sales Price (ASP) evaluate precisely that for many applications. This measure is sufficient for evaluating the consumer willingness to pay for a specific application or a category of applications, and is also a good indicator of any potential price erosion within the application marketplace. However, it does not incorporate the end to end process of measuring how consumers make a decision to purchase an application. More comprehensive metrics are needed to evaluate the end to end user process for applications, and one such metric is proposed in the next section.

When one examines the top free and paid applications on both iOS and Android, one can see that Nokia already has many of the same applications available. CNET recently reported that 46 of the top 50 iPhone applications are now available on the Windows Phone as well. From the perspective of a new user choosing a device, the application barrier has been reduced significantly in that regard. It would benefit Nokia to continue to reduce or eliminate the gap.

4.2   Operational Implications for Nokia

As it currently stands, at Nokia, the applications are tracked at each stage, and the conversion metrics between the stages are also determined. However, more comprehensive metrics capturing the overall process could help Nokia identify successful apps independent of revenue and help push for wider adoption. Two proposed metrics are Revenue per Product View and Downloads per Product View. As mentioned in section 3.1, the product view is the first step where the user has interaction with the application, and the download/revenue generated are towards the end of the process. By incorporating these two aspects, we can then evaluate the performance of the application from an overall perspective rather than at its individual stage. Comparatively, the Average Sales Price (ASP) captures only the revenue generated per download, and ignores the stages prior to Completed Downloads.

When we compare the ASP of paid applications against that of IAP and Try & Buy, we see that the paid application dominate significantly. The reason behind this is fairly clear: since most of the Try & Buy and IAP applications are free to begin with and only generate revenue when the full version is purchased or the user procures additional goods/services within the game, the amount of downloads is significantly more than the amount of purchases. For paid applications, the ratio is much lower as most downloads result in purchases and revenue.
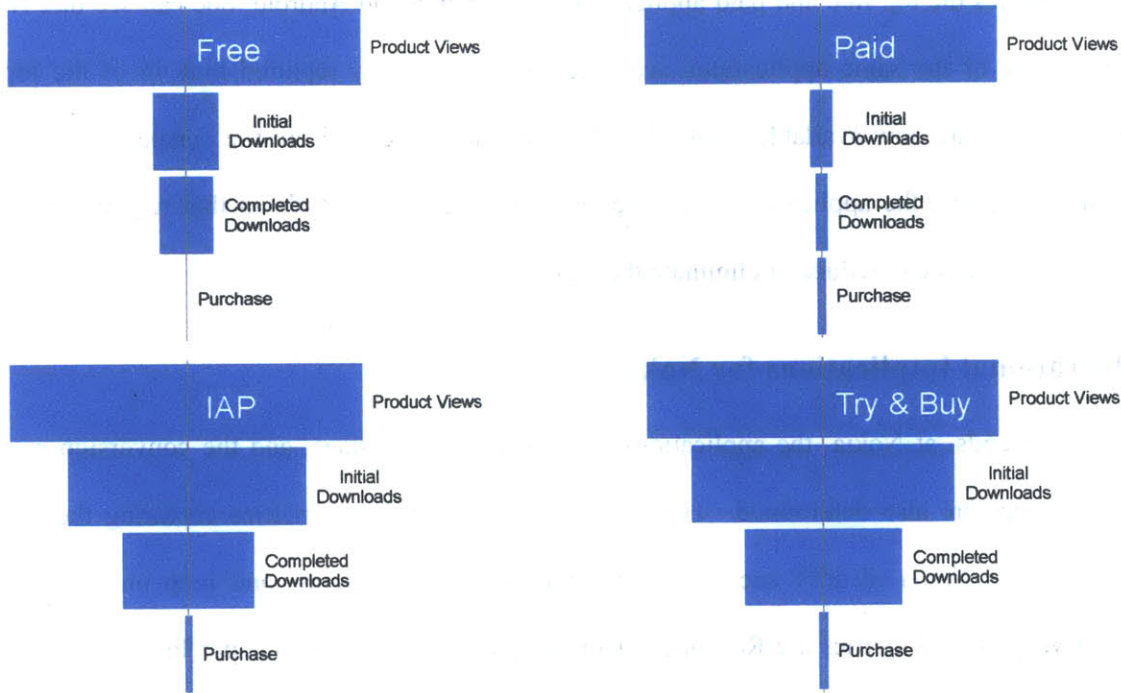
Figure 17 Conversions Funnel from Product Views to Purchases

When one looks at the funnel diagrams above, it is evident that the Try & Buy and IAP applications actually generate a much wider audience initially, despite being free applications. When comparing revenue per product view, Try & Buy applications are performing just as well as, if not better than, Paid applications. This metric also captures the reason behind the explosive growth that Try & Buy has experienced recently, and provides a more holistic picture in addition to just revenue figures.

Another use for these new metrics is in the area of evaluating marketing and promotion campaigns. Nokia and application developers regular employ promotion campaigns in order for certain applications to receive more visibility. Given all encompassing nature of these metrics, one can examine the values before and after to determine the type of customers the campaign helped to drive in, what their willingness to pay, as well as the overall additional conversion rates of the new customers.

4.3 Managerial Implications for Nokia

As with any large organization focused on multiple priorities, it is important to have alignment and timely communication on important issues. Despite the geographically dispersed employees within the same team, teams are able to tackle challenges effectively and drive to results. Most employees were willing to adapt to the different time zones required by the meetings in order to collaborate effectively, and has resulted in meeting or exceeding targets at a team level.

From an organizational perspective, Nokia's Content & Ecosystem Sourcing team can benefit from further increasing their collaboration with the Developer Experience (DX) team as well as the Finance team. While the connection with the DX team is in very good shape, the knowledge sharing between C&E Sourcing and Finance have room for improvement. Despite the relative small financial size of the content sourcing scope as compared to other groups such as Hardware Sourcing, Finance would benefit from having more knowledge around the application sourcing efforts. The metrics proposed above are effective ways of evaluating the effectiveness of the sourcing efforts from an application level as well as from an overall aggregate level and gives Finance a clear view of performance without the necessity of delving into the details of operational execution.

Additionally, the Download / Product View metric can be viewed as an overall indicator of the health of the ecosystem. An increase in this metric would indicate that more people are downloading than before, potentially a sign of more quality applications that were launched recently, and a decrease would drive to the opposite conclusions. The business can then decide on the most effective way of allocating resources, whether it is towards marketing/promotions or sourcing efforts to ensure more quality applications in the pipeline.

5 Recommendations

5.1 Recommendations for Nokia

For Nokia, helping developers create successful application is an important task that if successful, will ensure that the associated ecosystems become self-sustaining.

In order to do so, success within the market place must first be measured from an overall perspective and not at each stage. While the Average Sales Price (ASP) metric does provide some insights into consumer spending, it does not capture the effectiveness of the overall reach of the applications. One can also look at just revenue numbers, however, without taking into account the time frame of the launch the comparison loses some of its value.

The proposed metric of Revenue per Product View captures the end to end process and greatly diminishes the time effect of the application lifespan. By evaluating revenue generated in terms of the product views, one is able to infer the overall attractiveness of the application as well as the overall monetization ability of the applications rather than measuring the willingness to pay of consumers who have already paid for the product.

The other proposed metric, Download per Product View, also captures a large amount of the process, but with an alternate focus on the reach of the product. As previously mentioned, one of the goals for Nokia is not only to generate revenue for the developers, but also create applications that users want to ensure a sustainable ecosystem. This metric allows Nokia to determine the effectiveness of the application from a reach perspective in order to see whether the developer accomplished the intended goal. Similar to the other metric, Download per Product View isolates the time and monetization effect in order to truly measure the effective reach of the application.

Nokia should adopt both metrics and keep track of them as new applications are launched in the marketplace. This ensures a good idea of the health of the ecosystem in addition to the revenue pool and downloads, metrics being tracked today.

Try & Buy has also proven its worth, especially within the lower end S40 market. This success is evident when examine pure revenue figures. However, when utilizing the new metrics to measure the success of Try & Buy, we can see that it is on par, if not better, than paid applications in terms of monetization as well. As such, Try & Buy should be utilized everywhere that makes sense.

5.2 Recommendations for Application Development

Although there are many regional differences when it comes to application development as well as the monetization approaches, several key ingredients for success do appear to be consistent across all of the regions. For example, in order to develop a successful social media application, such as a built-on application for Facebook or Twitter, or one of the many other social network sites around the world, the application needs to be free in order to ensure wide adoption and take advantage of the strong network effects present in that space. Maps and navigation applications should also be made free, but for different reasons. With many of the popular maps software such as Google Maps, Apple Maps and Nokia's HERE available for free, a paid maps software need to provide significantly more value in order to justify the price. As the free software becomes increasingly more sophisticated, the additional value of paid mapping applications versus free ones decrease significantly. This is one of the methods by which the platform providers attempt to lock users in their ecosystem.

The largest opportunity to monetize appears to be in the Games category. Across all of the different regions, arcade and action games appear to be very popular with the paid monetization approach. However, for puzzle games the Try & Buy approach works the best to provide the users with a taste of the game before enticing them to complete the purchase. It is also easily implementable from a content perspective as the application developer can simply provide the first 5-10 levels for free for the trial

version. IAP works best for social gaming applications as users will compete with their friends for high scores and that encourages spending on in-game goods and services.

5.3 Remaining Questions and Potential Future Research Areas

The dominant behavior of Try & Buy as a monetization approach for mobile applications has been shown in multiple ways in this paper, within the context of Nokia S40 platform applications. However, Nokia has embraced the Windows Phone platform and all of its high end smartphones will be Lumia branded Windows Phones. One interesting area of study which this paper does not cover is whether these findings are also applicable to the high end smartphone market, including the Windows Marketplace that operates for the Windows Phones. As the high end business is strategically important to Nokia as a whole, the potential impacts of these findings are much higher for the Lumia lineup than the S40 platform.

With most of the applications in the Windows Phone already utilizing a Try & Buy model, there is reason to surmise that the monetization approach can be successful on different platforms as well. More broadly, this leads to the question of whether additional platforms such as iOS and Android will also pick up such trends and launch more Try & Buy games and applications.

In the beginning of the paper it was mentioned that within the S40 platform, there currently do not exist applications employing multiple monetization approaches (i.e. Try & Buy with IAP, Paid with IAP, etc). However, one area of opportunity would be examining how the interactions between these different monetization approaches, whether the overall effect is greater, equal to, or less than if they launched them separately. While on the S40 platform there are still no applications with such features, applications combining multiple monetization approaches do exist on other platforms and would be yet another interesting area of further research.

6 Conclusions

The effectiveness of Try & Buy monetization approach has been proven with various measures, and Nokia should push its developers towards utilizing this approach, especially for games. Nokia can leverage the specific findings for monetization approach and an application category to make specific recommendations for what is the best approach given the application category and targeted region. When developers are looking to develop a specific application, the same findings can be used to determine which regions may be the most profitable to go after first.

The organization between Content & Ecosystem Sourcing can now work more closely together with Developer Experience team, to leverage the findings and adopt the proposed metrics in order to incorporate an end-to-end measurement of the application downloads. This will enable Nokia to evaluate applications and developers more thoroughly. Specifically, the Content & Ecosystem Sourcing group now has valuable knowledge to provide developers with which may ultimately help the ecosystem to succeed.

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