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Mobile Application: A Key for Entrepreneurial Enhancement

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ABSTRACT

The growth of mobile commerce requires development of both demand and supply sides of the market. On the supply side, the development of mobile applications (e.g. games, calendars, search engines) via cellular technologies occur in a context partially defined by technical development dependencies that arise from the layered nature of mobile hardware and software technologies. This paper says that these technical application development dependencies shape both the strategies employed by entrepreneurs as well as the evolution of the mobile market. In particular, entrepreneurs are faced with technology choices and device uncertainties, while the market experiences fragmentation, intermediation and distribution integration. These results in the slow development of mobile commerce in general, provides a basis for understanding future market developments, and further evidences the interdependency between technological and market evolution.

KEYWORDS: Entrepreneurship, Mobile Commerce, Application Development, Market Structure

INTRODUCTION

Mobile Commerce, unlike electronic commerce has fallen short of its expectations in multiple ways. Researchers finds several fit falls on consumer trust and indifference such as; device usability and security, infrastructure dependability , and business models . Despite these challenges m-commerce faces both demand and supply incompatibility. In particular, focus on the supply of mobile applications and services, which, given adequate supply, are expected to increase use and chances of user adoption.

In the next section, presented a brief background of the mobile applications market, with particular emphasis on the development issues.

MOBILE APPLICATION DEVELOPMENT: BACKGROUND

Mobile application developers target specialized niche markets that make use of different mobile devices and wireless infrastructures. These wireless infrastructures include, satellite communication networks, Wireless Local Area Networks and cellular communication infrastructure. Here focus on mobile applications developed for the cellular communications network and cellular mobile devices. The two reasons – 1) cellular mobile devices (mobile phones) are by far the most widely used mobile devices; and 2) application development issues are likely to vary across infrastructures it is necessary to narrow the scope of a study of application development issues.

ENTREPRENEURSHIP IN MOBILE APPLICATION DEVELOPMENT

In order to understand the criticality of mobile application development issues in the supply of new mobile applications, the current study elaborate entrepreneurial activity in mobile application market. As mentioned above, investigate the influence of development dependencies on – a) entrepreneurial strategies; and b) the market structure that affects future entrepreneurial strategies.

Entrepreneurial approach and Development Dependencies

The nascent nature of mobile applications market provides ample opportunities for entrepreneurial activity. To exploit these opportunities mobile application developers must generate successful market entry strategies, and among them a niche market strategy is considered the first step towards financial gain. Almost all the entrants pointed to the unique space, market position, and requirement they had carved out for engaging in business. In addition to delineating the market niche in general, entrepreneurial strategies must also address niche-specific issues of production and distribution.

Furthermore, due to development dependencies the entrepreneur has to be aware of the consumer market for the applications. This is a difficult endeavour, particularly at the device level. Although, devices with improved performance, usability and features are becoming available in the market, the devices in the mass consumer market are typically on average a year old compared to the latest available mobile devices. This is due to the subsidized provisioning of mobile devices by network operators to contractually lock-in the end-user. This trend is more discomforting for the application developer in the prepaid user market. Though the prepaid market is increasing in the US, the phones that are subsidized by the mobile operators are even older and cheaper, further diminishing the potential returns that improved device features might present to application developers.

Emerging Mobile Market Structure and Development Dependencies

In addition to development dependencies' direct strategic implications for entrepreneurs, the interviews also highlighted its influences on mobile market structure that indirectly impact entrepreneurial opportunities and activity. Three main themes in development dependencies induced market structure changes emerged – Fragmentation, Intermediation, and Distribution Integration.

Fragmentation

Two mechanisms of market fragmentation due to development dependencies were observed. First, due to rapid changes in mobile device features and non-standardized device architectures, an application can be developed for specific combinations of device, operating system and networks. The mobile industry is still in an embryonic stage and hence higher degrees of harmonization and interoperability are expected. However, this harmonization is expected to be slow as it feeds on the strategic negotiations and positioning of various upstream firms. Second, application development platforms were seen as a solution to this slow harmonization of incompatible standards. However, almost all interviewees had issues with open (versus proprietary) application development platform standardization efforts in mobile application market. J2ME, for instance, attempts to provide compatibility across devices, operating systems and networks. However, the diffusion of different versions and uncertain adoption of different API sets of J2ME by device manufacturers falls short of achieving interoperability. Although J2ME has the potential to provide economies of scale for development (partly due to the familiarity and success of Java in the desktop market), the lack of control in the diffusion of J2ME to device manufacturers cancels out the intended effect. Proprietary development platform standards such as BREW and Flash, on the other hand, provide the necessary control for diffusion, but are limited in their market reach as a de-facto development standard has not yet emerged.

Intermediation

The increasing fragmentation of the mobile applications market has opened up multiple intermediation opportunities. Intermediation opportunities such as testing, certification, and cross-platform application

porting have emerged from development dependencies. Further, this intermediation was shaped and encouraged by the network operators. The network operators in the early 2000s were looking to get as many mobile applications as possible on their application portals to drive up their average revenue per user (ARPU). In order to do this they opened up multiple developer programs and workshops to support the developers. However, the network operators faced multiple challenges. Of particular concern for the carriers were the possibilities that a badly designed application might affect their networks or that an application might cause an end-user's device to crash and possibly lose critical data. Furthermore, the challenges of testing, certification and integration were mounting – not to mention the administrative challenges of managing and interfacing with the increasing number of developers. This led the mobile operators to outsource the management of these issues to technology enablers, testing agencies and certification bodies. More so, their relations matured with selective aggregators/publishers of applications. Although, intermediation can be beneficial for a growing industry, in mobile application market the entrepreneurs noted that the money that trickles down to them was just "too little".

Distribution Integration

In addition to the development dependencies-induced intermediation, the mobile value chain is also witnessing the consolidation of distribution channels around application aggregators/publishers. The rise of BREW and its distribution system (BDS) is particularly noteworthy here. In addition to providing APIs for application development, BREW incorporates a Distribution System (BDS) that provides the framework for network operators and the end users' to shop, purchase, download, and install software over the operators' network. This constitutes a vertically integrated distribution control system for the network operator. Further, Qualcomm through its BDS facilitates a process to manage certification and testing of applications on different BREW-enabled devices . Although there is a cost associated with this package, the process is streamlined and can be repeatedly used by the entrant in the long run. Currently, BDS is not an option for J2ME developers, but with newer BREW versions that incorporate the J2ME platform, this is expected to change.

As the three different market structure effects (fragmentation, intermediation, and distribution integration) indicate, all the levels in the mobile value chain are knit into a complex system. Innovation will come from multiple levels of this complex and continuously evolving structure. New innovative mobile applications hence will depend heavily on the slow evolution of the mobile value chain. Expectations for the speed of this evolution are exemplified by the comment of one entrepreneur – "I think it's naïve on my part to hope that I would be able to write an application and be able to run [it] on different devices." These expectations are likely to hold true for some time to come.

CONCLUSION

The idea of a "killer app" driving the ongoing "mobile revolution", derived from the Internet revolution, is often discussed in trade press articles. However, the development of this "killer app" requires navigation through a variety of technical dependencies and market uncertainties. The complexities stemming from such issues hamper the economic viability of entrepreneurial efforts, which might otherwise serve as the engine for the "mobile revolution".

In addition, the paper highlights the potential benefits and shortfalls of application development platforms. That is to say that although multiple open and proprietary application development platforms have been designed to address technological dependencies (like J2ME, BREW, Nokia Series 60), two important implications standout – 1) development platforms are unable to completely integrate technological dependencies; and 2) the mobile applications market has fragmented along the development platforms. These two issues combine to further exacerbate problems that development platforms were introduced to resolve. also note that these issues are more prominent in the case of an open development platform (J2ME) as opposed to a proprietary development platform (BREW), due to the lack of control in adoption and versioning.

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