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Mobi-Incubation User Experience for Rural Entrepreneurs in Emerging Economies

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Abstract: Business incubation has long been a successful economic development tool in developed and emerging economies. It helps entrepreneurs start businesses that remain sustainable. However, business incubation theory designed for developed countries and urban areas does not have the same application in rural areas. It is often not possible for business incubators to be established in these areas due to geographical constraints and the characteristics of the user population. This paper acknowledges that emerging economies can harness the explosive wireless technology and services for sustainable development of entrepreneurship in rural areas. Consequently, it explores the potential of using mobile technology as a tool that facilitates business incubation hence "*mobi-Incubation"*. Although the Business incubation concept is well established in developed countries and urban areas in emerging economies, some concepts may not be applicable to rural entrepreneurs. This paper therefore, explores the mobi-Incubation concept and business incubation services required by rural entrepreneurs in South Africa. It asserts that for the successful uptake of mobi-Incubation, one needs to consider the context and the type of users. Through a review of relevant literature, this paper explores the components that influence mobile user experience in a mobi-Incubation process. Thereafter it proposes preliminary elements that need to be considered when developing mobi-Incubation applications for rural entrepreneurs in emerging economies like South Africa.

Keywords: Business incubation, mobi-Incubation, user experience, rural, entrepreneurs, emerging economies.

1. Introduction

A positive relationship between entrepreneurship and economic growth has been widely agreed upon [1,4]. Entrepreneurship sector contributes towards the economic development of a country in several ways especially by creating employment [3,4]. In South Africa, an emerging economy, small businesses are estimated to account for approximately 38% of production and 71% of jobs [3, 5]. However, a recent Global Entrepreneurship Monitor (GEM) report indicates that South Africa is struggling in entrepreneurship. The report

shows a drop of 40% in the number of start-ups in 2009 as compared to 2008 [4, 6]. Moreover, there is lack of entrepreneurial activity in rural areas as compared to urban areas [4].Most reports consistently show that the main issues facing entrepreneurship in rural South Africa are: a low level of overall training and education, lack of access to finance due to a difficult regulatory environment, infrastructural inadequacies, a lack of active markets and the lack of access phenomenon [2, 4, 7].

In an attempt to curb these problems several Information Technology for Development (ICT4D) innovative solutions have been proposed. Lately, most solutions revolve around the mobile for development (M4D) solutions. Enthusiasm for Mobile for Development (M4D) has come in waves [8]. Many believe that mobile technology offer entrepreneurs opportunities to deepen interactions with existing customers, replace travel, improve market information flows and productivity as well as increase Gross Domestic Product (GDP) [2, 9]. As such mobile technology has surged worldwide with over 5 billion mobile phone subscriptions globally [10]. The International Telecommunications Union (ITU) Report [11] reported that the number of mobile subscribers in Africa is constantly increasing as it is the region with the highest annual growth rates. With this notion in mind, this paper acknowledges that mobile technology holds potential to support economic development initiatives such as business incubation. The availability of such innovative mobile technology will spur and sustain entrepreneurship in rural South Africa.

It is with no doubt that the benefits offered by mobile services are many, but so are the challenges that prevent access and use [2]. Chittaro [12] cautions that if Human-Computer interaction (HCI) aspects of mobile technologies are not properly addressed, users will not enthusiastically adopt mobile computing. This author further argues that mobile services will not be successful if we do not understand mobile users and design for their contexts. Therefore, designing and deploying mobile applications necessitates attention to numerous considerations of the user population, context, purpose and conditions in which the technology will be used, as well as expectations of the product and the nature of its influence on the user populations. It is with this motivation delves user experience and contributes to building of factors that influence user experience in a rural mobile context.The paper attempts to address the following research questions:

What services are needed for a successful mobi-Incubation process?

What user experience elements should be included in a mobi-Incubation to ensure a seamless user experience?

An explorative research methodology was applied by the researchers to address the abovementioned research questions. The paper starts by providing a review of literature focusing on business incubation while highlighting the services provided in a business incubator. It then addresses the first research question by proposing a mobi-Incubation support service framework. Thereafter, mobile user experience is discussed and the second research question is addressed by proposing preliminary UX elements for designing a mobi-Incubation application.

2. From Business Incubation to Mobi-Incubation

Generally an incubator can be viewed as a support environment for start-up and fledging companies [13].Hackett and Dilts [14] systematically reviewed literature on business incubators and business incubation and put forward a large number of detailed definitions of business incubators. Four components received particular attention in their review: (i) shared office space, which is rented under more or less favorable conditions to incubatees, (ii) a pool of shared support services to reduce overhead costs, (iii) professional business support or advice (‘‘coaching’’) and (iv) network provision, internal and/or external. By

providing entrepreneurs with these services, and enabling them to reduce their overhead costs, business incubators are able to significantly improve the survival and growth prospects of new start-ups [14-16].

In most cases business incubators are funded for a limited amount of time, and the incubator clients are aided for short periods of the incubator's lifetime. In this case if an application had been introduced to the incubatees, it is only accessible to them during their stay with the program. To deal with this situation many business incubators introduced virtual incubation also referred to as ‘‘incubators without walls’’ that endeavour to deliver business assistance services to incubator clients who are not co-located within the incubator [14, 17]. In rural South African areas which face developmental challenges such as poor roads, very limited access to computers and bandwidth, virtual incubation may prove to be a challenge. Hence, individuals require access to support in remote and rural areas, but it is not possible for business incubators to be established in each of these areas [18].

It is therefore, necessary to utilize new emerging technologies such as mobile phones. This paper therefore argues that mobile technology would allow government agencies and private companies to nurture rural entrepreneurs to improve their sustainability as elaborated in figure 1. It is important to note that the formation of a mobi-incubator follows the same generic procedures and motivation as a normal business incubator, which is beyond the scope of this paper. This paper concentrates on the relationship between the mentor and the incubatee who in this case is the rural entrepreneur and looks into user experience factors.

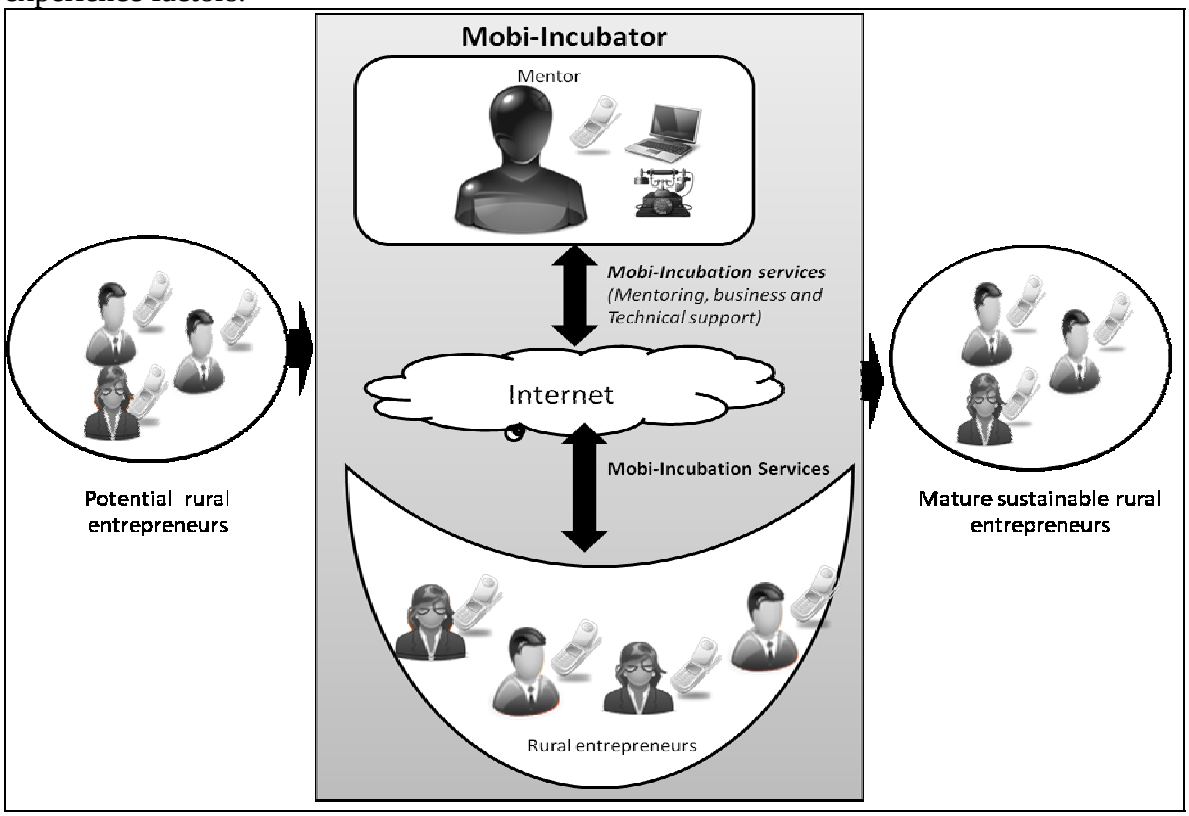

Figure 1: The Concept of Mobi-Incubator

Source: *Authors’ interpretation of literature*

As can be seen in the figure 1, the mobi-Incubator consists of two stakeholders, the mentor(s) and rural entrepreneur(s) also referred to as incubates. In a mobi-Incubator a mobile phone enables the mentoring, monitoring and guidance of entrepreneurs wherever they are located. More importantly, the rural entrepreneurs are connected to a wide network of

coaches and investors spreading the costs and exposing them to a wide range of expertise and experience.

It is important to note that in this process a system needs to be developed to manage the mobi-Incubation process which at the moment does not exist in available literature. Mobile technology is more complex than other types of Information Technology environments, as it includes not only the hardware and software, but also communication networks that make possible most mobile services [19, 20]. The question remains what services are needed by rural entrepreneurs during a mobi-Incubation process? Keeping in mind the challenges which a mobile device brings forth such as the screen which presents severe limitations as it restricts the amount and format of the data that can be presented.

The following section discusses the business incubation support process; the discussion is contextualised to the needs of the rural population and mobi-Incubation.

3. Mobi-Incubation Services

Most aspiring rural entrepreneurs have had no previous experience, possibly even little exposure to a mature corporate environment. Therefore, a good understanding of the rural community will enable one to add related services that could subsidize some other incubation activities [21]. Figure 2, summarises some of the services available in literature which are deemed crucial for South African entrepreneurs. As can be seen in figure 2 some of the services required are business support, mentoring services and technical support.

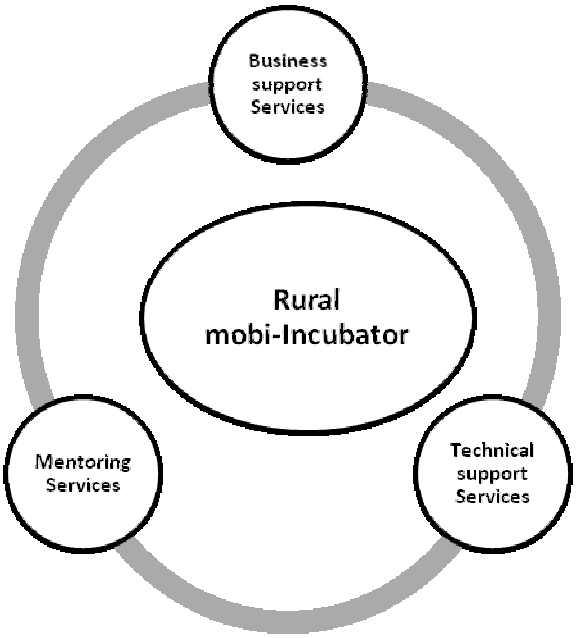

Figure 2: Mobi-Incubation Services

Source: *Authors' interpretation of literature*

3.1 Business Support Services

The number of South Africans that believe that they have the knowledge, skills and experience required to start a business is rather low [4]. Many South African rural entrepreneurs do not distinguish between their personal expenditure and the business expenditure. It is therefore crucial to provide a way for them to manage their finances. Providing rural entrepreneurs with these skills is crucial for their success.

Business support services may include an array of support such as entrepreneurial training and business development advice, as well as services concerning general business

matters such as accounting, legal matters, advertising and financial assistance [2, 16]. Those of most concern here are those related to business development and entrepreneurial training, including coaching and education related to business planning, leadership marketing, sales and financial assistance.

3.2 Technical Support Services

Due to the paucity of financial resources for further education, rural entrepreneurs have low literacy levels. It is therefore, necessary to provide technical support for rural entrepreneurs whenever needed. Technical assistance includes research and technology supply pipelines, intellectual property protection and technological know-how skills. Technical support include aspects such as; technology trouble shooting for example printers, faxes and other technology which they many have [22].

3.3 Mentoring Services

Mentoring refers to the close hand-holding of new rural entrepreneurs [7]. Rural entrepreneurs lack skills in areas such as negotiation, communication, conflict management, time management among others. These skills are essential for the success of any business. Other mentoring services include investments, general support and life skills mentoring. We therefore propose that the mobi-Incubation application should also include these services.

As indicated before, designing mobile applications is a challenge; this challenge is posed by mobile restrictions which range from the device itself to that of the users. Chittaro [12] emphasises that users will not enthusiastically adopt mobile computing devices if we are not able to prevent the pains and complexities of interacting through very limited input and output facilities. The author further argues that mobile services will not be successful if we do not understand mobile users and design for their contexts which are different from the ones traditionally studied in HCI. In view of this, we emphasize that in order to ensure the successful uptake and usage of mobi-Incubation, we should design for a positive user experience. The following section discusses user experience, while addressing the third research question: what user experience (UX) elements should be included in a mobi-Incubation application to ensure a seamless user experience?

4. User Experience

User experience (UX) is still an elusive notion with many different meanings, ranging from traditional usability to beauty, hedonic, affective or experiential aspects of technology uses [23, 25]. ISO 9241-210 describes UX as being all aspects of the user's experience when interacting with the product. It includes aspects of usability and desirability of the product from the user's perspective.

Mäkelä and Fulton Suri [26] define user experience as a result of a motivated action in a certain context. The user's previous experiences and expectations influence the present experience, and the present experience leads to more experiences and modified expectations.

Arhippainen and Tähti [27] list five components affecting user experience and attributes for each component. These attributes include the age of the user, symbols as cultural factors, or the weight of a product. Forlizzi and Ford [25] investigated what influences experiences by investigating the characteristics of user-product interaction and what surrounds it. These authors identified users and products as major influences. They further argue that the user-product interaction takes place in a context of use, shaped by cultural and organizational behaviour patterns. Hassenzal and Tractinsky [24] sees UX as

consequence of a user's internal state pre-dispositions, expectations, needs, motivation, mood, the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the interaction occurs (e.g. organizational/social setting, meaningfulness of the activity, voluntariness of use, among others). Roto [28] argues this, stating that the term experience encompasses too many variables and that a focus on the interaction and experiences of the user with an interactive system is desirable.

With the various UX definitions in mind, we acknowledge that the user's internal state affects user experience and that previous experience and expectations affect user experience. Hence the context also plays a role in user experience. In view of this, it is clear that there is a need to gain a deeper understanding of factors affecting UX in a rural mobile context. This paper focuses on the three high level UX components identified by Hassenzal and Tractinsky [24] namely context, user and the system or content. The following section discusses mobi-Incubation user experience.

5. Mobi-Incubation User Experience

As discussed before mobile technologies bring forth different complications to traditional systems. There is limited literature on mobile user experience. Subramanya and Byung's [29] approach to enhancing mobile user experience focus on three dimensions namely device-related issues, communication-related issues and application related issues. Device-related factors are related to deal with hardware features that are built into the device. Communication-related issues focus on efforts to enrich interpersonal communication and application-related issues deal with mobile application interactions. Botha et al. [30] explored the mobile user experience in a mlearning and expanded Hassenzal and Tractinsky's components to include the following:

- **User:** the mobile user, mobile use;
- **System:** mobile device, mobile business practices, network affordances, mobile applications, mobile interaction;
- **Context:** mobile context

The following section addresses the third research question in this paper which is: what user experience (UX) elements should be included in a mobi-Incubation application to ensure a seamless UX. The discussion is presented with the previous discussion in mind whereby the mobi-Incubation application is the ***system*** aimed at entrepreneurs who are the ***users*** in rural areas which is the ***context***.

6. Proposed Guidelines for UX Elements for Mobi-Incubation Application

When designing a mobi-Incubation application, UX design is aimed at describing the users' satisfaction and delight in terms of the application "*system*". For the purpose of this paper, the elements proposed in figure 3 were identified as a good baseline when designing mobi-Incubation application.

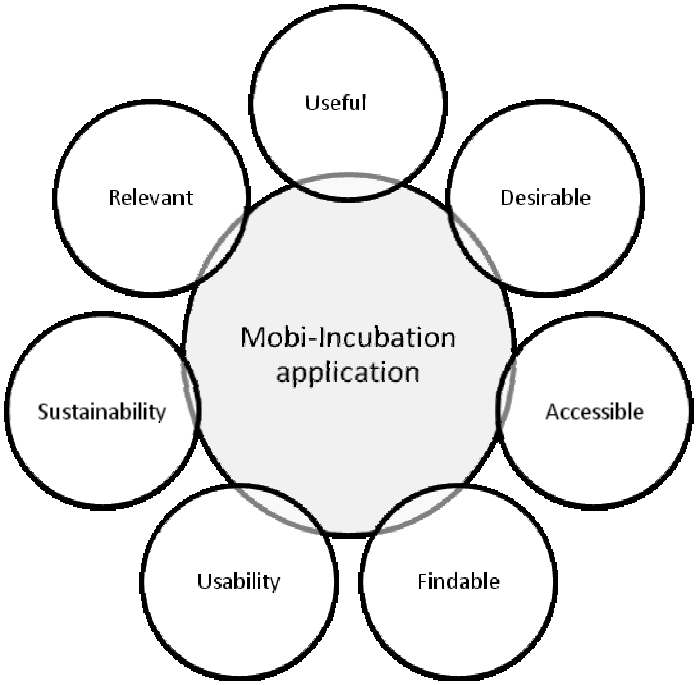

Figure 3 UX Elements for Rural Mobi-Incubation Application

***Source:** Authors' interpretation of literature*

6.1 Useful

Usefulness is based on usability and utility. This implies that a mobi-Incubation application should give exactly the right kind of service that meets the users' expectations. Considering the rural entrepreneurs' physical remoteness and lack of transport, providing them with the correct and complete services will reduce the frustration of having to struggle to access the services elsewhere.

6.2 Desirable

To an increasing extent products should not only fulfil the utilitarian but also hedonic user needs. Therefore, visual design is crucial in order to ensure a positive UX. It is responsible for the clarity of the information and the elements, the simplicity of the tools and features, the pleasant or interesting appearance of the interface, the visual hierarchy, and the look and feel of the interface. mobi-Incubation applications should be designed with appreciation of brand, image and other elements of emotional design.

6.3 Accessible

Accessibility describes how easy it is for people to use the applications. In this case the mobi-Incubation application should be designed in such a way that includes the diversity of all rural entrepreneurs.

6.4 Findable

This aspect focuses on the clarity of information and features, hence a mobi-Incubation application should respond to issues of workflow, the logic and simplicity of information. This should enable users to navigate the application with ease.

6.5 Usability

Usability describes how easily an application can be used by the user. A usable application is effective, efficient, easy to learn, and provides a satisfying user experience. Due to low literacy levels of rural entrepreneurs, usability is vital to the success of mobi-Incubation applications.

6.6 Sustainability

Mobi-Incubation applications should enhance sustainability of entrepreneurs, considering the limited resources available in rural areas. The mobi-Incubation itself should also be sustainable adding value and good experiences to the overall incubation process.

6.7 Relevant

Relevance in this regard refers to the relevance of the content provided for the incubation of entrepreneurs in a local (South African) context. Since rural entrepreneurs face unique challenges for instance low technical skills it is crucial to provide relevant mobi-Incubation services.

7. Future Work

This paper has presented the preliminary findings from an ongoing PhD study. The next phase of this study involves the development of the actual mobi-Incubation application and to further identify user elements for their appropriateness to rural entrepreneurs, keeping in mind the low literacy levels and the context. The impact of the mobi-Incubation application will also be investigated with regards to UX. The primary goal of the research is to propose a user experience framework for mobi-Incubation in rural areas.

8. Conclusion

In South Africa and other emerging economies alike, we are trying to reduce poverty and build a vibrant economy at the same time. Entrepreneurs and particularly rural entrepreneurs find themselves in the midst of both interventions. In many instances the objectives of developmental and business approaches appear to be in conflict. In an attempt to reconcile these, we propose that mobile technology be used during the business incubation process. Many entrepreneurs appear to fail outright or they do not grow beyond survivalist levels. To ensure sustainability of both entrepreneurs and the growing economy, it is necessary to design and develop a mobi-Incubation application that considers all aspects of the users' interaction with such an application. Some of these aspects include business principles and needs, context of use, utility and usefulness of the application and relevant local content. Only when all of these and more are in place, will entrepreneurs be empowered to build successful and sustainable business which will contribute to the economic growth of the country.

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