Defining, executing and evolving microfranchise templates

Jeff DePreea,*, Stanley Y.W. Su

aDepartment of Computer Information Science and Engineering, University of Florida, Gainesville, FL, USA

Abstract

In developing and developed countries alike, microenterprises have the potential to alleviate poverty by allowing the motivated poor to go into business for themselves. Many, however, may not have the knowledge or skills needed to identify the opportunities available and create a viable business plan. This paper looks at defining and employing microfranchise templates to facilitate the process of starting and running franchise instances. These templates will include workflows that guide the entrepreneur and employees via mobile phones, will support the formation of collaborative federations to minimize waste and maximize profits, and will provide adaptive parameters that can be adjusted over time based on past results.

Keywords: microfranchise; microenterprise; business workflows; event-driven; collaboration

1. Introduction

Poverty is a problem in developing and developed countries alike, but, particularly in the developing world, many poor have the fitness and skills needed to escape poverty. Microenterprises are a well-established means of giving the capable poor a reliable source of income [17]. Many are entrepreneurial in nature and can devise and execute their own business plans; these individuals only need the capital to procure the supplies they need, and microcredit programs have addressed this need [2]. Others, however, do not have the knowledge or experience needed to start their own business from scratch. Microfranchising can provide an avenue to replicate a proven business model, greatly simplifying the process of creating a microenterprise [18].

Franchising makes up 15-25 percent of the GDP of most developed countries [11] and the tenets of the franchising model can be readily applied to the case of the developing world. Both non-profit NGOs and for-profit multi-national corporations use microfranchising to advance the development of franchisees and their communities, but it can also open up new markets for goods and services. Enterprises initiated through this process demand minimal initial investment and do not require the strong business community or educational background that is typically necessary to generate novel businesses. Leveraging a proven idea means minimal risk for the franchisee, and often, the necessary supply network is already in place [13].

* Corresponding author. Tel.: +1-941-539-7472
E-mail address: jdepree@ufl.edu.
Microfranchises, however, remain highly dependent on the initiative and continuous intervention of outside entities. In order to introduce a franchise to a new area, it is necessary for an organization to search for and select that area, identify appropriate individuals or groups within that area to act as franchisees, and provide training and supervision until the businesses are well-established. Such organizations will typically monitor the success of their franchises over time and actively work to refine the business model [13]. This process is resource-intensive and is limited in scope to the areas that these organizations are able to identify. If there were a way to provide potential franchisees with a mechanism for easily identifying new business opportunities, along with guidance on how to start and run such businesses, the cost of propagating a franchise could be significantly reduced, and the opportunities could therefore be extended to a broader audience.

To this end, a computer system can be developed that will allow NGOs, private corporations, and successful entrepreneurs to define templates for starting and running a microfranchise. Those interested in starting a new business can subsequently access the system and register with a given template. Each template will contain a workflow that will notify the franchisee, and any employees, when each step needs to be taken. The template will also contain events and business rule specifications that will assist the franchisee in reacting to given circumstances. Templates can be designed to be modular, such that the inputs and/or outputs are derived from or are delivered to other microfranchises in the system [19].

The templates can be defined through a user-friendly web interface that can be accessed with virtually any web-enabled computer or device, anywhere in the world. A template designer can specify the various workflows that will be conducted throughout the life of the business, the events that will signal when notable things happen in the business’s environment, the rules that will determine when and/or under what conditions special actions need to be taken, and the operations that one or more of the employees of a business must carry out at a given point in the workflow or as a result of a given event. Template definers will be able to build collaborative networks among symbiotic businesses. Records and statistics from existing instances of businesses will also be available for mining.

While the template definition can be performed via a web interface, many microfranchisees will not have access to an internet-enabled computer. The rapid proliferation of mobile devices in developing countries makes them a promising candidate for providing ubiquitous access to the system. In Angola, for instance, the prevalence of mobile phone ownership is roughly five times that of internet access [5], and in both India and South Africa, the number of mobile internet connections is markedly higher than the number of those that use a PC[9]. Programs such as txtEagle [10] are already allowing some in the developing world to work for multinational corporations using their phones.

Since multiple franchisees in different locations will be adopting the same template, it will be possible to measure the effects of different environmental variables and tweaks to the business over a broad sample. Using objective functions, the success of a business can be quantified and the template may be adjusted at adaptation points to maximize the appropriate functions.

The remainder of this paper is organized as follows. In Section 2, we look at recent literature that has addressed related problems or made use of similar components. Section 3 describes how a template is created, saved, published, and adopted by franchisees. Section 4 discusses how adaptation parameters are selected and adaptation rules are established to change franchises based on usage patterns. Finally, Section 5 provides a brief summary and conclusion.

2. Related Work

While the full integrated system discussed in this paper is novel, many of the component parts and related technologies have already been successfully implemented.

2.1 Microfinance

Micro-loans have been around for centuries in various forms, but only in the last few decades have the associated processes been formalized through the development of microfinance institutions. Today, thousands of these organizations exist, in both non-profit, and for-profit forms [4]. In recent years, companies such as Kiva (www.kiva.org) and MicroPlace (www.microplace.com) have made it possible for ordinary internet users to participate in microfinance. Individuals are able to loan small amounts which are combined with other small
contributions to fund a project. Some of these companies are non-profit and do not return interest to the investors, while others are for-profit and provide competitive interest rates to investors [3]. While these systems typically provide a profile for the sponsored individual or group, and a history of repayments, they do not provide detailed updates on the progress of the business. The system discussed in this paper produces a comprehensive audit trail for all of a microenterprise’s activities, which could be a huge value-add for potential lenders.

2.2 Microfranchising

In the past few years, microfranchising has become a powerful tool for simplifying the processes involved in starting and running a business. When a franchisee acquires a new microfranchise, he/she receives with it a standard operating procedure with checklists and guidelines which a guiding organization will lead the franchisee through, directing his/her activities and regularly gauging progress [11].

Examples abound of how the microfranchising methodology has been used to provide livelihoods for entrepreneurs, distribute critical products to underserved regions, and, in some cases, even provide profits for investors. One such case is that of Drishtee (www.drishtee.com), which through a network of kiosks in rural villages, distributes educational materials, eyeglasses, and other necessary products and services to those who did not have access to them before. At present, developing a new microfranchising model, and adapting it to new environments is expensive [13]; the system discussed in this paper seeks to simplify the process.

Franchising also makes it easy to standardize the goods and services that businesses produce. This standardization greatly simplifies the process of a consumer searching for a given good or service. [15] introduces the idea of Organic Product Catalogs and the advantages of providing consumers with a catalog of standard products that show minimal variation from one producer to the next. Likewise, [6] explains what can be gained from reusing educational courses in a broad range of learning environments.

2.3 Crowdsourcing

Many corporations have a large number of small, simple tasks, that can be completed anywhere, using only an internet-enabled computer or mobile device, in the absence of specialized knowledge. By opening these opportunities to the world at large, services such as Amazon’s Mechanical Turk, can markedly reduce a company’s costs [12]. The rapid proliferation of mobile devices has enabled many without access to computers to participate in crowdsourcing. The txtEagle project allows individuals to complete tasks using text messaging and voice menus and compensates them by placing money in their mobile account. This project has provided many who do not have other opportunities for employment with a respectable income [10].

2.4 Strengthening Microenterprises with Mobile Devices

The increase in mobile subscribers has also paved the way for increased efficiency in small businesses. [7] details how location-detecting technologies, integrated into many mobile devices, can be applied to aid mobile food vendors in Indonesia. By connecting producers with real-time information about potential markets, one can more accurately predict demand and allow producers to make better decisions; [1] discusses how Indian fishermen can use market data to make an educated guess on how much fish they should catch.

The system discussed in this paper will provide an interface, accessible over the web and by mobile phones, that will allow individuals to identify opportunities and receive instruction on how to start and run a new business. Like with existing microfinancing programs, donors and lenders will be able to select businesses to fund. These businesses will be instances of microfranchises; the system will simplify the process of defining the framework for each microfranchise and guiding a new microfranchisee through each business model. As in the crowdsourcing efforts that are active today, anyone with a mobile phone can log into the system and become a microfranchisee. By leveraging the power of mobile devices, the system will be able to react to location data and other environmental factors and customize the instructions given to the franchisee appropriately.

At present, there is no system that ties together these concepts, and it is this lack, coupled with the potential for such a system to greatly expand access to life-changing microenterprise opportunities, that motivate this research. In the following sections, we will use two different types of microfranchise to illustrate the different components of
the system. The first will be a transportation franchise that will tie together a distributed network of drivers, operating a variety of vehicles to move people or goods, either on a schedule or on-demand. The second will be a food provider, who may be a farmer that sells his/her own produce, a housewife that prepares snacks or meals, or a reseller that buys in bulk and sells in smaller quantities. We will explain how templates may be developed for these businesses, how those templates can be adopted by franchisees, and how the system can facilitate cooperation among instances of the templates.

3. Template Specification and Registration

The system will have two types of end-users. The first, the franchisors, will include experienced entrepreneurs, as well as representatives from multinational corporations and NGOs, and will be responsible for content definition; these groups may have purely charitable motives, or may make a profit by integrating themselves into the supply chain or by taking some cut of each franchisee’s profits. The franchisors will define the templates for microfranchises, which may be existing franchises that are in need of a new mode of proliferation, or may be new enterprises that still need to be field-tested. The second group of users, the franchisees, will adopt a given template and follow instructions issued by the system to start and run a business; the system will lead them through one or more workflows and will handle budgeting and record-keeping automatically. The system allows the first group to specify the different components of each template using an intuitive graphical interface. The microfranchisees and their employees need only to receive instructions for tasks that must be performed and enter results upon their completion; these system-user interactions can be performed using a low-end mobile device, though the initial registration steps will require brief access to an internet-enabled device.

3.1. Defining Business Workflow and Roles

In the context of our system, an enterprise template is a contractual package that provides a franchisee with a set of instructions that are provided over time as he/she completes tasks and enters results into the system. Additionally, the template includes events and rule specifications that can respond to different events in the user’s business and modify or enact workflows appropriately. A comprehensive, yet intuitive, interface is provided to define a structure of tasks that each franchisee, and any employees he/she might have, must complete, along with the materials required to complete those tasks. Tasks within a workflow will be specific to different users’ roles.

Each workflow will consist of a structure of activities that invoke a number of manual and/or automated operations. These operations can be defined before or after the structure of the workflow is in place and can be reused in other workflows or enterprises. Each manual operation will have instructions for the system users (i.e., the franchisee and his/her employees), along with data from earlier operations that a user will need to complete a specified task(s). When all tasks within a given operation are completed, the user will provide results to the system. We have previously applied workflows in the business and education domains in [20] and [8].

In our transport service example, when a customer requests a ride or delivery, a workflow will execute a number of automatic operations that use web services to discover the optimal route and select the best driver/vehicle for the route; a manual operation will then contact the appropriate driver with instructions on how to communicate with the customer, where and when to perform the pick-up, and what payment to request. When the ride or delivery is completed, the driver will report back to the system, and this will cause the workflow to resume and execute a final automatic operation that will update the driver’s budget and other appropriate records.

3.2. Events and Business Rules

Often, owners or employees of micro-enterprises need to react to events in their area, changes in the costs of goods and services, or critical levels in one’s inventory or finances, in order to optimize their on-the-job activities. Events and business rules can be used to instruct a business owner to shift operations to a different area in order to tap into a localized surge in demand, encourage a change in the products or services that are to be offered, alter one’s schedule to react to inclement weather, or take some necessary action to comply with local statutes.

This system will leverage an existing software system known as ETKnet, or Event-Triggered Knowledge Network, which allows organizations to define and process workflows and business rules in order to react to events
that occur within a collaborative federation [16, 20]. ETKnet allows for businesses to subscribe to events, and define rules that will be evaluated when an event occurs, taking into account the data attached to that event. Rules can change the values of data attributes within a business and enact workflows that guide the owner and employees through the appropriate steps. In ETKnet, events, event notifications and event data transfer are handled by an Event Server. The processing of rules and the enactment of workflows by rules are handled by a Rule Server. Rules and workflows are translated into Java code and packaged as web services for the uniform processing in the web service infrastructure.

In the case of a transport service, an event would be a request for a ride or delivery. When a customer makes a request to the system, an event is fired which contains data regarding the location of the customer and his/her destination, as well as the number of persons or size of the package to be delivered. Based on this event data, a rule can be evaluated to determine what type(s) of vehicle will be capable of providing the service.

### 3.3. Budget Management

Since many candidates for employment as microenterprise franchisees do not have much knowledge of finance, a great asset for template users will be integrated budget management and inventory control. When franchisees or their employees make sales or purchase inventory, they can report these transactions using mobile devices and the system can keep a comprehensive record of the funds and resources available to the business. Events and rules can be used to react to critical levels in either money or supplies, or to make changes based on historical trends.

In many parts of the world, it has become possible to send and receive money using mobile phones [10]. Using this technology, the system could automatically make loan payments, pay dividends to investors, handle purchases of supplies, and pay salaries to employees.

Since there will already be a global system in place that drives the creation and operation of the businesses, it will be straightforward to provide an interface to allow donors and investors to make money available for use by instances of a particular template, to register with the system so that they can be notified when a potential microfranchisee expresses interest in a given template, or to provide funds to a new instance which is still in the fundraising stage. These individuals or organizations can then easily follow the progress of the businesses they have funded by viewing an audit trail created by the franchisees’ interactions with the system.

With our transport service, the system will determine from the circumstances the correct price to charge for each ride/delivery, and the franchisee will report on gas usage and maintenance. Using this data, the system will maintain detailed budget information, and use that to track the health of the business.

### 3.4. Publishing the Template

Once a new business has been defined, it will need to be made available to potential entrepreneurs. In order to increase the speed of communication and decrease the cost of sending and receiving data to/from mobile devices, the service will be decentralized, with servers local to specific countries and regions. These servers can be operated by franchisors or independent aid organizations. These servers will each have a copy of the user interface and backend communication software, and will host a component for managing event and rule processing. One of these servers will act as a coordinator that will maintain a directory of regional servers and host the template repository. Franchisees can access this coordinating server to identify the appropriate local server to find appropriate templates to reuse.

### 3.5. Discovering a Template

To start a new business, an entrepreneur will need to first select a template from the central repository. A prospective entrepreneur could specify what type of business he/she is interested in starting, the available capital, and other relevant parameters and receive a list of search results to investigate. Alternatively, the system could propose a business to a prospective entrepreneur based on its knowledge of the needs of the area and the other businesses that are present; individual entrepreneurs are not always able to pick up on such relevant factors.

Necessary data can be entered into the system by the prospective entrepreneur, by an NGO or multinational corporation, or by a government. Once one or more businesses have been started using the system’s templates,
additional data can be gathered which can provide guidance for future ventures. The success or failure of a particular business model will serve as an indicator for the demand for a given good or service.

The transport service, described above, would be a good match for a potential franchisee who owns a vehicle which is appropriate for transporting people or goods, and, who lives in an area with a shortage of other similar services.

3.6. Modularity in Templates

While microenterprises derive much of their success by being limited in size and focus, such that they may be run with minimal resources and operational complexity, much can be gained by creating a loosely connected network of related or complementary enterprises. The proposed system will be designed in such a way that related enterprises can be linked together, and it will modify its recommendations for new enterprises, and the steps involved in starting and running each enterprise, based on the existence of related enterprises.

Each business template will have inputs and outputs that represent the supply chain. Necessary goods and services for each business instance can come from any source, but it will be desirable, if possible, for these to come from other instances within the system.

Additionally, it will frequently be useful for different instances of the same template to collaborate. When purchasing inputs from a third party, it will save on transport costs if goods are purchased for multiple instances simultaneously. In the same respect, if instances are able to collectively sell their products, they may be able to command a higher price for each product while minimizing expenses. The system can also assist in distributing like businesses evenly over a geographic area and coordinating prices to maximize the efficacy of each business.

Both the transport and food selling businesses would be good examples of modular franchises. A food seller will need to acquire raw ingredients and move their finished products to the consumers, and their workflows might therefore include coordinating with an instance of the transport template. Likewise, one instance of the food template might prepare a dish using ingredients provided by another instance. If a seller is in a remote area, it might make sense for two collaborating instances of the transport service to move its products to the consumers; a franchisee with a motorbike might take the goods to an informal distribution center, where a franchisee with a truck could then assume the responsibility of delivering the product to its final destination. Figure 1, below, depicts this scenario.

Fig. 1. typical processing and communication for sample franchise
4. Evolving Business Templates Using Adaptive Parameters

The values for many parameters in a template will be predetermined by the environmental factors of a given situation. However, some parameters within a template will be flexible and can be varied by the system or the entrepreneur; variations in these parameters may lead to a more successful business. Examples of this type of parameter could include the amount of products that are purchased for resale at any given time, or the profit margin that is built into the sale price of each product. These parameters, depending on circumstances and the primary goal of a given instance of a template, may be varied to maximize the value of a given objective function. By looking at the values, these variables are assigned for each instance, in conjunction with the values of other variables in the instance, the system can attempt to identify the optimal values for these variables for a template that is to be applied in a given environment.

These adaptation points will be selected by a template designer and the system will subsequently generate statistics for the points for all instances of the template that are currently active in the system or have been active in the past. Users will be able to view these statistics, along with the system’s recommendations based on those statistics and use this information to make an informed decision when assigning values to independent variables.

In our transport example, adaptive parameters may be used to decide which types of vehicles to use in which scenarios. A bicycle rickshaw is a human-powered taxi that is extremely cheap to operate, but, due to the speed at which it moves, and the effort that must be exerted by the driver, is only effective for short distances. By varying the parameters used in the determination of whether to use a human or motor-powered vehicle, we can have an effect on the success of those franchises; having a bicycle rickshaw handle longer-distance rides will create more business for that driver, but it may reduce customer satisfaction, as well as the amount of business that the driver is able to handle in a given timeframe.

5. Summary and Conclusion

This paper describes a system that will allow for the specification of microfranchise templates, and the discovery and implementation of those templates by interested individuals or groups. Workflows will guide the microfranchisees through the process of starting and running a business, allowing them to use their mobile devices as a means to communicate instructions and input data into the system. Events and business rules will allow the system to react to inventory shortages, a lack of funds, inclement weather, or other circumstances, and guide the owner and employees appropriately. Adaptive parameters and rules will make it possible for the system to observe the past performance of franchise instances and decide on the best procedures to adopt when starting future instances. Since the system described here is "template-driven", it can be used to create and run different types of microfranchises defined by different templates.

The fundamental framework for this system, in the form of ETKnet, has already been implemented and deployed to assist with the exercises of the National Plant Diagnostic Network [16]. Still to be implemented are the interfaces for creating, discovering and adopting templates, as well as the adaptive parameters and rules. Once all components are in place, a target microfranchise, such as the transport or food franchises discussed above, will be identified and the system will be deployed to test several instances of that franchise. If this is successful, a web presence can be established that will allow organizations and corporations to create their own templates, and subsequently, will allow potential microfranchisees to find and adopt these templates.

There are many interesting research problems that we are investigating through the development of this system. A critical task is to develop appropriate interfaces for interacting with franchisees through their mobile devices; information must be conveyed to the user and inputs must be received in such a way that the franchisee will not feel overly burdened by the tasks required of them. Another important feature is the recommendation engine which will advise a potential franchisee on the best template to adopt; we will need to explore the manner in which the engine discovers relevant data about the environment and other active templates. Also of interest, is the issue of what exactly constitutes a template; we must develop a comprehensive set of parameters and an extensible system that will support the creation and management of different types of microfranchises. Finally, we will be looking at establishing a system for interaction within composite templates to bolster the efficacy of the component businesses through collaboration.
References