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COLLABORATIVE CONSUMPTION: CONCEPTUAL SNAPSHOT AT A BUZZWORD

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ABSTRACT

Considerable work has focused on Collaborative Consumption (CC) from a managerial standpoint. Little academic research has been conducted into this specific concept. This paper proposes two theoretical contributions in that regard: 1) a definition of CC that enables to determine effectively whether any given resource distribution system can be labelled as CC or not; 2) the scope and limits of CC by contrasting it with other forms of exchanges. Consumers' capacity to switch side from obtainment to provision or from "obtainer" to "provider" role constitutes the key criteria to identify a resource distribution system as being a form of CC.

We define CC as the set of resource circulation systems which enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator.

Collaborative Consumption is therefore a concept which stands in sharp contrast with the notion of Conventional Consumption. Conventional consumption – which underlies classic marketing thought – is a type of resource distribution system which involves passive consumers (not obtainers), who cannot, or are not given the capacity to, provide any resource or service (not providers). Incapable of engaging either in obtainment or in provision, their role is limited to that of buying – monetary exchange - and consuming organization-made resources or services, and, in the case of tangible resources, to discard them. In contrast, Collaborative Consumption involves not mere "consumers" but "obtainers" who may also be "providers". In sum, consumers' capacity to switch roles from provider to obtainer and from obtainer to provider, in a given resource distribution system constitutes the key distinguishing criteria between conventional consumption and CC.

We also introduce the consumer process that is specific to Collaborative Consumption by emphasizing that CC involves not only delegation, such as in conventional consumption, but also empowerment and quasi-empowerment. More specifically, delegation assumes that there is a clear distinction between organizations which produce and sell goods and consumers who buy those goods produced and sold by organizations. Consumers rely on organization-made advertising, texts, logos, labels, trademarks, brands and other communication to choose among the broad array of goods or other types of resources that are offered to them.

Empowerment means that consumers are empowered to collaborate directly with each other. They organize, arrange and negotiate informally the terms and conditions of the exchange of valuable resources, including goods or services. Under the concept of empowerment, consumers engage in what we call pure collaboration, where both the obtainer and the provider are consumers, such as in a secondhand purchase or sale at a flea market.

As a middle-ground between delegation and empowerment, quasi-empowerment involves consumer-to-consumer exchanges that are mediated by a third-party, which is typically an organization. Under the concept of quasi-empowerment, consumers engage either in sourcing

collaboration or in trading collaboration. Sourcing collaboration means that the provider provides a resource or service to the obtainer through a mediator. On the other hand, trading collaboration means that the obtainer obtains a resource from the provider through that specific mediator.

INTRODUCTION

According to "The Mesh Directory", managed by business author and consultant Lisa Gansky, there are more than 9,000 online platforms across the world, which enable people and organisations to make temporarily available their private resources for others' usage (Owyang, 2014). These platforms represented a global market worth 15 billion dollars, in 2014; 29 billion dollars, in 2015; and are expected to reach 335 billion dollars, by 2025 (PricewaterhouseCoopers, 2015). Focusing on tangible goods only, the Canadian-based Kijiji Secondhand Economy Index of 2016, estimated that about 84% of consumers acquired or disposed of pre-owned goods through secondhand marketplaces (secondhand purchase and resale), gift-giving, swapping or temporary renting (out), through either online or offline exchange channels. According to the Kijiji Secondhand Economy Index of 2015, the Canadian secondhand market, alone, was estimated at 230 billion dollars, in 2015. Through co-creation, some CEOs now want customers, not only their workers, to help them define the firm's new products and services (Prahalad and Ramaswamy, 2004). What do these practices all have in common? They form part of a rising global phenomenon called 'Collaborative Consumption' (CC) (Botsman and Roger, 2010) or, more colloquially, "the sharing economy" (Gansky, 2010).

Despite the increasing use of the term Collaborative Consumption (CC) to denote a wide array of new Peer-to-Peer (P2P) business models or innovative technology-enabled exchanges, no consensus on the definition has yet been reached. This lack of agreement has made it difficult for scholars to determine the impact CC has for the study and practice of marketing as well as for society at large. It remains difficult to compare different studies and their results since each of them uses a different conceptualization.

A clearer definition of CC could have several benefits. First, delineating the phenomenon can guide future research and produce useful contributions and recommendations for marketing practitioners who are keen on learning more about how to adapt their business model to the rising CC phenomenon. Second, a clear conceptualization avoids confusion of terms. CC is often conflated with the notion of "sharing", as epitomized in the expression of "sharing economy" or "commercial sharing programs" (e.g. ridesharing, bikesharing, carsharing, tool-sharing, and so forth), which are also widespread in academia (Lamberton and Rose, 2012; Fishman et al., 2013; Parkes et al., 2013; Cohen and Kietzmann, 2014; Bardhi and Eckhardt, 2012), starting with Yochai Benkler (2004). CC is also confounded with access-based business models which involve access to goods without transfer of their ownership (Bardhi and Eckhardt, 2012). Overall, a clearer conceptualization of CC will allow further useful theoretical studies on the subject.

TOWARDS A DEFINITION OF COLLABORATIVE CONSUMPTION

Review of Previous Definitions

Collaborative Consumption (CC) has been first coined by Felson and Spaeth (1978) who themselves drew upon Hawley's (1950) theory of human ecology to theorize collaborative consumption as events requiring a high spatio-temporal concurrence and which must be analyzed

in terms of human coordination and human competition. They made it clear that, from a consumer behaviour perspective, the unit of analysis is "people", or "consumers" This early conceptualization (see Table 1) is however too broad as it could include such trivial activities as having beer with friends or using a washing machine for family laundry.

Table 1
PREVIOUS DEFINITIONS OF COLLABORATIVE CONSUMPTION

Authors (year)	Definition of collaborative consumption	Web-facilitated	Offline	Transfer of ownership	Free exchanges	Company-owned resources
Felson and Spaeth (1978)	"Those events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others" (p.614)		X		X	
Botsman and Rogers (2010)	"The rapid explosion in swapping, sharing, bartering, trading and renting being reinvented through the latest technologies and peer-to-peer marketplaces in ways and on a scale never possible before" (p.xv)	X	X	X	X	X
Belk (2014)	"people coordinating the acquisition and distribution of a resource for a fee or other compensation" (p.1597)	X				X
Hamari *et al.* (2015)	"Peer-to-peer based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services" (p. 2)	X		X	X	

More recent definitions which characterize the current phenomenon have therefore been developed but each tends to overemphasize one specific aspect of CC and misses out others.

First, based on the review of studies that sought to define the precise concept of "Collaborative Consumption", there is a common tendency to consider CC as being mainly web-driven. Belk (2014), for example, considers that the common denominator to CC ventures is "an Internet facilitated ability to help people find things" (p.1598). Harvey, Smith and Golightly conflate CC with a "computer-mediated economy". Similarly, Hamari, et al. (2015), conceive CC, primarily and even exclusively, as a technological phenomenon because Peer-to-Peer (P2P) collaboration finds its origins in open source programming, and file-sharing. Online cooperation and digital sharing formed the basis of web-facilitated exchange platforms (Botsman and Rogers, 2010; Gansky, 2010; Airgrain, 2012; Nissanoff, 2006). The technological terminology (e.g. start-ups) and metaphors (peer-to-peer) employed in the discursive construction of CC, are also explicit references to this close relationship between technology and CC (John, 2013a, p.13).

Actually, the Internet enabled to increase the scale and scope of practices that are not inherently new but which have always existed before and have been given a new impetus through web technologies (Ritzer, 2015). The web technology merely increased the scope of

previously geographically- or community-ascribed exchange systems. As an example, the semantic field surrounding "collaboration" has not only been used to designate strangers exchanging any type of resource from any part of the globe, but also close neighbours joining for a street-corner yard sale on a Sunday afternoon, such as in Herrmann and Soiffer' s (1984) study on American garage sales. CC is therefore an incremental evolution rather than a discrete revolution (Ritzer, 2013). Since it accrues from previously offline-based informal exchanges, these should not be cast out of the way but rather regarded as founding practices of current CC. As such, "offline exchanges" should fit within the conceptual delimitations of CC, mainly because they are no less collaborative than Internet-facilitated modes of value exchange.

The Web technology also enabled unprecedented business models to emerge. Giesler's (2006) analysis of the Napster file-sharing platform emphasized the impact of the Web in transforming previously discrete dyadic (on-to-one) exchanges into networks of polyadic (one-to-many) and rhizomatic (many-to-many) exchanges. Informal product exchanges, resource pooling or jobbing have always existed, yet online applications such as Über or Airbnb tremendously increased both the scope and the intensity of such undeclared practices, which poses, among others, numerous legal issues. In essence, CC is not solely limited to technology-enabled exchanges. Yet, technological advances, especially Web 2.0, increased collaboration between individuals and thus the emergence of new exchange types, which conflate de facto with CC.

Second, since most of CC models are based on leasing and rental schemes, CC has been related to what Bardhi and Eckhardt (2012) termed 'Access-Based Consumption' (e.g. Belk, 2014, p.1597), which can be related to 'commercial sharing systems' (Lamberton and Rose, 2012), 'product service systems' (Tukker, 2004), 'use rather than owning schemes' (Leisman et al., 2013), or 'leasing-rental agreements' (Fisk, 1973), in which access to resources is favoured over their ownership (e.g. Ostrom and Hess, 2007). What is valuable is the service that the good offers rather than the good in itself (Varian, 2000). This approach to CC may be problematic. Focusing solely on product service systems or access-based consumption, excludes a great variety of exchanges such as secondhand purchasing, reselling or swapping, and which are also collaborative (Botsman and Rogers, 2010). Whether offline or computer-mediated, these exchange schemes have often been reported as entailing high levels of P2P cooperation and interaction (Guiot and Roux, 2010; Belk et al., 1988; Herrmann and Soiffer, 1984; Bardhi and Arnould, 2005; Sherry, 1990; Stone et al., 1996; Gregson and Crewe, 2003). The recent literature that started to examine informal and alternative consumption practices, emphasized further that technology – especially the Internet – has favoured the withering of the distinction between prototypical exchange systems (gift-giving vs. swapping vs. commodity exchange) (Arsel and Dobscha, 2011; Albinsson and Perera, 2012; Scaraboto, 2015; Harvey et al., 2014). Instead, there is a simultaneous presence and complementary interaction between different forms of resource circulation systems (Corciolani and Dalli, 2014; Scaraboto, 2015). In other terms, it makes little sense to refer to CC as being limited to temporary access-or granting of access to-resources, since collaboration between consumers can be found in permanent acquisition and disposition as well. Besides, online collaborative platforms tend to blur the frontiers between exchange paradigms anyways. A conceptualization of CC which leaves permanent disposition and acquisition aside would be at best, incomplete, and at worst, irrelevant since it would miss out a substantive portion of CC.

Conceptual Delineations of Collaborative Consumption

Although being predominantly performed online (Belk, 2014; Hamari et al., 2015), offline-based exchanges should not be omitted from CC. Neither should non-access based consumption schemes which involve transfer of possessions. In line with a consumer-focused approach to collaboration, what should however be clearly kept aside form CC, are resource circulation systems which exclude consumer input either at, what we call, the "provision" and the "obtainment" level. In other words, collaboration should not be merely conflated with P2P, or even online systems, but rather with consumers' capacity of being both "providers" and "obtainers" of resources, in a given "resource circulation system". By taking Scaraboto's (2015) theory on hybrid economies, this means that consumers are able to "switch roles, engage in embedded entrepreneurship and collaborate to produce and access resources" (p. 166). The "resource circulation system" equates the metaphor of a "supply chain", much inspired from the discipline of operations management and logistics. CC is therefore characterized by the fact that a consumer could be both an obtainer and a provider of a given resource. Companies have traditionally sold products and services to consumers, they now start pulling on their resources too (Prahalad and Ramaswamy, 2004). Consumers were classically conceptualized in marketing as buyers whereas they have also always been pushers too (Ritzer, 2015). Consumers invite themselves in the value creation process, as consumers and not as formal workers, employees or suppliers, to successfully reconcile their personal interests. Conversely, organizations tap into the sphere of private assets and skills, as formal organizations and not as family, friends, or acquaintances, to make profits or reach other objectives. A consumer is not only a consumer anymore but also an obtainer who may have the additional opportunity to endorse, if wanted, a provider role. More specifically:

1. The obtainer is the consumer who seeks to obtain a resource or service that is provided directly by another consumer (i.e. the provider), or indirectly through the mediation of an organization known as the "mediator" (for profit or non-profit). "Obtainment" entails secondhand purchase, free receiving, swapping, accessing resources for free or for a compensation (excluding conventional consumption access), reconditioned / refurbished consumption, and to a lesser extent, recycled consumption;
2. The provider is the consumer who provides a specific resource or service either directly, to a consumer (i.e. the obtainer) or, indirectly through a "mediator". "Provision" involves reselling, giving for free, swapping, providing access for free or in exchange of a compensation, recycling or trading in with an organization.

CC may be better conceived of in a broader perspective of resource circulation systems incurring differential levels of collaborative intensity, which can be categorized as: (1) pure collaboration (P2P, or Peer-to-Peer); (2) sourcing collaboration (P2O, or Peer-to-Organization); and (3) trading collaboration (O2P, or Organization-to-Peer).

1. Pure collaboration: both the obtainer and the provider are consumers (e.g. a secondhand purchase/sale at a flea market);
2. Sourcing collaboration: the provider provides a resource or service to the obtainer through a mediator (e.g. resale of a pre-owned television set to a secondhand electronics shop);
3. Trading collaboration: the obtainer obtains a resource or service from the provider through a mediator (e.g. the consumer who purchases the television set from the secondhand electronics shop).

Pure collaboration involves direct P2P exchanges, in which consumers directly exchange a specific resource or service. For example, on online platforms (e.g. Peerby, Kijiji, eBay or Couchsurfing), consumers directly provide and obtain resources or services. Although these online platforms are intermediates they are not "mediators", because consumers are free to devise the terms and conditions of distribution and consumption of the resource or service together, whereas mediators interfere in the devising. For example, the Canadian-based "ridesharing" website Amigo Express does not allow obtainers (service obtainers) and providers (service providers) to get into contact to arrange the terms of the ride, rather each needs to separately contact and pay a fee to the website in order to, respectively, obtain and provide the service. Most P2P websites are online platforms and operate on the freemium model, where the use of the website is free, but premium features must be paid for (e.g. Kijiji) (Scaraboto, 2015, p.164). Others have a donationware mode of exchange, whereby website use is free but financial donations are requested or accepted to offset production and maintenance costs (e.g. The Khan Academy) (Scaraboto, 2015, p.164).

Sourcing collaboration includes, for example, refurbished or reconditioned products, sold by conventional organizations, but provided by providers who were, for some reason, dissatisfied with the products in question. Other examples include antique dealers, consignment shops or pre-owned books dealers on Amazon.com. Similarly, online platforms which take a percentage off the transaction cost in supposedly P2P exchanges (e.g. Über, Instacart, Task Rabbit, Airbnb), actually outsource the fulfillment of specific tasks or jobs to consumer A in order to efficiently redistribute those to consumer B. In short, instead of manufacturing / purchasing a good or delivering a service by themselves, such organizations rely on providers and obtainers to perform both. They benefit from the Internet to mediate, at a cost and more efficiently, exchanges that would otherwise be authentically P2P exchanges. New technologies have therefore sparked entrepreneurial creativity to develop new breeds of intermediates. They claim to challenge conventional business, and they do so, because they operate business differently, without delivering or producing anything, but by capitalizing on the logics of 'crowdsourcing'. Also, a tangible resource may circulate across multiple organizations (intermediates) from the provider to the obtainer. For example, a car sold by a consumer to a professional car dealer may then be sold and resold by several other car dealers, before being eventually resold to a consumer.

Trading collaboration is the corollary of 'sourcing collaboration'. It is consumer B who obtains a cheap refurbished iPhone or who enjoys a Montreal-Toronto commute in a high-end car driven by consumer A, via ÜberXL. It is the converse of sourcing collaboration, in that it refers to the obtainer who enjoys a resource mediated by an organization but originally provided by a provider via sourcing collaboration.

CC is therefore salient in a multiplicity of resource circulation systems in which the core characteristic is that consumers are able to switch sides. As obtainers, they perform trading collaboration with organizations or pure collaboration with providers; as providers, they engage in sourcing collaboration with organizations, or in pure collaboration with obtainers. In sum, CC can be defined as:

> *The set of resource circulation systems which enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator.*

SIMILARITIES AND FRONTIERS WITH RELATED CONCEPTS

Discriminatory Criteria

Consumers' capacity to switch roles from provider to obtainer and from obtainer to provider, in a given resource distribution system, constitutes the key distinguishing criteria between conventional consumption and CC. Conventional consumption – which underlies classic marketing thought – is a type of resource distribution system which involves passive consumers (not obtainers), who cannot, or are not given the capacity to, provide any resource or service (not providers). Incapable of engaging either in obtainment or in provision, their role is limited to that of buying – monetary exchange - and consuming organization-made resources or services, and, in the case of tangible resources, to discard them. Although a whole literature stream started to acknowledge consumers' capacity to provide resources in addition to obtaining them (Stone et al., 1996; Gregson et al., 2007; Harrell and McConocha, 1992; Hanson, 1980), today, however, academia has devoted precious little research to integrate disposition practices and alternative means of consumption-other than conventional consumption-into theory development and consumer behavior studies. So, from a paradigmatic perspective, the marketing discipline still appears to conceive the consumer as being confined to a role of goods and services buyer-destructor with a limited input in other consumers' consumption processes or in organizations' supply chains.

Acknowledgement of CC challenges that conception. Once it can be acknowledged that consumers can dispose of resources, it follows that they become suppliers or providers of that resource to another party. They cooperate or collaborate with other actors in the market. The idea of cooperation or collaboration has generally been confined to production and B2B relationships (Robert et al., 2014; Perret, 2015). CC epitomizes the overspilling of cooperation or collaboration outside of the production sphere toward that of exchange (Perret, 2015). CC disrupts therefore marketing because it clamps market economies into the social while inserting economic activities into social networks (Laville, 2008; Scaraboto, 2015; Lessig, 2008). It embodies practically the abstract idea that "economies are not the product of intersection between two pure, existing economies [market and nonmarket economies] but are constituted by an interplay of logics and modes of exchange that could occasion a hybrid if their struggle (...) persist or move toward becoming more of a market or nonmarket-like economy should performativities favouring one set of logics and modes of exchange prevail" (Scaraboto, 2015, p.157).

The Consumer Process

After having defined CC and the different concepts that are attached to it, it is also useful to define the process by which consumers perform CC. According to Actor Network Theory (ANT) and convention theory (Latour, 1997, 2005; Boltanski and Thévenot, 2005), the market is a dense network of mechanisms and possibilities e.g. prices, retail spaces, social conventions and norms that enable market actors to coordinate their actions (Callon, 1986 in Dubuisson-Quellier and Lamine, 2008). It prioritizes networks and behaviors over human agency (Bajde, 2013; Loyal and Barnes, 2001). These mechanisms produce consumer processes of delegation or empowerment (Dubuisson-Quellier and Lamine, 2008).

1. **Delegation:** Delegation relates to the ANT concept of purification, a modernist conception characterized by critique and separation (Latour, 1997; Bajde, 2013). Purification displaces culture and technology. It is most common and most effectual in conventional consumption practice and in consumption studies (Bajde, 2013, p.236). Purification thus assumes a clear distinction between "organizations / production and society / consumption" (Perret, 2015) or "market economies" vs. "nonmarket economies" (Scaraboto, 2015). Consumers on the society / consumption side delegate the supply of resources to organizations / production and perform exclusively conventional consumption. They rely on organization-made advertising, texts, logos, labels, trademarks, brands and other communication cues to choose among the vast morass of goods or other types of resources that are offered to them (Miller, 1987, 1998). This situation is stable in that consumers cannot obtain or provide anything. Hence the purchase of staples in groceries; of (semi-)durables or semi-durables in commercial centers; of lodging in hotels; of leisure and entertainment in cinemas, amusement parks, restaurants; or of financial management in banks and insurance firms;
2. **Empowerment:** Empowerment refers to the ANT concept of translation (Latour, 1997; Bajde, 2013), a postmodernist concept characterized by assemblages (actor-networks) and proliferation in which things are distributed, transported through assiduous association and transformation (Kjellberg and Helgesson, 2007). Contrarily to delegation, consumers are empowered to collaborate directly with each other (Dubuisson-Quellier and Lamine, 2008). Through co-constituted assemblages, they organize, arrange and negotiate informally the terms and conditions of production, distribution and consumption. For example, in farmers' markets, farmers are considered as peers, with whom consumers negotiate directly about conditions in which produce should be cultivated (Dubuisson-Quellier and Lamine, 2004, 2008);
3. **Quasi-empowerment:** In the case of CC, a third hybrid category entitled Quasi-empowerment could be added. While empowerment involves clearly pure collaboration, quasi-empowerment involves both sourcing and trading collaboration. As a middle-ground between empowerment and delegation, in cases of sourcing collaboration, consumers provide inputs into production or distribution in collaboration with a third-party, but the third-party is responsible for the successful trading of the resource or service to other consumers. For example, consumers may be allowed to co-produce or co-create goods or services with established organizations (Prahalad and Ramaswamy, 2004); or they may be allowed to trade-in used games for new ones with video games merchants (Guiot and Roux, 2010, p.397). In both cases, the mediator keeps an important level of control over most of the production and the distribution process, which is why consumers only enjoy quasi-empowerment. This is the second example of listed material.

These three consumer processes, which could be considered as a continuum from delegation to empowerment with quasi-empowerment in-between, can be positioned against another axis scale of perceived distance (Sahlins, 1972, in Arnould and Rose, 2015, p.6). Smaller scales of social distance involve processes that take place with family, friends, relatives and then acquaintances, while larger scales denote collaboration with strangers. Because increased capacity to connect strangers lies at the crux of the current re-emergence of CC as a phenomenon (Botsman and Rogers, 2010; John, 2013a), the focus will be put on large-scale social distance, i.e. people with whom levels of sociality are very low.

Forms of Collaborative Consumption and Frontiers with Other Concepts

Table 2 introduces the concepts referring to different resource circulation systems, according to the level of collaborative intensity (sourcing, trading, or pure) that they involve as well as the consumer process (delegation, empowerment, quasi-empowerment), that each of them entails. As discussed previously, the focus is put on resource circulation systems which imply large social distances, thus excluding close social circles such as family, relatives and friends.

Table 2
RESOURCE CIRCULATION SYSTEMS, COLLABORATIVE INTENSITY AND CONSUMER PROCESS

Resource circulation systems	Collaborative intensity			Collaborative consumption	Consumer process	Examples involving tangible and intangible types of resources
	Sourcing	Trading	Pure			
Conventional consumption	None	None	None	No	Delegation	- Consumers buying resources at a cost from conventional retailers or directly from manufacturers (e.g. Buying a Chromecast receiver from a Best Buy store)
Reconditioned / refurbished consumption	Yes	Yes	None	Yes	Quasi-empowerment	- Consumers trading in/buying pre-owned resources with/from an organization (e.g. Ikea trade-in programs) - N/A to services
Sharing	N/A	N/A	N/A	No	Empowerment	- Neighbors share a tree located in-between their respective house properties - Colleagues share a 'Potlatch' meal
Free P2P access	None	None	Yes	Yes	Empowerment	- Consumers borrowing/renting out resources temporarily for free from/to other consumers (e.g. Peerby) - Consumers obtaining/providing services for free from/to other consumers (e.g. Couchsurfing)
Compensated P2P access	None	None	Yes	Yes	Empowerment	- Consumers renting (out) a resource temporarily at a cost from (to) other consumers (e.g. Rentable) - Consumers obtaining/providing a service temporarily at a cost from/to other consumers (e.g. Covoiturage.org)
Free mediated access *(peer resources)*	Yes	Yes	None	Yes	Quasi-empowerment	- Consumers borrowing/renting out pre-owned resources temporarily for free from/to an organization (e.g. community sharing center) - Consumers obtaining/providing a service temporarily for free from/to other consumers through the coordination of a third-party (e.g. The Khan Academy)
Compensated mediated access *(peer resources)*	Yes	Yes	None	Yes	Quasi-empowerment	- Consumers renting (out) a resource temporarily at a cost from (to) other consumers via a for-profit mediator (e.g. Getaround, Turo, EasyCar Club, Drivy, RenttheRunway) - Consumers providing/obtaining a service temporarily at a cost to/from other consumers via a for-profit mediator (e.g. Über, Airbnb, Livementor, Lyft, TaskRabbit, Instacart, Tok Tok Tok, Zopa, Prosper, Lending Club, Upstart, Bla Bla Car, Kiva, Gigwalk, Coursera)
Free mediated access *(organization resources)*	None	None	None	No	Delegation	- Consumers renting a resource for free from an organization (e.g. public libraries, toy-lending libraries) - Consumers access services provided by organizations for free (e.g. Fab Labs)
Compensated mediated access *(organization resources)*	None	None	None	No	Delegation	- Consumers renting a resource at a cost from a commercial rental scheme (e.g. Bixi, Car2Go, Zipcar, Lokéo, U-Haul, Rent-a-Car, Avis, Hertz, Stylelend, LendingLuxury, Vestiaire Collective); - Consumers access services provided by organizations at a cost (e.g.,McDonald's, HSBC, Deloitte, Hilton, ING, Virgin Mobile, Barclay's)

P2P marketplace	No	No	Yes	Yes	Empowerment	- Consumers purchasing/reselling secondhand from/to consumers (e.g. flea markets, car boot sales, garage sales, eBay/Amazon pre-owned goods sections, Kijiji, Gumtree, Craigslist, Vide Dressing) - N/A to services
Mediated marketplace	Yes	Yes	No	Yes	Quasi-empowerment	- Consumers buying secondhand/reselling goods from/to mediators (e.g. consignment shops, antique dealers, thrift stores, retro-shops, auctions sales, secondhand stores or sections within conventional stores) - N/A to services
P2P swapping	No	No	Yes	Yes	Empowerment	- Consumers swapping resources with other consumers (e.g. swap meets, SwapTree) - Consumers swap skills and services with other consumers (e.g. interest-free lending/repayment, HomeExchange)
Mediated swapping	Yes	Yes	No	Yes	Quasi-empowerment	- Consumers swap resources from a set of resources pooled by a mediator (e.g. Troc-t-Trucs) - Consumers swap skills and services through a mediator-coordinated system (e. g. Local Exchange Trading Systems)
P2P gift-giving	No	No	Yes	Yes	Empowerment	- Consumers giving/receiving resources for free to/from other consumers (e.g. Freecycle) - N/A to services
Mediated gift-giving	Yes	Yes	No	Yes	Quasi-empowerment	- Consumers giving/receiving pre-owned resources for free to/from an organization (e.g. charities, food banks, GoFundMe) - N/A to services
Mediated hybrids	Yes	Yes	No	Yes	Quasi-empowerment	-Consumers give resources for free to organizations which then resell them (e.g. Yerdle, The Salute's Army, Minitrade, examples from 'mediated marketplace' when consumers do not resell but give away resources for free) - N/A to services

Conventional consumption designates a resource circulation system in which consumers follow a delegation process, because they can neither provide resources to organizations, nor obtain such resources. Consumption becomes collaborative as soon as empowerment possibilities are offered by the conventional manufacturing and retailing system to consumers (e.g. trade-in schemes), involving sourcing and trading collaboration, and which is called refurbished / reconditioned consumption, a form of quasi-empowerment that applies essentially to tangible resources.

Sharing is defined as "the act of distributing what is ours to others for their use and/or the act and process of receiving or taking something from others for our use" (Belk, 2007, p.126). Under sharing, provision or obtainment become attenuated and irrelevant, since the resource is not exchanged but owned jointly (Belk, 2007, 2010). Yet, attenuation and irrelevance does not mean suppression, because under specific situations (e.g. divorce), previously latent ownership rights become salient again (Arnould and Rose, 2015; McAlexander, 1991). Instead of sharing, Arnould and Rose (2015) have proposed the concept of "mutuality", a higher-order orientation underlying forms of exchanges, as a metaphor of inclusion, nearing concepts such as generalized reciprocity (Sahlins, 1965), social utilitarianism (Giesler, 2006) or communal sharing (Fiske, 1992). It is "action that entails the assumption that another party would act toward the first party in a similar, mutual, fashion if circumstances were reversed, as guaranteed by their mutual

inscription in a common social frame" (Arnould and Rose, 2015, p.14-15). Resources are allocated without calculating returns, and there is a low level of formality as well as a low need to acknowledge what is taken and given (Fiske, 1992). It is most prominent in the household sphere (Belk, 2010; Douglas and Isherwood, 1979).

Either sharing or mutuality may be used, and both denote "a metaphor of inclusion" (Arnould and Rose, 2015). More specifically, in a given resource circulation system, both usage and ownership are shared. Sharing neutralizes thus, at least temporarily, the distinction between provider and obtainer and thus the switching between both roles. If one draws a line in a sand spot, crossing that line is made possible but if no line is drawn in that sand spot, then there is nothing to cross, although the same sand spot is being walked upon. Sharing boils down to the erasing of that line in the sand, and to the recognition of one common spot in the sand instead of that spot being separated into two distinct areas. In other words, sharing is a tacit or implicit agreement related to a supposedly permanent denial of obtainer(s) and provider(s) statuses, of the notion of a resource circulation system and thus of the notion of exchange.

As explained earlier, specific life events or circumstances such as divorce or interpersonal conflicts, may threaten sharing so that original ownership rights may ultimately resurface. Once a consumer reclaims a resource that was originally pooled and subject to joint usage and ownership (shared usage and shared ownership), the 'alienation' of that resource from the sharing system reinstalls potentialities of collaboration (Curasi et al., 2004), because that consumer may provide the resource to potential obtainers.

Further, because sharing refers to the mental model of Communal Sharing in which people treat - or at least, pretend to treat - material objects as things they have in common (Fiske, 1992), it is therefore rooted in empowerment. The resource is theoretically regarded as a commons, without regard for how much any individual uses or takes; everything belongs to all together and individual shares and property are not marked (Fiske, 1992, p.694). There may be certain hierarchies and levels of ownership intensity within a given sharing sphere (Ostrom and Hess, 2007), but distinguishing between obtainer and provider is irrelevant since resources do not undergo discrete exchange patterns and thus ownership and usage transfer. Rather, they are embedded in a continuous and evolutive (narrowing or widening) circle of ownership and usage sharing (Albinsson and Perera, 2012, p.306). Considerations of sourcing, trading or pure collaboration are thus irrelevant since sharing is not rooted in exchange.

Although this assertion might be counter-intuitive because sharing is inherently something that appears collaborative, for the present conceptualization of CC, it is not. The case of sharing is also an excellent one to demonstrate the independence between consumer process and collaborative intensity. Consumer process refers essentially to the extent to which consumers are emancipated from conventional retailing (Dubuisson-Quellier and Lamine, 2008). Empowerment signals maximal emancipation and is at its highest when no intermediary is involved (i.e. P2P) or when the logic of exchange, derived from the notion of commodity exchange and underlying the mental model of market pricing (Fiske, 1992, p.196; Komter, 2005), is bypassed (i.e. sharing). For each type of resource distribution system that integrates pure collaboration (i.e. P2P), empowerment is adjunct because it signals independent consumers who are the only ones responsible for the exchange. Besides, for each type of resource distribution system that does not acknowledge the existence of individual property, empowerment is similarly adjunct, because such a system transcends the notion of exchange and exclusion in favour of mutuality (or commensalism [Hawley, 1950]) and inclusion (Arnould and Rose, 2015).

Collaboration, on the other hand, is rooted in exchange and characterizes the various levels through which, consumers collaborate with each other or with other organizations to make resources circulate across closed-ended ecosystems of sharing, through temporary or permanent transfer of ownership rights. As such, although P2P exchanges involve empowerment, they are still rooted in the notion of exchange and, as such, qualify for attributions of collaborative intensities.

In brief, sharing overlaps with CC when consumers (re-)associate the ownership rights of a resource with (a) particular consumer(s); or when compensations are provided to the supposed owner / provider, in order to use the resource. Both conflate respectively with free and compensated P2P access. They also refer to empowerment.

Access and related concepts are temporary acquisition or disposition of a resource. More specifically they refer to "transactions that may be market mediated in which no transfer of ownership takes place" (Bardhi and Eckhardt, 2012, p.881). Contrarily to sharing, which involves shared usage and shared ownership, access does not involve joint ownership (Bardhi and Eckhardt, 2012). Usage is shared but ownership is not. For example, different consumers who share the usage of a car to get from Montreal to Toronto share the usage of the car, but car ownership rights remain legally attached to the car owner. Also, Access may be free or compensated; and P2P or mediated. Therefore, certain aspects of Access overlap with CC but others are clearly excluded from it.

First, there is a thin line between free P2P access and sharing. However, sharing involves joint ownership (Belk, 2007, 2010), or at least, a temporary and tacit recognition that ownership rights are being detached from a specific individual and shared with others. Free P2P access, on the other hand, involves no transfer of ownership or joint ownership (Ostrom and Hess, 2007; Bardhi and Eckhardt, 2012). Second, the provision of a compensation to the lending consumer would indicate a shift toward compensated P2P access. Whether free or compensated, the fact that consumers interact directly to discuss the terms and the conditions of the access, would mean that they follow an empowerment process. Third, some organizations may also grant free access to resources sourced collaboratively such as in community centers, where, usually, not for profits coordinate the process in which consumers may rent out their goods for free to others and may take them back whenever they want. Such a system corresponds to quasi-empowerment. In Table 2, this practice refers to free mediated access (of peer resources). Fourth, when resources to which an organization grants compensation-based access, have initially been provided by consumers, CC is manifest through sourcing (trading) collaboration. Consumers on both ends enjoy quasi-empowerment. Usually, the third-party or mediator takes a certain percentage on the price of the transaction, or requests users to pay membership. Entrance or listing fees and other types of charges are added in certain circumstances such as "late charges" for obtainers or providers who do not behave on time, "no show up charges", for obtainers or providers who do not show up at all. Über and Airbnb, for services, or Zilok and BMW's Drivy, for goods, are prominent examples into that category of compensated mediated access (of peer resources) (Table 2). Fifth, access offered by organizations such as Zipcar, Daimler's Car2Go or tool libraries are compensated mediated access (of organization resources) (in Table 2). They do not allow for any form of collaboration and involve delegation. They correspond therefore to the access-based form of conventional consumption. Sixth, there are many instances were organizations provide goods, and especially, services to consumers. In public libraries or toy-lending libraries, consumers borrow goods for free. Similarly, consumers may access to fab labs (i.e. fabrication laboratories) which are open innovation centers that provide access to modern

means of invention to consumers, for free. Access to any type of resources comprised within a fab lab, university, or museum, including towels in the bathroom, do not involve CC. Consumers delegate the whole process of providing the resource and infrastructures to organizations, and they do not provide or obtain any type of resource, which indicates therefore absence of CC. The paragraph about hybrid economies brings some nuances to that assertion.

In addition to temporarily accessing to resources, consumers may also acquire or dispose of them permanently. First, P2P marketplace refers to monetary exchanges in which consumers purchase or resell pre-owned goods directly with one another. The intensity of their collaboration is therefore high because it is P2P and the consumer process involved is one of empowerment. Second, in mediated marketplace, consumers are able to purchase from and to resell to a mediator such as a conventional store or a second hand store; collaboration become of trading or sourcing nature and the consumer process is quasi-empowerment. Third, P2P swapping indicates that consumers directly exchange resources in person, involving pure collaboration and empowerment. Fourth, the introduction of a mediator between swappers causes the consumer process to become one of quasi-empowerment because consumers exchange indirectly through a coordinating mediator, which is mediated swapping. Fifth, consumers may give away resources for free without any compensation in return. P2P gift-giving involves consumers who give and others wo receive, without any mediator. The process is one of empowerment. Sixth, in an attempt to render git-giving and resource redistribution more efficient, some mediators such as online platforms (e.g. Kiva) or charities redistribute resources to consumers who need them. Through mediated gift-giving, the intensity of collaboration is therefore of trading and sourcing type and the consumer process is one of quasi-empowerment.

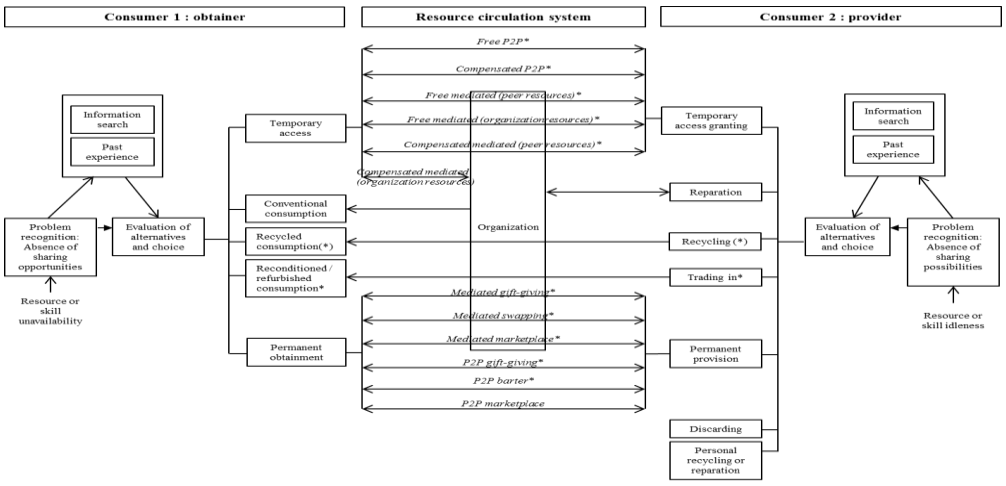
Hybrid economies designate resource circulation systems in which different modes of value exchange paradigms (gift-giving, swapping or monetized exchange), occur within a given resource circulation system (Corciolani and Dalli, 2008; Dalli and Corciolani, 2014). All the different resource circulation systems listed so far, in Table 2, involve the same exchange paradigm across both obtainment and provision. For example, "free P2P access" involves a consumer who may rent out a Playstation 4 for free and another consumer who borrows it. In both cases, free access occurs. As another example, in 'mediated marketplace', a consumer may resell a used car to a car dealership, and that car may be ultimately purchased by another consumer. Usually, consumers get vouchers or gift cards for trading in their pre-owned products, which is equivalent to money. More importantly, both the obtainment and the provision phases, involve a permanent monetary exchange. Scaraboto (2015) defines hybrid economies, as the "coexistence of multiple logics and modes of exchange in a mutually beneficial dynamic, and where new logics and modes for the distribution of resources emerge that resemble but are nevertheless distinguishable from the ones commonly associated with either market or nonmarket economies" (p.155). Therefore, hybrid exchanges indicate the presence of both market and nonmarket practices within a single resource circulation system. For example, many secondhand stores, such as The Salute's Army are donation centers, which receive goods from consumers for free and resell them at a cost to other consumers. Some retailers enable consumers to swap their used goods, which will then be reconditioned or refurbished, to be resold at a cost. In some resource circulation systems labelled as free mediated access (of organization resources), libraries may use procurement systems to purchase new books, but consumers may also supply books that will be available at libraries. For example, Ozanne and Ballantine (2010) identified that consumers give toys to toy-lending libraries which are then rented out for free to other consumers. These are forms of hybrid economies.

The Collaborative Consumption Stages

By drawing on previous works from the literature stream about disposition (Jacoby et al., 1977; Hanson, 1980; Paden and Stell, 2005; Harrell and McConocha, 1992), the classic stages in the consumer decision making model (Engel et al., 1968) can be adapted to depict CC, as exhibited in Figure 1. On the left hand-side, Figure 1, starts with the realization of the unavailability of a resource or skill. The absence of sharing opportunities constitutes a problem that is acknowledged by the consumer. Problem recognition then triggers recollection of past experiences involving conventional consumption or obtainment and/or information search on ways to conventionally purchase or obtain the resource (Gregson et al., 2007). The search and memories recollection process may also be bypassed. The consumer then evaluates obtainment alternatives, in addition to conventional consumption ones, and further decides whether to access to the resource temporarily or acquire it permanently. Double arrows indicate temporary access with the resource returning to the initial provider (i.e. access).

Going to the right hand-side of Figure 1, Botsman and Rogers (2010) indicated that one of the key foundations of CC was 'resource or skill idleness'. Sharing possibilities are absent, perhaps because a former sharer has died, divorced, moved or relinquished ownership rights. A tangible good may be underused, unused or unwanted and falls prey to provision (Curasi et al., 2000). Similarly, a skill may be underused or unused because of a job loss or a lack of opportunity to exert that skill for useful purposes. Consumers' evaluation and choice of an appropriate disposition system is influenced by past experience (Gregson et al., 2007) as well as information search, but could also bypass those steps, such as when a consumer thinks spontaneously of providing a resource to a consumer with whom she is interacting and who may be in need of the resource. For example, one consumer may be speaking of her need of a child's bed while the other realizes that she has one and gives it to her. Consumption is collaborative when the consumer, who becomes a provider, either disposes permanently or temporarily of a resource through P2P exchanges (pure collaboration), or mediated exchange (sourcing collaboration). Sharing is again outside of the scope of CC. When consumers rely on organizations / professionals to discard resources, they follow a process of delegation which deters them from switching sides.

Figure 1
COLLABORATIVE CONSUMER DECISION-MAKING PROCESS



When they perform either repairing or recycling personally (e.g. composting) and with their own private means, they do not exchange but follow empowerment, because they rely upon themselves. Just as for sharing, personal recycling (e.g. composting) and repairing as well as discarding, are cases in which collaboration is thus irrelevant. Mediated recycling is more ambivalent because the resource is destroyed by an organization and used as input for other types of resources, which is different from all the other types of exchanges which incur an integer or slightly modified resource (e.g. reconditioned, refurbished). Therefore, mediated recycling is a type of ambivalent collaboration which involves sourcing and trading exchange, through a consumer process of quasi-empowerment.

DISCUSSION AND IMPLICATIONS

Theoretical Contributions

This paper seeks to contribute to the emerging literature gravitating around the concept of collaborative consumption (Lamberton and Rose, 2012; Bardhi and Eckhardt, 2012; Arsel and Dobscha, 2011; Albinsson and Perera, 2012; Harvey et al., 2014; Hamari et al., 2015; Belk, 2014). Given the lack of any clear definition of CC, and a common confusion with the "sharing" concept, the most important contribution of this paper is to suggest a conceptualization of CC and to clarify its relation to adjacent concepts such as sharing or access. CC is defined as, the set of resource circulation systems which enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through the mediation of a third-party. The key discriminatory criteria to distinguish between CC and other forms of resource circulation systems (e.g. conventional consumption), can thus be expressed in terms of collaborative intensity: any exchange channelled through a resource circulation system which allows consumer to switch sides from 'obtainer' to 'provider', can be deemed collaborative, whether it is free or compensation-based, peer-to-peer or organization-mediated, online or offline, involving a transfer of ownership or not.

Belk (2014) suggested that CC is a subset of Bardhi and Echardt's (2012) 'Access-based consumption'. Instead, the aforementioned definition implies that the concept of Access, as originally defined in the property rights literature (Ostrom and Hess, 2007; Hess and Ostrom, 2007; Schlager and Ostrom, 1992), is a specific form of CC. Regardless of whether it is P2P (free or compensated) or mediated (free or compensated), whenever the resource being exchanged has been initially sourced by another consumer, the resource circulation system embedding exchange encapsulates CC. Therefore, not all forms of access-based consumption pertain to CC, especially if they are market-mediated and use solely organizational private assets, contrarily to what has been reported in the literature (e.g. Lamberton and Rose, 2012; Bardhi and Eckhardt, 2012; Belk, 2014). Resource circulation systems which involve compensated mediated access (to organization resources) such as Car2Go, Zipcar, Communauto, Bixi and likes do not correspond to collaborative forms of consumption since: 1) they do not involve trading or sourcing collaboration and, 2) they put consumers into a delegation process. By now, the complete irrelevance of such resource circulation systems with sharing be even more evident. More genuine CC schemes refer, for example, to Daimler's Drivy which is a P2P platform enabling consumers to rent (rent out) their car from (to) others, and the website takes a percentage on the renting price, which corresponds to sourcing and trading collaboration, as well as a quasi-empowerment consumer process.

This paper also makes a strong case in recusing the concept of 'sharing economy' that has been recurrently utilized by many business press outlets, commentators and analysts, even in negative critics. Rather, CC is everything but sharing as it starts where sharing ends and it ends where sharing starts (see Figure 1). Sharing involves de jure or de facto joint ownership and usufruct (Arnould and Rose, 2015; Belk, 2007, 2010), whereas the modes of value exchange headed under CC imply either permanent transfer of ownership and usage rights (reconditioned / refurbished consumption, gift-giving, barter and marketplace) or transfer of usage rights only (access).

It appears that the only setting involving genuine sharing and which is characterized by large social distances, is the digital context, and especially Web 2.0, whose constitutive activity is sharing (John, 2013b). Both usage and ownership are de facto being shared (Giesler, 2006; Airgrain, 2012). Digital examples of sharing abound such as open source P2P money systems (e.g. Bitcoin, Bristol Pound), user-generated content platforms (e.g. Wikipedia, YouTube), open source software and operating systems (e.g. Linux/Unix), P2P file-sharing (e.g. BitComet), and hybrid which involve sharing and other types of exchanges (e.g. Creative Commons, Dailymotion's pay-per-video option). Many online platforms reclaiming themselves from the so-called "sharing economy" involve no sharing at all. They do enable collaboration by extending its scope to unprecedented levels or drive collaboration by encouraging its materialization in offline and more diversified settings and many of them are P2P (John, 2013a), but the type of resource circulation that they involve is not 'sharing'. The future of the "sharing economy", if one may allow the term, may rather lie with participatory web cultures such as folksonomies, which are "archive sites where users contribute data to the archive and metadata to organize the archived content" (Beer and Burrows, 2010, p.5), such as YouTube, Flickr, Creative Commons or Wikipedia, which are now well-known and valuable cultural brands (Beer and Burrows, 2010).

Managerial Implications

The study suggests that conventional organizations, especially companies, are not the desperate losers as the media often portray. Rather, they are central not only for conventional consumption but also for a variety of CC forms of exchange. Organizations are part of resource distribution systems which aim at offering maximized value for consumers (Kotler and Keller, 2006). Yet, for consumers, value may not be limited to the purchase of a good or a service. Exchange is source of value (Simmel, 1978), and since exchange involves two facets, for consumers, value may not only reside in acquisition but also in proposition. Overall, marketers – regardless of their industry sector – may benefit from reconsidering how they consider 'maximizing consumer value'. Allowing consumers to play a more active role, beyond participation in advertising or product design as discussed in the co-creation literature (e.g. Ramaswamy and Pralahad, 2004), may have several advantages. It creates value for consumers in that the brand or company is now associated to a valuable partner in consumer economies, but may also lead to synergies in selling i.e. cross-selling, up-selling (Paden and Stell, 2005), and attract new segments of consumers who prefer to acquire lower-priced or re-used resources (Chu and Liao, 2007).

Marketing communications could emphasize the recourse through collaborative sourcing as a sustainable effort on part of the company to not only increase usage intensity through access but also foster environmental protection through the reuse of pre-owned resources. In other terms, this means coupling the advantages of access (practicality, intensity of usages) to the

circular economy (extension of the resource lifecycle, reconditioning, reuse) (Robert et al., 2014). Companies offering CC access would also benefit from marketing the difference in cost between resource ownership and resource access (Leisman et al., 2013).

Because of cognitive lock-in resulting from the perception of a higher efficiency in re-using web platforms that are already mastered i.e. the Power Law of Practice (Johnson et al., 2003), consumers consult generally only a few websites in order to access various resource distribution systems (e.g. secondhand purchase, carsharing, gift-giving). For a company, as long as congruence is observed with its market positioning and branding, it may be worthwhile to develop a P2P consumer marketplace along conventional consumption offerings, on a unique website. For example, a sports equipment retailer website could include a forum or platform on which consumers can swap, donate, resell or purchase resources secondhand, organize homeswapping or carsharing for trekking outings, and so on. Previous research demonstrated that a cannibalization effect may be offset by the fact that consumers may easily dispose of resources on the website in order to acquire new ones, which would in turn lead to more product sales form the retailer (Paden and Stell, 2005). Some consumers even buy with the intention to resell which brings them cash to recover the original purchase payment and re-purchase other new or pre-used goods more easily (Chu and Liao, 2007, 2010; Liao and Chu, 2013; Nissanoff, 2006). Such efforts may also generate more favourable attitudes toward the organization, increase loyalty, trust and satisfaction.

Eventually, for companies which need to constantly remain in close contact with their markets because those represent rapidly shifting consumer subcultures such as, for example, Schouten and McAlexander's (1991) Harley Davidson biker community, the integration of consumers in co-production and co-creation is an interesting instance of CC through sourcing collaboration.

The current hype surrounding the 'sharing economy' is already driving existing and new organizations to position themselves in the so-called 'sharing segment' or 'sharing economy', and exposing themselves often quite unwillingly to 'sharewashing'. Yet, if companies position their business as sharing, while it is indeed compensation-based access (or even free-mediated access), this could undermine their credibility and reputation in the eyes of consumers and critics. Emphasizing economic, social and environmental advantages of their business model, with direct positive impacts on consumers' lives (Carrigan and Attalla, 2001), would be more honest, more credible, foster consumer trust and direct attention to distinct competitive advantages, because now everybody trumpets to be in the so-called "sharing economy" anyways.

Societal Implications

The present study enlightened the fact that many so-called "P2P business models" claiming to be part of the "sharing economy", are actually "compensated mediated access of peer resources". But verbal misuses have already been discussed and if that would all there was to discuss, everything would be just fine. However, such organizations are at the heart of rising polemics because they also often cause negative effects on society at large. For example, in a comment posted to The Press Project Blog on Friday 24 in 2014, P2P business models do not contribute to social welfare systems, impose disloyal competition to established economic agents, generate the emergence of a multiplicity of intermediaries (e.g. organizations taking fully in charge the posting of ads on Airbnb, or of the cleaning of properties listed on that same platform), and put providers in a precarious situation (e.g. absence of legal work contracts, absence of social benefits scheme, undefined professional status). From a social perspective,

these organizations extend the market to the private sphere contributing to an increased commodification of all aspects of life (Perret, 2015). According to the comment posted on The Press Project Blog cited previously, every privately-owned asset or act of mutual aid (e.g. housing friends for free), has an opportunity cost which undermines genuine sharing or free giving away. Extended commoditization is marketed under a rosy package of appealing values such as mutuality, collectivism and disinterestedness. While some organizations are genuinely based on values of mutuality, cooperation, benevolence and financial disinterestedness such as Couchsurfing, or Local Exchange Trading Systems, others clearly take advantage of the legal, financial, fiscal or political – and obviously, conceptual - mist surrounding CC and the "sharing economy" to design peer-sourced business models that are everything but sharing (in addition to sharing being everything but CC). Rather, they deploy heavy lobbyism to curb institutional attempts to regulate their practices, are committed to shareholder value maximization and the implementation of aggressive / predatory business strategies to achieve organizational goals (Cohen and Kietzmann, 2014).

They do offer useful services in many instances such as temporary employment, additional income or increased savings (Dillahunt and Malone, 2015). They are also innovative, from an entrepreneurial viewpoint, because consumers do not only provide their labour and skills but also their own personal and private resources in order to perform jobs that are in demand but for which there is a shortage in the offer. In October 2014, Juliet Schor wrote in an essay on the Grassroots Economic Organizing website that, through 'new technologies of P2P activity' providers may regain bargaining power compared to regular employees in conventional consumption organizations, but this would require democratizing both ownership and governance of these online platforms. In other terms they should become truly P2P and involving empowerment, because as this study shows they are currently mediated and entail, at best, quasi-empowerment.

Deeper discussions about the normative aspects of these business models are beyond the scope of this article, rather what is contended is their affiliation to a so-called "sharing economy" and scholars' re-use of that same misleading rhetoric. Rather, and very beneficially so, because they involve sourcing and trading collaboration (not pure collaboration and not sharing), they are manifest instances of CC.

Limitations and Avenues for Future Research

Inter-organization as well as intra-organizational collaboration has been the subject of a large corpus of research in the strategic management literature (e.g. Martin and Eisenhardt, 2010; Galunic and Eisenhardt, 2001), because it is an important source of economic value for organizations (Bowman and Helfat, 2001). Similarly, collaboration is on the rise in consumer marketplaces because it enables consumers to derive more value-not only economic, but also practical, social, hedonic, symbolic, or ecological-than through conventional consumption (Belk, 2014; Mano and Elliott, 1997; Guiot and Roux, 2010). This novel form of consumption entails therefore important implications for strategic management.

As a first step to dig into the vast concept of collaborative consumption, this study sought to define CC. By so doing it introduced several new key concepts in strategy which are essential to understand the conceptual mapping surrounding CC, and to provide a conceptual framework for subsequent research in strategic management into that domain. Such concepts include: "resource circulation system", "obtainment" and "obtainer" as well as "provision" and "provider"; "delegation", "empowerment", "quasi-empowerment", "pure collaboration",

"sourcing collaboration" and "trading collaboration". Other concepts are more straightforward. One key construct that has been used throughout this article is "resource" which, in addition to "services", has been voluntarily kept as large as possible. Many CC exchange schemes involve not only goods or services but land, money, time, skills or space. Since the focus of the article was mainly at delineating the CC concept, potential nuances between different types of resources have not been eschewed. For example, a service is delivered and there is no transfer of either ownership or usage. Skills and knowledge are not only exchanged but become, very likely, shared as soon as they are transferred. Future research could provide a more specific conceptualization of the collaborative process according to the type of resource involved in the exchange, and particularly when that resource is more intangible such as in the case of a service or a skill.

Second and related to the previous point, the variety of collaboration configurations (e.g. C2C, C2B, B2C, G2C, C2G) through highly differentiated forms of resource circulation systems , makes the study of collaborative consumption schemes a complexity phenomenon often termed an "edge of chaos" in the literature (Davis et al., 2009). In addition to the framework proposed into this study, future research could adapt the classic cross-business-unit collaboration framework (Martin and Eisenhardt, 2010) to examine the various collaborative configurations that may exist between consumers and organizations. This kind of research could be of particular value in order to further our understanding of co-creation and co-optation between firms and consumers as initially discussed by Prahalad and Ramaswamy (2000) or Ramaswamy, Venkat and Gouillart (2010).

Third, the media and firm communications have contributed to introduce CC as an "innovation" and discussed it as a strategy to change consumer behaviour to reduce the environmental impact of consumption (Meijkamp, 1998; Shaheen and Cohen, 2007; Jonsson, 2006). Several professional works contributed and still contribute to positioning CC as an innovative concept with intrinsic social benefits (Meijkamp, 1998). Such professional works include most notably Benkler (2006), Botsman & Rogers (2010), Gansky (2010), or Owyang, Samuel & Grenville (2014). The CC innovation was presented as a way to improve the "production process" or certain end results which can be called "units of service" for the consumer, the whole being defined as "consumption technology" (Meijkamp, 1998). Examples of units of service may include, getting a loan, a lift, a meal or accessing clothing. Their corresponding consumption technologies are peer-to-peer lending, carpooling, co-lunching, and secondhand systems. These consumption technologies and the eco-efficient units of services that they allow are therefore introduced as an innovation strategy (Meijkamp, 1998). While posing the whole of CC as being innovative is debatable, most of its web-mediated components are. Future research could investigate in more details to what extent innovative CC schemes (e.g. web-mediated ones) are more eco-efficient than their conventional counterparts.

Further, this study shows the depth of collaboration in consumption and it is actually huge. Although special attention has been granted to be as exhaustive as possible in identifying resource circulation systems in which consumers are able to switch sides from obtainers to providers and conversely, some may have been omitted, either because they have not (yet) been documented in the literature or because their link with CC is ambiguous. For example, a car that is put at the scrapyard by a consumer may involve discarding or recycling. The scraper may also remove valuable parts from the car and resell them to professionals or to other consumers, which corresponds to sourcing-trading collaboration and quasi-empowerment. Varying forms of collaboration are involved but their exact designation implies close scrutiny of the scrappers'

activities. Further research could therefore develop more specific categorizations within each specific type of resource circulation system.

A final remark concerns consumer agency in the decision-making process. Very often, some resources are imposed on the consumer rather than the consumer deliberately seeking a resource, as well as comparing and choosing between different options to get it. This is very prominent in gift-giving where consumers are being "imposed" a good or a service which they did not necessarily ask for. Such circumstance of lower consumer agency, often trigger subsequent disposition intentions, which increase in salience when consumers are aware of CC alternatives to get rid of unwanted items (Chu and Liao, 2007, 2010). This abridges the consumer's decision-making process from its initial phases and may also increase the velocity of resource circulation because the consumer will quickly seek to get rid of the resource. Future research could therefore investigate the extent to which lack of agency in a collaborative acquisition process could be counterbalanced by a(n) (pro)active collaborative disposition process in order to confirm one's capacity to act upon the world.

CONCLUSION

Despite increased attention for Collaborative Consumption (CC), both in academia, by scholars, and in practice, by marketers, a clear definition of Collaborative Consumption is still missing. This study delineates the concept of Collaborative Consumption and compares it to other consumption schemes such as conventional consumption, sharing, access-based consumption or the sharing economy. It posits that Collaborative Consumption refers to all those resource distribution systems which enable the consumer to be either the acquirer of a resource or the provider of that resource. As such, it defines Collaborative Consumption according to three levels of collaboration and it also introduces the type of process consumers follow in different systems of resource channeling. The implications of this study are then discussed and limitations are highlighted in order to provide avenues for future research in the domain.

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AN OPPORTUNITY EVALUATION FRAMEWORK FOR INTRODUCTORY COURSES IN ENTREPRENEURSHIP

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ABSTRACT

We present a robust framework for opportunity evaluation especially suitable for introductory entrepreneurship courses where an important learning goal is the ability to evaluate business opportunities. The framework is divided into three main elements: Opportunity, Resource Requirements, and Entrepreneur(s). We have used it to guide first-year business students through the business opportunity review process during our introductory entrepreneurship course in a systematic and thorough manner. It is particularly useful when making sense of typically complex entrepreneurial situations. The framework should interest entrepreneurship educators and practitioners engaged in the design and delivery of entrepreneurship curriculum. It specifically addresses two key learning goals recommended for future entrepreneurs: it assists them acquire an understanding for action based on the main entrepreneurial behaviors and ensures they are able to apply entrepreneurial heuristics valuable in start-up and other contexts.

The framework underpins a significant portion of a required Introduction to Entrepreneurship course at our university and has been successfully employed in nearly 150 iterations of the course over the past number of years. It was recently adopted by a Canadian provincial department of education for use at the secondary school level. The experience of both students and instructors has tended to be highly positive. Business educators outside the entrepreneurship domain who often deal with small firm contexts (e.g. marketing, retail management) have also expressed interest in the framework.

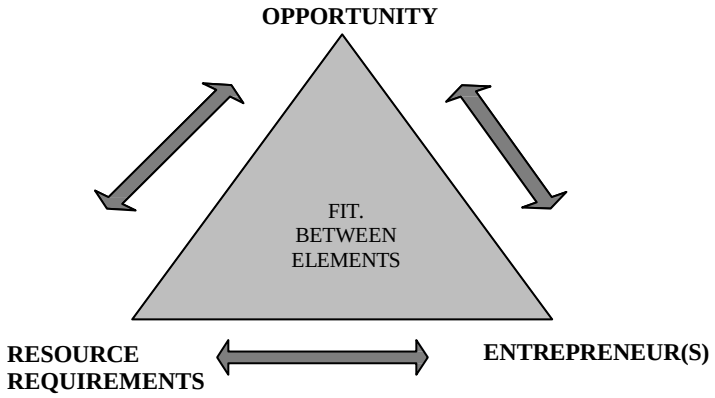
The paper is primarily qualitative in nature, relying on description, critical discussion and logical development of our story. It addresses the concern over the lack of paradigms available to guide curriculum development through the sharing of practice and by stimulating critique and discussion to improve the tools and models available to entrepreneurship educators. At another level we contribute to the wider debate in entrepreneurship education (EE) on what is appropriate entrepreneurship curriculum. We begin by examining the relevant literature and then proceed to describe the history, development, and framework's use at our university, which leads to reflections on its implementation and effectiveness as a tool for EE. We conclude that the framework is suited for students in an introductory entrepreneurship course, entrepreneurs, and a wider audience who wish to understand how an entrepreneurial opportunity can be evaluated. Future work could usefully focus on further empirical validation of the framework.

INTRODUCTION

In this paper we present a framework for opportunity evaluation (for the sake of brevity we will refer to it as the 'framework') especially suited for introductory entrepreneurship courses where the ability to evaluate entrepreneurial opportunities is an important learning goal. The framework is divided into three elements (Figure 1): Opportunity, Resource Requirements, and Entrepreneur(s), each of which is analyzed separately, beginning with the opportunity. After

addressing the three elements the student is asked to evaluate the 'fit' between them, leading to the overall final evaluation.

Figure 1
OPPORTUNITY EVALUATION FRAMEWORK



Adapted from Ronstadt (1984) and Timmons (1999).

This paper is descriptive rather than empirical in nature and consequently lacks a methodology in the standard sense. We rely instead on precise description, critical discussion and logical development of our narrative. The framework should interest a broad range of entrepreneurship educators and practitioners engaged in the design and delivery of entrepreneurship curriculum. The framework underpins a significant portion of a compulsory (for undergraduate business faculty students) Introduction to Entrepreneurship course at our university and has been successfully used in 148 course offerings over the last 10 years. Recently it was adopted by a provincial department of education for use at the secondary school level. Business educators outside the entrepreneurship domain who often deal with small firm contexts (e.g., marketing or retail management) have also expressed interest in the framework. The experience of both students and instructors with the framework has tended, in respect of achieving the learning objectives, to be highly positive.

Effective entrepreneurship education (EE) is arguably more important than ever for economic growth in a globalizing economy. Whilst the growth of EE is well documented (Bechard & Gregoire, 2005; Katz, 2003; Kuratko, 2005; Solomon, Duffy, & Tarabishy, 2002; Winkel, Vanevenhoven, Drago, & Clements, 2013), an appropriate paradigm for teaching entrepreneurship remains the subject of debate (Fiet, 2001; Solomon, Fernald, & Dennis, 2003). As Rideout and Gray (2013) observed, "EE appears to be one of those phenomena where action and intervention have raced far ahead of the theory and pedagogy and research needed to justify and explain it" (p. 346). Indeed, much research has failed to provide convincing evidence that we are actually teaching the skills most important to future entrepreneurs (see, for example, Edelman, Manolova, & Brush, 2008). Despite these criticisms, Martin, McNally, and Kay (2013), in a quantitative meta-analysis of EE, recently concluded that EE is positively associated with both entrepreneurship-related capital assets and entrepreneurship outcomes (pp. 219-222). This paper addresses part of these concerns through the sharing of practice and by stimulating critique and discussion to improve the tools and educational models available to entrepreneurship educators. At another level

we contribute to the wider debate in EE over what should be in our curriculum. We proceed by, first, briefly examining the relevant literature; secondly, describing the history and development of the framework; thirdly, discussing our use of the framework; and fourthly, reflecting on its implementation and discussing its appropriateness as a tool for EE.

LITERATURE REVIEW

The literature relevant to this work focuses on the areas of curriculum development and appropriate teaching and learning tools, methods, and strategies. The scholarship related to curriculum development in a business school context is extensive and has been very useful in assisting entrepreneurship educators improve our students' teaching and learning experience (see for example, Fayolle, 2013; Fiet, 2001; Gibb, 2002; Honig, 2004; Rae & Carswell, 2001; Rideout & Gray, 2013; Solomon et al., 2003). There have been three key messages in this literature: firstly, the complexity and uncertainty of entrepreneurial efforts should be reflected in course curricula; secondly, students should be encouraged to develop and understand entrepreneurial tools and behaviors; and finally, more rigorous teaching and learning theory should be applied and elaborated to support our efforts.

These messages are exemplified in the work of a number of scholars. Gibb (2002) called for a paradigm of EE based on a more holistic approach combining the 'for, about, and through' curricula that reflected the complexity and uncertainty entrepreneur's face. Fayolle (2013) proposed a bi-level theory to assist curriculum development (see also, Jones, Penaluna, Matlay, & Penaluna, 2013). He suggested that at the first level educators engage in a philosophical discussion of what they mean by EE. Once this has been addressed, the second or didactic level would have the educator assess their particular audience needs. This is a crucial and helpful point as an audience of potential entrepreneurs will have markedly different learning goals from, for instance, those expecting to become managers. We agree with Gibb (2002) that there are three main student audiences in entrepreneurship: those who want to become entrepreneurs, those who will not become entrepreneurs but will need to use entrepreneurial tools/behaviours to do their managerial work better (i.e. enable the development of what are often called "enterprising" skills), and those who will be in positions to help entrepreneurs (e.g. if they work for government support agencies or with venture capital funds). Following this reasoning, students should leave a mandatory introductory entrepreneurship course where all three student audiences are likely to be represented with a basic knowledge of entrepreneurship, including both entrepreneurship theory - the "about" - and also some of the practical tools, approaches, and behaviours for dealing with the more common problems facing entrepreneurs - the "for" and "through".

A variety of authors have debated appropriate teaching and learning tools, methods, and strategies that could be used in an entrepreneurship course. Some have addressed the question of whether we actually teach the necessary skills (Edelman et al., 2008; Martin et al., 2013; Rideout & Gray, 2013; Vanevenhoven, 2013). Certainly, the need to ensure relevance for particular audiences is becoming more evident. An excellent example of this debate can be seen in the discussion of business planning, a traditional and near universal entrepreneurship teaching tool that has recently come under intense scrutiny (Blank & Dorf, 2012; Bridge & Hegarty, 2011; Honig, 2004; Jones et al., 2013). The debate revolves around whether using a business plan is an appropriate entrepreneurship teaching tool and, if so, for which student audience(s). Many propose that a business plan is an effective entrepreneurship teaching tool as the student must articulate

and therefore learn about the key operational and financial aspects of the proposed business. Others suggest that the learning from business plan creation is largely irrelevant to many students and, indeed, to a real start-up. Another relevant example, closer to this paper's topic, is provided by Clydesdale (2012), whose work arguing that the ability to identify entrepreneurial opportunity can be taught ran contrary to the belief amongst many entrepreneurship instructors. The central message in all of this literature is that we, as entrepreneurship educators, must be careful to use tools appropriate to the learning goals and audience(s). It is to this area that our paper seeks to contribute.

While there is not yet a generally accepted EE teaching paradigm (Fayolle, 2013; Fiet, 2001), we suggest our framework fits well with aspects of EE theory and practice for two main reasons. Firstly, few would contend that opportunity evaluation is not a key skill for entrepreneurs - and arguably those students who will work with entrepreneurs need it too. Edelma et al. (2008), in their insightful comparison between what is taught versus what is practiced by entrepreneurs, observed that "defining the market opportunities/customers, competitors" and "invested own money" are two of the most important nascent entrepreneurial practices. Secondly, using the framework requires a measure of active learning, as students must apply it to their ideas or those of an entrepreneur. Many scholars have theorized that EE should require students to engage in activities that exercise entrepreneurial behaviours, what has been variously termed as "action learning" (Gielnik et al., 2015), "practice-based" learning (Neck, Greene, & Brush, 2014) or learning "for and through" (Gibb, 2005). These ideas derive in large part from Piaget's (1950) and Kolb's (1984) learning theories whereby students learn by iteration and reflection. More generally, theories of knowledge focused on knowing in practice, whereby knowledge is created during the doing of the practice in question (Berger & Luckmann, 1966; Brown & Duguid, 2001) also underpin the framework.

HISTORY & DEVELOPMENT OF THE FRAMEWORK

In the late 1980's, like many business programs at that time, Memorial's entrepreneurship offerings were limited to one elective course offered once per year at the MBA and undergraduate levels. The undergraduate course was targeted at students in their third year of a four-year business degree and was roughly organized into three content themes: first, an overview of entrepreneurship topics such as the role and importance of entrepreneurship, characteristics of entrepreneurs, women entrepreneurs, family business, etc.; second, start-up and small business topics such as market research, marketing, operations, etc.; and finally, the business plan.

Beginning in 1991, and over a period of approximately six months, six faculty members with an interest in entrepreneurship began to meet regularly at the university's Faculty Club to discuss the possible introduction and design of a specialization or "option" in entrepreneurship within the Faculty's undergraduate program. What emerged from this skunkworks-type effort was a proposal for a slate of undergraduate courses, one of which, Introduction to Entrepreneurship, would be mandatory for all undergraduate business students. In a largely unprecedented move, this course (along with the proposed slate of four other entrepreneurship courses) was subsequently approved by the Faculty and first offered in 1993. This marked, to our knowledge, the first compulsory business undergraduate entrepreneurship course in Canada.

The framework comprising the subject of this paper has provided the conceptual foundation for our introductory entrepreneurship course since 2003, following a major and controversial decision to abandon the use of a textbook due to instructor dissatisfaction with the

course format. Three factors seem to have been most important in our decision to develop a conceptual framework to underpin the course. First, there was a strong desire to move away from rote memorization and traditional examinations. Although the use of a textbook does not in itself require a traditional course format, the use of textbooks does tend to have a strong impact on student expectations that often interferes with other types of desired learning outcomes. Second, there was interest in promoting greater skill development among students; we hoped to place less emphasis on knowledge acquisition and considerably more on the application of that knowledge. Moreover, we wanted to provide an environment where those (application) skills could be developed and strengthened through practice over a semester, resulting in demonstrable improvement in student performance over time. Finally, because the course was a required course with up to 14 offerings per year taught by multiple instructors, it was our intention that a common conceptual framework would provide some consistency in course content across different instructors and classes while still providing instructors a degree of creative freedom.

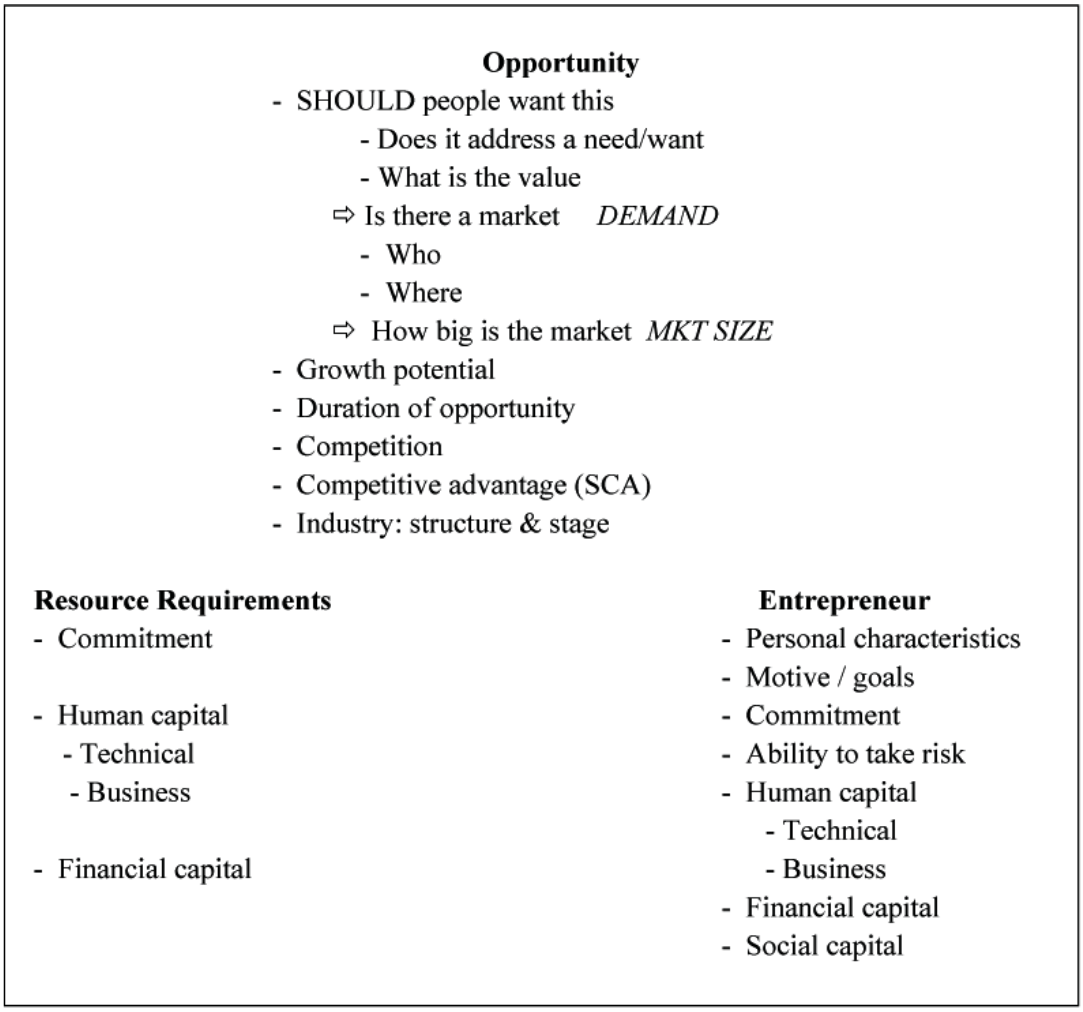
Our framework has historical roots that trace back to the theoretical models proposed by Ronstadt (1984) and Timmons (1999). Ronstadt argued that entrepreneurship is a dynamic, long-term process and that the unit of "analysis" for entrepreneurial activities should be the entrepreneurial career, causing him to overlay the entrepreneur's current education and experience on the assessment of a venture. Importantly, he suggested an evaluation examining the entrepreneurial career in the context of the type of venture, and the environment (i.e., is it "…the right kind of venture…at the right time and place, to build the kind of career…that is right…" for the entrepreneur?). While championing the entrepreneur, Ronstadt also acknowledged the contextual elements that can affect an opportunity's viability. Throughout his explanation of the model he was at pains to emphasize that the three factors - entrepreneur, venture, and environment - are interrelated and will change continuously in real time during the entrepreneurial process. The final part of Ronstadt's model was the assessment, which he suggested should occur along four dimensions: qualitative, quantitative, strategic, and ethical.

Timmons (1999) model, appearing over a decade later, bears some strong similarities to Ronstadt's framework. Timmons also highlighted the necessity for the entrepreneur to balance a dynamic process, going so far as to diagram his ideas using a fulcrum and three balls (representing opportunity, team, and resources). Timmons, however, focused more on the single opportunity (or in Ronstadt's terminology the "venture") and was perhaps more concerned with high growth potential opportunities. Under "resources" Timmons directed attention to the financial assets and people available to support the team, while also noting the importance of bootstrapping as the team's resources are likely to be limited.

The Ronstadt and Timmons models provide the broad theoretical underpinnings for our framework (Figure 1) and serve to highlight the dynamic between factors that influence opportunity selection. In our experience such high-level models can be applied productively by MBA students, but in our view a more detailed roadmap was needed to provide greater hands-on guidance for undergraduates. We therefore added to the framework by developing a moderately detailed list of criteria (Figure 2) to be considered and analyzed under each of the three major framework elements. These criteria can usefully serve as "checklists" for students to help them ensure they conduct a thorough analysis. Most scholars will recognize these criteria as "standard fare" in introductory entrepreneurship textbooks. Indeed, most of the concepts would be regarded as being central to mainstream entrepreneurship theory, even though their theoretical origins are often quite diverse, including strategic management (e.g. industry structure and the resource-based

theory of sustainable competitive advantage, organization theory (e.g. industry stage), psychology (e.g. personal characteristics), economics (e.g. human capital), etc.

Figure 2
OPPORTUNITY EVALUATION FRAMEWORK – CRITERIA



Today the framework, although modified over the years, continues to be used in the course. Students are mainly first-year undergraduate business students who, at Memorial, are normally in their second year of studies. The size of each class is typically limited to 40-50 students who attend two 75 minute classes a week over 13 weeks. There is also an online version of the course which was recently adapted to provide a comparable experience to the on-campus course. The framework provides the core curriculum for the course over the first six weeks of the semester.

Students are evaluated both formally and informally on their use of the framework on several occasions during the course, using a variety of assessment methods. Formal examinations are typically based on a case analysis. Although the course emphasis shifts mid-semester from opportunity evaluation to start-up activities, the framework (or at a minimum, the opportunity portion) continues to be applied for the duration of the semester. Our approach has been to give students lots of practice in applying the framework so that they have the opportunity to develop

their proficiency and witness their own progress. We also provide regular diagnostic feedback so they are able to take corrective action and improve their performance. When asked to provide informal feedback on their course experience, students have often indicated the framework helps them make better decisions.

USING THE FRAMEWORK

Using the framework is straightforward. After an initial introduction, the framework criteria are gradually "revealed" over the course of five or six classes. In a typical class the framework is applied after students have reviewed an entrepreneurship case presenting a business opportunity. Cases may appear in a variety of forms, including written (often 1-2 pages in length), video (15-20 minutes) or may be inferred from a presentation by a guest speaker. The instructor typically divides the class into small groups of 4-6 students and assigns each group one of the main elements of the framework triangle to analyze. This work is then shared amongst the class using group presentations or questioning by the instructor. The instructor can critique or facilitate a class critique of a synthesis of the class' analysis, and guide a further analysis of the fit between elements. A final step is to draw formal conclusions from the analysis and make appropriate recommendations.

The framework itself is comprised of three main elements (Figure 1): Opportunity (O), Resource Requirements (RR) and Entrepreneur(s) (E). Of the three elements, Opportunity is usually considered first because if the outcome indicates there is no opportunity, it makes little sense to continue. We suggest to students that they think of the evaluation as a two-step process addressing the questions:

1. How attractive is this opportunity?
2. How attractive is this opportunity to me?

Question 1, considered in isolation, reflects an economic/market perspective and focuses on the Opportunity element at the top of the triangle. Students must first determine whether people "should" want this particular product or service by considering what need or want is satisfied by the product. A clear understanding of this should provide students with insights as to the value of the product and potential pricing strategies. If it is concluded there is indeed a market for the product then the opportunity can be said to exist. The remaining criteria in this section establish the size or attractiveness of the opportunity. Two questions (who is the market and where are they located?) address market characteristics explicitly and enable students to draw a conclusion regarding market size. In our experience, students need to be reminded regularly to develop a profile of the target market using concrete demographic characteristics. We encourage students to work down the list of criteria in a systematic fashion, examining growth potential, the opportunity's duration, competitive advantage (is there one; if yes, is it sustainable?), and the industry structure and stage of development. After completing this part of the assessment it is important for students to draw a conclusion about the opportunity's overall attractiveness or potential associated with the opportunity. We suggest one helpful way of rating the attractiveness is to rank it using one of three venture classifications i.e., lifestyle venture, small-to-medium sized stable and profitable firm, or a firm with high growth potential.

Once the attractiveness or size of the opportunity has been established, students are ready to tackle the second question: How attractive is this opportunity for me? However, this is ultimately a question of fit between all three elements and can only be answered after considering the other two elements of the framework, RR (resource requirements) and E (entrepreneur). In RR the aim is to identify the amount and/or quality of resources that the opportunity seems to require. If the business being assessed does not include financial projections, it may be difficult to make accurate estimates of financial needs here. Nevertheless, students can still provide rough yet useful indications of the scale of resources needed by identifying the key assets that will be required to start the business and by differentiating between ventures needing thousands versus hundreds of thousands versus millions of dollars. Such basic categorizations not only provide an indication of scale, but also enable insights later in the process about the types of financing sources that may be appropriate, and the likelihood of success in accessing these sources. Students also examine commitment in terms of the demands the opportunity will make on the entrepreneur's time, energy and lifestyle. In addition, human capital needs (i.e. the depth of knowledge and skills needed to operate the business) are examined. Students should be cautioned to avoid oversimplifying here, as Yes/No answers are not typically helpful. We remind students that all businesses will require some business knowledge but the reality is that many entrepreneurs are able to start without any business background, learning what they need from the school of "hard knocks". It can be helpful to ask students to consider how many years of education or experience would constitute satisfactory preparation to operate the business. It is also useful to consider business and technical knowledge separately and to break the business component of human capital into functional areas such as Leadership/Strategy, Marketing, Operations, HR, and Accounting/Finance. At a minimum, students should try to categorize each area of required knowledge as Low, Moderate or High and justify their choices.

Turning to the E (entrepreneur(s)) in the framework, under this heading students are asked to evaluate the entrepreneur in seven areas. Firstly, they need to identify the prospective entrepreneur's personal characteristics that could help or hinder his/her ability to function effectively as an entrepreneur. Secondly, they examine the entrepreneur's motives or goals for starting the business. This is important because it cannot always be assumed that financial gain is the main motive. The next area is an evaluation of how much time the entrepreneur can commit to the venture. Fourthly, students look at the entrepreneur's ability to handle the venture's risk. It is worth noting that this is not the same as someone's willingness to take risk, as that will already have been considered under personal characteristics. Instead, students here should try to evaluate the entrepreneur's risk-taking ability based on such factors as age, number and age of any dependents, amount of personal indebtedness, personal net worth, etc. Next is the evaluation of "human capital", or any relevant knowledge and skills the entrepreneur has acquired through education or experience. As was the case in the resource requirements element, we ask students to distinguish between businesses versus technical knowledge/skills. "Technical" background refers to any industry-specific or product-specific knowledge or skills that may be useful in a particular firm. Physicians and software programmers, for example, often possess a great deal of technical knowledge but may have little knowledge about how to run a business. In the sixth area the students evaluate the availability of financial capital or how much the entrepreneur is able to personally invest in the venture. Finally, the entrepreneur's social capital - who they know - is evaluated. Here students pay particular attention to the entrepreneur's access to individuals able to help their venture.

The final part of answering the second question involves examining the "fit" among the three elements of the framework. As Figure 1 shows, there are three potential areas of fit: students must evaluate the fit between O and RR, O and E, and finally RR and E. The fit between O and RR is largely a question of economics, the main issue being the extent to which the investment required aligns with the size and profitability of the opportunity. In many of our introductory cases there is often insufficient financial information to make a detailed evaluation, so this aspect of fit tends to receive less emphasis. The fit between O and E involves a consideration of the extent to which the opportunity is consistent with the motivation, goals and aspirations of the entrepreneur. A good fit here can be key to happiness, personal fulfillment, and wellbeing, and may have less to do with economics. Next the fit between RR and E compares the resources needed to properly pursue this opportunity to what the entrepreneur has available.

If the evaluation has been done well, the student is now in a position to identify where the gaps and mismatches are, and assess their severity. Students need to be reminded that they will seldom see a perfect match in the real world, but by applying the framework they should be in a position to report the overall level of fit, identify potential strategies for mitigating or reducing gaps, and draw a conclusion as to the overall suitability or attractiveness of the opportunity for the entrepreneur.

REFLECTIONS ON IMPLEMENTING THE FRAMEWORK

In use, the framework addresses EE challenges in a number of ways. We use the framework because it conceptualizes entrepreneurial activity as a dynamic process influenced by multiple factors. Using the framework requires the students to come to a conclusion - they must make decisions and judgments - about the opportunity. We think it encourages, at the same time, a balanced and realistic appraisal of the opportunity and for the student entrepreneurs in the course the framework provides a rigor to temper, but not kill, their enthusiasm for an opportunity. The framework develops the student's risk-taking abilities, albeit in a low risk educational environment, by requiring them to employ the framework in a systematic manner. Students must examine questions, whether they think they have the correct (or good) answer or not. In our experience many students try to avoid this situation but this aspect of the evaluation takes them out of their comfort zone and asks them to take a small personal risk. Ultimately they must answer all the questions and defend their judgments. They also develop their critical thinking and ability to deal with unstructured entrepreneurial situations, skills which are transferable to other areas and settings. The framework provides a comprehensive yet simple structure, but not too simplistic. It facilitates identification of key issues without getting bogged down in financial and operational details and works well with a wide variety of opportunities and industries, as well as cases differing in length and complexity. In addition, the framework highlights the human dimension; it is one of the few frameworks that explicitly recognize the non-economic motives of entrepreneurs, despite overwhelming evidence that these motives are important. A business plan does address the availability of human capital in the management team, but is not normally used in introductory courses and is not suitable for preliminary screening of opportunities. We have also found, pragmatically, that the framework can be used in a 60-90 minute class time frame, with multiple case types from newspaper articles to guest speakers to videos. It can be used at just about any stage of the course or even the academic program. Finally, the framework is perceived as useful by both instructors and students.

Accredited schools and those planning to become accredited can take some comfort in the fact that implementation of the framework can be quite compatible with AACSB principles (Table 1). Memorial's Faculty of Business, for example, is an accredited school where the ability to evaluate opportunities is a program-level goal. As Table 1 demonstrates, AACSB's expectations regarding a school's ability to demonstrate learning achievement are quite high, requiring considerable effort to demonstrate the school is meeting its learning goals through systematically measuring outcomes and continuous improvement. Nevertheless, accommodating AACSB's assessment of learning (AOL) requirements occurred quite seamlessly here, requiring almost no changes to prior practice, and according to the Faculty's AOL coordinator, the practices employed by the entrepreneurship area were well-suited to be used as a model for the other area groups. It seems likely the smooth accommodation of AOL in the entrepreneurship area was facilitated by the prior existence of clear learning goals (no doubt necessitated, in part, by the absence of a textbook), a strong emphasis on skill development through repeated practice in applying the framework, and multiple measures of student learning across the semester to capture student progress and provide diagnostic feedback for both students and instructor.

Learning assessments in Memorial's Introduction to Entrepreneurship course suggest that students improve significantly in their ability to apply the framework as the semester progresses, despite the fact that the examinations increase in complexity. Grades are assigned for the comprehensiveness of the analysis (i.e. systematic and thorough scope of framework coverage, with explicit effort to identify both positive and negative aspects) and quality of thought (e.g. the use of evidence and examples to support claims, creativity, and integrative thinking). These simple criteria are transparent to students and are assessed using broad strokes (e.g. 70 versus 75, rather than trying to make fine distinctions, such as 72 versus 74). Students have responded well. Not only is this, arguably, a more efficient way to measure student performance, but it is a more reliable indication of student progress, as distinctions involving one or two marks in a qualitative analysis can be quite random.

Students in the Introduction to Entrepreneurship course are formally assessed on their ability to evaluate opportunities on four occasions across the semester, typically in weeks four, five, nine and eleven. The first assessment (Week 4) is an individual assignment where students evaluate opportunities that they have identified themselves in preparation for a term-long project. The three subsequent assessments all consist of midterm examinations based on the analysis of written cases. The first midterm exam (Week 5) requires students to assess one case-based opportunity using the framework. Two cohorts of students were analyzed separately (Figure 3) due to changes in the recording of grades for Midterm 2. Midterm 2 normally includes one major question directed at evaluating the case-based opportunity and another major question addressing start-up issues. Because separate marks for the two questions were only retained for storage to meet the more recent administrative needs of AOL, Cohort 1 includes five classes of students enrolled over five semesters from Fall 2012 to Fall 2014; in this instance the second (Week 9) grade is based on a specific question directed at opportunity evaluation. In contrast, the midterm 2 result for Cohort 2 students (five classes enrolled over four semesters from Fall 2010 to Winter 2012) represents the overall examination score (no separate score was available for question 1), only half of which was based on opportunity evaluation. The latter must therefore be regarded as a more indirect measure of student ability to evaluate opportunities. Finally, the last midterm examination (Week 11) consists of a case requiring students to evaluate three opportunities (start-up, franchise, and a purchase decision) and select the most appropriate one.

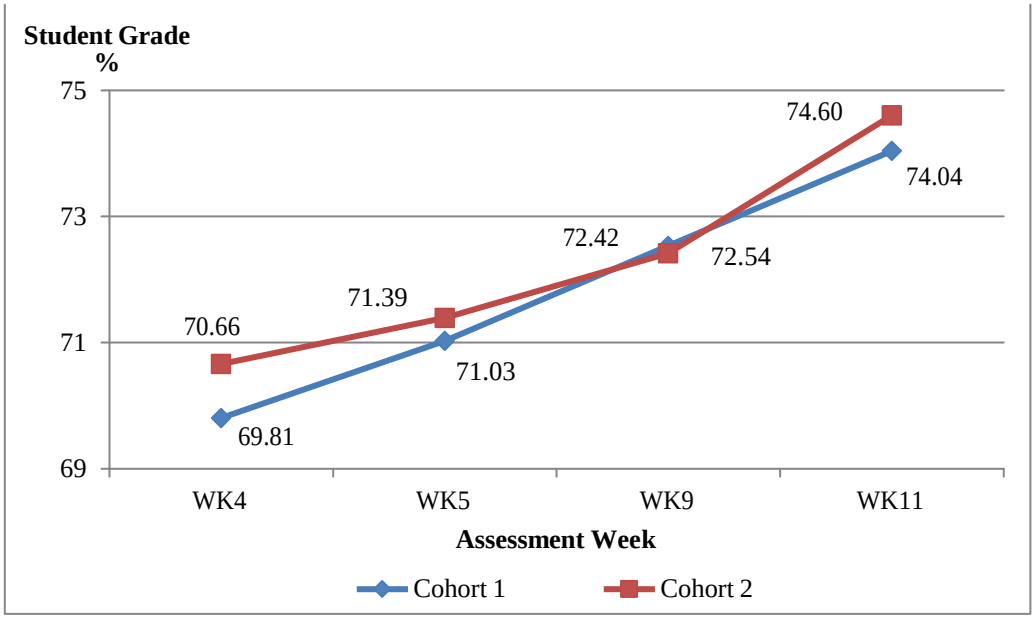
Table 1
FRAMEWORK COMPATIBILITY WITH AACSB PHILOSOPHY & IMPLEMENTATION

Source	AACSB Dictums	Comment
1, 2	Learning goals are established at different levels.	The ability to assess opportunities is a learning goal at both the course level and undergraduate program level at Memorial.
1, 3	Goals express expectations concerning the depth & breadth of student knowledge & skills.	Student analyses are evaluated for both quality and comprehensiveness. E.g.: making inferences and providing examples to support claims versus systematic coverage of the framework criteria.
2, 3	Learning goals should address two types of learning: general knowledge/skills and management-specific knowledge/skills.	Application of the framework requires analytical skills, problem solving and integrative thinking. Understanding the framework's theoretical foundations requires management-specific knowledge of entrepreneurship, marketing, strategy, accounting and organizational theory concepts.
2, 3, 4	Measures to assess achievement of the learning goals must be specified or developed to support the principle of accountability (Standard 8, Assurance of Learning).	At Memorial existing assessment formats were easily specified to assess student learning on the program's AOL rubric for opportunity evaluation. No new measures needed development and no stand-alone (i.e. outside of the normal classroom experience) measures were required.
2	Course-embedded measures of learning achievement can be used when required courses expose students to systematic experiences designed to produce the school's learning goals.	Course-embedded measures involving the framework are employed at Memorial to assess learning on the program's opportunity evaluation rubric.
3, 4	Assessment information should be used for continuous improvement.	Continuous improvement can be facilitated throug the use of multiple assessments (including informal measures) throughout the course, providing separate feedback on the comprehensiveness and quality of student analyses, and decomposing the framework to focus on one or more parts, etc.
3	Assessment of learning goal achievement should include both direct and indirect measures.	Memorial used a variety of assessment tools, including instructor review of group discussion notes, exercises and formal assignments requiring students to screen/select opportunities they have identified, the use of specific questions directing attention to one or more parts of the framework on examination cases, written holistic case analyses, and instructor reflection on in-class case discussions.
3	Ideally curriculum addresses a (program-level) learning goal in a number of courses.	The framework is flexible and adaptable. It has been used successfully in two undergraduate courses (Intro to Entrepreneurship & New Venture Creation - NVC) and the MBA NVC course. In NVC courses it is used early for Opportunity Screening. It is also suitable for strategy courses and was used to ground the analysis in an advanced level case on growth intentions and goal-setting where no other framework was available to guide the analysis (Hanlon, Walker & Stapleton, 2015).

4	Students should engage in experiential and active learning.	The framework can be applied to cases, opportunities that the students themselves have identified, and other real-world contexts such as might be found in small business centres and student consulting situations.
4	Curricula should facilitate frequent student-student and student-faculty interaction.	The framework's suitability for case analysis is a strength. The class can be divided into groups assigned to discuss one piece of the framework before presenting their results to the whole class. The instructor can facilitate the discussion of FIT, which cannot be considered until each of the framework dimensions has been analyzed individually.
4	Although skill areas tend to remain consistent, knowledge areas are likely to be more dynamic.	The specific evaluation criteria comprising the framework can be easily revised to incorporate new knowledge.
Sources for AACSB Dictums: (1) AACSB 2009; (2) AACSB 2012; (3) AACSB 2013; (4) AACSB 2016		

Figure 3 provides a summary of student grades on the four assessments. All classes in the sample had the same instructor and were taught by one of the authors; it was not possible to include classes of other instructors because grades on individual assessment instruments were only recorded in instructor spreadsheets that were no longer available due to staffing changes. It can be seen that for each cohort the marks get progressively better across the semester. Repeated measures ANOVA results indicate that the difference in grades is statistically significant for both cohorts (Cohort 1 n=200, F=7.001, p<.001; Cohort 2 n=208, F=9.573, p<.001) (the Huynh-Feldt version of the test was applied in both instances).

Figure 3
OPPORTUNITY EVALUATION GRADES ACROSS SEMESTER



It is noteworthy that Cohort 2 scores dip below those of Cohort 1 in Week 9. This can likely be attributed to the fact that (as mentioned earlier) the Week 9 Cohort 2 grade included the results from a second question dealing with start-up. Because Cohort 2 scores include the evaluation of other, more recently introduced knowledge (i.e. start-up, in addition to the opportunity framework) this drop in performance is not unexpected. On another note, one might surmise that the lowest score occurs in Week 4 because students have not yet become accustomed to the assessment methods and standards employed in the course. We were not able to rule this alternative explanation out, but we were able to compare the grade on the Week 4 assignment with an alternative individual assignment. In earlier years the Week 4 assignment was a research proposal for the term project; an analysis of a sample of another four classes (n=173) for this assignment revealed an average grade of 80.4 percent, which was significantly higher than the opportunity evaluation grade of 70.66 percent ($t=-7.204$, $p<.000$). Overall, our results are consistent with the expectation that students are improving their opportunity evaluation skills as the semester progresses, but the results cannot be considered conclusive without a control group for comparison.

CONCLUSIONS

We have provided an account of the evolution of our framework and its efficacy as a tool for introducing students to opportunity evaluation. The main contribution of this paper is the sharing of a practical entrepreneurship teaching tool that aligns well with current EE theory. The practicality of the framework is crucial. It is important to remember that our audience of first-year undergraduate business students is required to take the course and unlikely to become entrepreneurs, though they are likely to become managers. Using Gibb's (2002) description of audiences they are, then, mainly managers who will need to use entrepreneurial tools and behaviours and/or will, in the future, be in a position to assist entrepreneurs. Fortunately, the framework is well suited for this audience and future entrepreneurs.

Not only is it practical for student learning, it is also practical for instructors. The framework is adaptable to a variety of materials (i.e. short/long, complex/simple, or videos cases etc.) and student audiences (i.e. introductory or more senior level courses) and its elements - opportunity, resource requirements and entrepreneurs - are easily recognizable to business students and can also be broadly understood by a lay person. Furthermore, instructors can adapt their use of the framework to the needs of their audience. If an industry analysis is thought to be too complex, for example, it can be simplified to focus on entry barriers alone.

The framework reflects contemporary EE philosophy by enhancing our student's capacity for action based on a number of the main entrepreneurial behaviors and enables them to apply an entrepreneurial heuristic valuable in a start-up and other contexts where an opportunity evaluation is needed, such as screening a number of opportunities. The strength of learning comes from applying the framework in numerous instances over the course. Although some knowledge of entrepreneurship concepts is needed to understand the framework, it is the ability to apply the framework that is emphasized. In other words, knowledge becomes the means to an end rather than the end in itself.

In the future we hope to extend the use of the framework to all students in our university. We have also been discussing the use of the framework by local incubators/accelerators, as we have used the framework successfully with a number of local entrepreneurs on an individual basis. Future research could usefully examine the framework's application to these non-academic environments and to test its usefulness in other universities. In addition, an experimental design

that includes a control group would permit a more definitive conclusion regarding the efficacy of the framework.

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DEVELOPMENT OF ENTREPRENEURSHIP EDUCATION PROGRAMMES FOR HEI STUDENTS: THE LEAN START-UP APPROACH

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ABSTRACT

In recent times the relevance of the business model design overlapped the business plan conception, having the lean start-up approach contributed to this situation. This approach consists in a methodology that focuses on agile testing and learning cycle to validate hypotheses in the business idea. It can be taught in higher education institutions being an interesting approach in the development of entrepreneurship educational programmes for university students. Thus, this research intends to make clear how a lean start-up approach can be useful for the development of entrepreneurship educational programmes, presenting two European projects – ICT Entrepreneur and SCIENT, that evidence that is possible to integrate the lean start-up approach in the design of entrepreneurship training courses. The integration of the "build-measure-learn" approach, supported by these two European educational projects is explained and discussed.

Key Words: *Entrepreneurship Education, Lean Start-Up, Higher Education Institutions, Entrepreneurship Programs*

INTRODUCTION

The rapid growth of the claim and supply of Entrepreneurship Education Programmes (EEP) demands for more examination in design, delivery and assessment of these programmes (Fayolle et al., 2006). Studies investigating European Union vs. Units States experiences in entrepreneurship education (EE) have been well recognized so far (Fiet, 2001). Nevertheless, there is no common paradigm in literature for the design, delivery and assessment of EEP. As Fayolle et al. state (2006: 702):

> "*There is therefore a need to develop a common framework to evaluate, compare and improve the design of those programmes, which goes beyond the estimation of their short-term microeconomic impact*". In addition, there is a lack of comparisons and analyses discussing problems of development of EEP.

Despite the relevance of business models for academics and practitioners, there is an absence of literature and research on this topic. Perhaps, an explanation behind the inexistence of specific literature lies in the lack of consensus on the conceptualisation and definition of what a business model is (Teece 2010; Zott et al. 2011). Morris et al. (2005) refer that there is not a generally accepted definition of "business model", instead a diversity of terminology is being used (e.g. business model, business strategy, economic model). Another possible explanation is related with the fact that the business model design within the entrepreneurship field is a recent topic (Trimi and Berbegal-Mirabent, 2012).

Nevertheless, it is gaining a growing attention in the literature. The usefulness and predictable power of business models are expected to help entrepreneurs making more informed decisions, thus increasing the chances of success (Trimi and Berbegal-Mirabent, 2012). This new approach can be more useful, than the conventional one based mainly on the business plan, to entrepreneurs out of the business language, as is the case of scientists, engineers or informatics.

Recently the relevance of the business model design overlapped the business plan conception (Nirwan and Dhewantob, 2015). Blank (2013:5) argues that "a research exercise written in isolation at a desk before an entrepreneur has even begun to build a product", and the Lean Start-up approach hardly contributed to this situation. But what is a Lean start-up approach? This is a methodology that focuses on agile testing and learning cycle to validate hypotheses in the business idea. This methodology allowed a lot of enterprises in the United States to achieve success.

The lean start-up approach is, for some authors, a practical methodology rather than an academic subject (Nientied, 2015). Whereas Patz (2013:61) defends that the lean start-up concept does have an academic contribution

> *"… to existing theories of entrepreneurial action like Effectuation and Bricolage, adding the element of running experiments and stressing the learning aspect of the entrepreneur during the journey of starting a company".*

Since the lean start-up is progress in an intellectual and practice development (Ries, 2011), it can be taught in Higher Education Institutions (HEI) and it could be an interesting approach in the development of entrepreneurship educational programmes for HEI students. This is what this research aims to show: how a lean start-up approach can be useful for the development of entrepreneurship educational programmes (EEP). Thus, this paper intends to illustrate through two European projects – ICT Entrepreneur and SCIENT, how it is possible to integrate the lean start-up approach in the design of entrepreneurship training courses. Furthermore, an integration of the "build-measure-learn" approach, supported by these two European educational projects, was carried out and discussed.

THEORETICAL BACKGROUND

Entrepreneurship Education

Entrepreneurial pedagogy and entrepreneurial learning have become issues of growing importance in several educational systems all over the world. According to Harms (2015), entrepreneurship education (EE) became an effective way to increase the "amount" of entrepreneurs. The growing number of HEI providing EEP and carrying out academic research in the area reflects its popularity (West et al., 2009).

It is consensual that EE plays a critical role in guiding and developing future entrepreneurs, since this type of education can provide them with the necessary knowledge and skills to create their own business or to be entrepreneurs in their job (Dutta et al., 2011). Thus, EE is crucial to the development of enterprising citizens, by identifying and activating vocations in individuals, promoting entrepreneurial attitudes and entrepreneurial intentions and behaviours (Oosterbeek et al., 2010). Education and training, based on a solid educational programme, can contribute to increased management knowledge and to developing the psychological attributes and behaviours associated with entrepreneurship (Lee et al., 2006). Moreover, EE prepares students for the job market that is complex and uncertain, endowing future leaders in

entrepreneurship, innovation, and management of technology with a set of knowledge, skills and attitudes that empower them to address global challenges (Harms, 2015).

Hytti and O'Gorman (2004) consider that EE can be described in terms of three aims: learning to understand entrepreneurship, learning to become entrepreneurial, and learning to become an entrepreneur. In this scope it is necessary to distinguish entrepreneurial and enterprising behaviour (internal entrepreneurship) and doing business (external entrepreneurship).

In the perspective of authors as Gibb (2011), the pedagogy applied to EE should be built on the active role of students, in the learning process, instead of being based on traditional teaching methods. Sherman et al. (2008) noticed that some educators increased the use of experiential learning in the classroom, reflecting a desire to move away from traditional teaching methods. Their study showed that activities that are more experiential in nature have a greater impact on the decision to become an entrepreneur and that those activities make the students more attracted to become entrepreneurs.

In this new learning entrepreneurship methodology, the information should be created collaboratively, using an approach of trial-and-error as a part of the learning process. Methods used can include cooperative learning, team learning, project work, learning by doing, drama pedagogy, practice enterprises, workplace guidance and company visits (Gibb, 2011). Additionally, Gartner (2008) refers the stories of entrepreneurship and suggests that more attention should be paid to the stories that entrepreneurs tell about themselves. In turn has identified a wide range of teaching methods, including role-play, learning diaries, guest speakers, case studies and simulations. Neck and Greene (2011) emphasise the importance of learning games and simulations because they allow students to play in virtual scenarios that reflect reality playing, observing, creating and thinking about entrepreneurship.

Caseiro and Alberto (2013) defend that lectures should be reduced to the minimum necessary and teaching should be oriented to the resolution of practical cases, preferably real cases to be discussed and resolved using a group of students; this will stimulate the abilities of cooperation and communication. That way it will be possible to engage students in a business context, to provide them with a vision of the kind of problems that may happen and to call their attention to the multidisciplinary nature of the situations.

Teaching methodologies employed outside the classroom should be more explored. As has been stated by some researchers (e.g. Cooper et al., 2004; Pittaway and Cope, 2007) projects carried out in connection with businesses have resulted in positive learning outcomes and teaching experiences because these practices are related to real life and are prepared in collaboration with the staff of the enterprises.

HEI and its programs have been questioned to provide more extensive impact on development and encouraging entrepreneurial skills, knowledge and attitudes. EEP began to appear during the 1960s, mainly in the US. Brush et al. (2003) argues that 1600 HEI offer 2200 courses in entrepreneurship worldwide. The evaluation of EEP began after 1980s (Kao and Stevenson, 1984; Vesper and Gartner, 1997) and after this date, this topic turned out to be one of the fascinating signs about entrepreneurship research since of the complexity of the definition, objectives, processes, activities and results of the EEP. Literature of the most recent EEP studies shows the scope of the conceptual and methodological challenges in the designing and monitoring of EEP (Fayolle et al., 2006). Garavan and O'Cinneide (1994) recommended a set of evaluation criteria for EEP evaluation such as philosophy of the program; targeted population;

objectives and program content; learning strategies and methods; and outcomes and impact of programs.

Twaalfhoven and Wilson (2004) compared the US and EU path for EE design and delivery. The results show that European HEI and business schools offer a variety of entrepreneurship or SME oriented courses as primarily elective that have not being integrated into all the curriculum or across the HEI. The curriculum is mainly focused on business start-up phase and neglect the growth phase. Entrepreneurship programs are delivered with participative pedagogy; however, the innovativeness of the teaching methods is still an issue for most programs. European entrepreneurship studies have on average 9.5 years of tradition and significantly less specialized courses or teachers in entrepreneurship. The lack of critical mass of the educational materials and innovative approaches have been described. Given this context new methodological approaches to EE are needed.

Lean Start-Up Approach

During the start-up process, entrepreneurs need to set up the frontiers of the business and define the offer. In the initial stages efforts are very focused on building the product that can be commercialised. This is a very difficult task, especially for new technology-based firms which usually require great investments, have very short product life cycle and have a limited time span to turn the idea into a business. But even in these cases it is necessary to spend some time maturing the business model (Trimi and Berbegal-Mirabent, 2012).

All of the essential features regarding the product, operations and the structure of the new firm are embedded in the business model. According to Teece (2010), the business models reflect what the clients' needs are, and how a company can organise its processes in order to best meet those needs, and have profits for that, this is, a business model evidences how to deliver value to customers and how to manage the organisation. As such, the relevance of the business model seems to be unquestionable and the lean start-up approach hardly contributed to this fact (Nirwan and Dhewantob, 2015).

The introduction of the customer development process by Steve Blank launched definitively the lean start-up movement. Blank (2005) defends a step-by-step process for managing the search for a new business model, and provides entrepreneurs with a route from idea to a feasible business model. Some years later, in 2011, after refining and developing further this initial methodology in collaboration with entrepreneurs, academics and other thinkers, Eric Ries published the book The Lean Start-up, thus contributing to the establishment of a lean start-up terminology including new several terms. This theory, initiated by Blank (2005) and popularised by Ries (2011), focuses on the importance of learning from the customer (market) to produce the adequate products. This is done throughout an iterative process where problem, product, and customer hypotheses are developed and validated, and prototypes are built when is necessary in order to minimize waste, time, and money during the new product development process (Blank, 2005; Ries, 2011).

According to Nientied (2015), lean start-up is a system for developing a business (or product) in the most efficient way possible to decrease the risk of failure, by treating all business ideas as assumptions (or hypotheses) that must be validated through a quick test or experimentation in the marketplace. Thus, the premise of lean is precisely to avoid waste, rather than reducing costs, by settling on structured experimentation, iterative product releases, and clients' feedback to generate validated learning. This approach pursues to reduce or even eliminate wasteful practices and add value generating practices, during the product development

process, so that start-ups can have better probabilities to succeed without the need of large amounts of funds, or elaborated business plans. In other words, the idea behind this approach is that the real product of an early stage start-up is an experiment that contributes to reducing the initial extreme uncertainty. The progress of a certain business can be assessed by the learning that is gained from these experiments (Moogk, 2012).

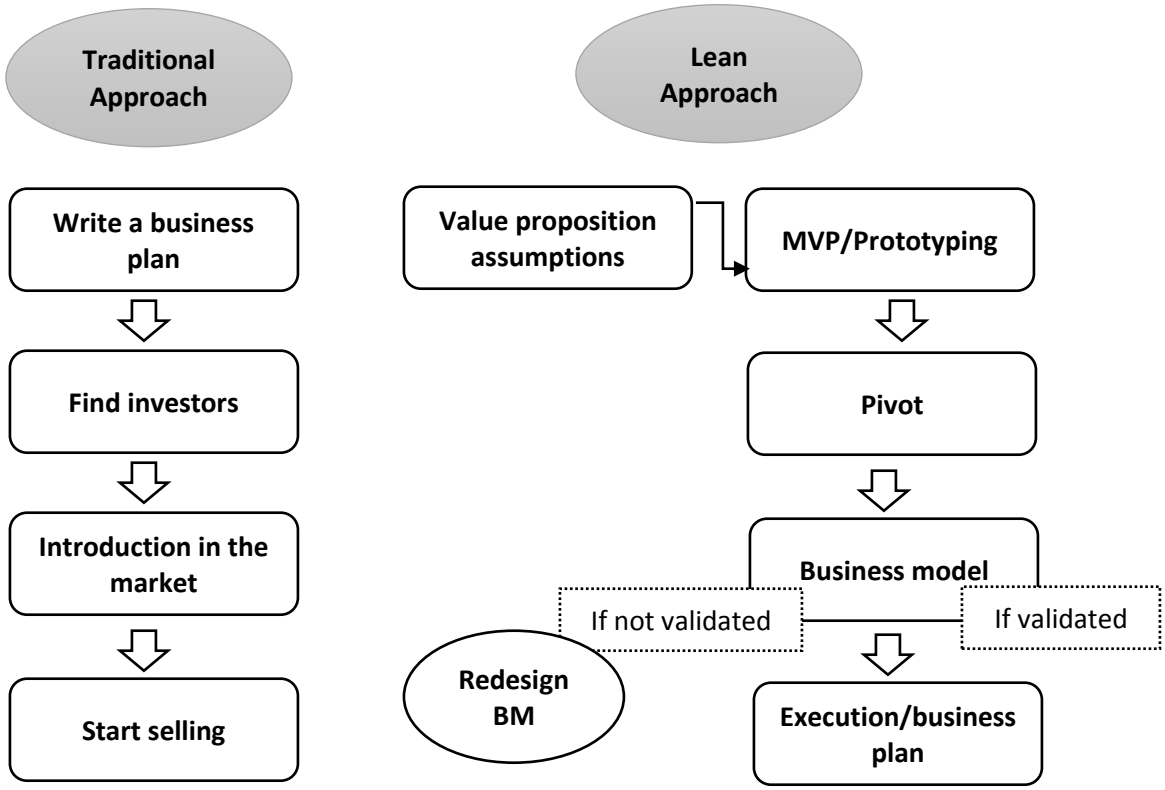
Following the works of Blank (2005) and Ries (2011), Eisenmann et al. (2012) introduced the concept of "lean start-up", defined as a firm that follows a hypothesis-driven approach to the assessment of an opportunity and the development of a new product for a specific market. This methodology focuses on translating a specific point of view or idea into verifiable hypotheses regarding a new product, associating to the process a business model. The hypotheses are then tested using prototypes that are planned to validate specific product features or business model specifications.

In this context, the entrepreneurial opportunity is based on modelling the new solution in a way that could solve a specific market need or problem. Ries (2011) presents the main principles of start-up methodology:

1. Get out of the building. Initially start-ups should formulate hypotheses that will be validated (or not) by customers in real world, needing to reflect about "the conversation" with the customers to help eliminate most of the uncertainty. Usually entrepreneurs formalise their hypotheses in a framework designated as business model canvas (a diagram of how a firm crates value for itself and for its costumers - Blank, 2013).
2. Minimum Viable Product (MVP). This is the version of the product that enables to test the "build-measure-learn approach" with a minimum amount of effort and development time (it has just those features that allow the product to be deployed and showed for a group of possible customers). According to Blank (2013), this is related with the agile development, a work carried out with the customer, in order to develop a product iteratively and incrementally.
3. Validated Learning. This is a method for demonstrating progress very useful mostly when one is embedded contexts of extreme uncertainty (it is based on the voice of the customer).
4. Pivot if necessary. If after customer feedback, the entrepreneur's assumption turned out to be invalid, the entrepreneur should consider a pivot, this is, to carry out a structured correction designed to test a new hypothesis about the product (it results from a better understanding of the customer's problem).
5. Iterate rapidly. The cycle of evolution: build-measure-learn should be as faster and lighter as possible. This process will provide the orientation that start-up needs to be successful. Note that ideas and products are thus based on learning derived from this cycle.

Figure 1 illustrates the approaches to start up. "According to the decades-old formula, you write a business plan, pitch it to investors, assemble a team, introduce a product, and start selling as hard as you can" (Blank, 2013:4). However, as is possible to infer from the scheme, contrary to the traditional approach, lean start up approach allows to make experiments and test the value proposition and market traction before making a significant investment. Once the entrepreneur gets a validated value proposition, and the value proposition is embedded in a sustainable business model, then the strategy can be set and the business plan can be written.

Figure 1
FROM TRADITIONAL APPROACH TO LEAN APPROACH



HOW TO USE THE LEAN START-UP APPROACH TO DEVELOP ENTREPRENEURSHIP TRAINING - EVIDENCE FROM TWO CASE STUDIES: ICT ENTREPRENEUR AND SCIENT PROJECTS

Two case studies will be explored based in the projects Erasmus+: ICT Entrepreneur and SCIENT, whose final aim is to develop a pilot training test in the European countries of the consortiums. Both entrepreneurship programmes here presented aimed to develop/test a complete pre-accelerator programme that could be offered in universities, research and entrepreneurship centres, accelerators and incubators, across Europe, once the project is completed. This task involves several phases. The first phase of this project was to make a diagnosis aiming to evaluate the national entrepreneurship ecosystem and the relevance of the existing entrepreneurship courses in each country of the consortium. Thus, an intensive search for the courses/seminars/lessons related with entrepreneurship education was carried out and several organisations were selected to be visited and interviewed (note that each partner visited and interviewed about six national entities and two foreign institutions chosen outside the countries of the consortium). The information collected helped us in the identification of the gaps, strengths and weaknesses in the current EE. This analysis also allowed us to identify specific entrepreneurial training needs of both STEM (Science, Technology, Engineering and Mathematics) and ICT students. Then questionnaires directed to the students were also developed and the data was carefully analysed (these instruments included skills, motivations, support from the HEI, barriers, difficulties and sociodemographic traits as variables).

Taking into account the results of the interviews and questionnaires, there is some consensus regarding the inclusion of the following subjects in an entrepreneurship programme directed to these students: entrepreneurial culture, communication and negotiation techniques, finances, basic management tools, logistics for manufacture/delivery of product, setting prices, selling products, internationalisation, business models, marketing and market research, and soft skills in general. This is in line with Mwasalwiba (2010) findings, who concluded that the most taught subjects or course contents in a typical entrepreneurship programme were: resources rationalising and finance, marketing, idea generation and opportunity discovery, business planning, managing growth, organisation and team building, new venture creation, SME management and risk and rationality. Other subjects, less common, were legal issues, management of innovations and technology, franchising, family business, negotiation skills, communication skills, and problem solving.

As such we tried to include in the courses some of these contents as well as practical activities, using an approach based on the lean start-up. Before the dissemination between the students, a "Train the Trainers" was carried out (for ICT in January in Nicosia, Cyprus, and for SCIENT in April in Bologna, Italy). All the participants of both projects were represented in these two-day trainings in order to criticise, make adjustments, recommendations and improvements. All didactic materials were uploaded in Trello (it is a web-based project management application) and distributed to trainers in all countries of the consortium.

In order to complement the theoretical training, the participants will be involved in job shadowing, working in interdisciplinary teams under the guidance of academics, managers, investors and entrepreneurs, having thus the opportunity to understand business needs and how their research can be applied in real business settings. Internships and visits to companies, as well as the presence of guest speakers in the training sessions, and mentoring and coaching activities, were also included in the pack. Additionally, the top five ICT participants from each country will participate in the final competition that will be held in Cyprus. For SCIENT, an internship in Germany will be offered for the best team.

Next we present the projects contexts, followed by the proposal for contents and functioning of each training course.

SCIENT

There are more than 180,000 STEM (Science, Technology, Engineering and Mathematics) students (about 36%) in EU universities (European Union, 2010). Not all of these students will get an academic/research position and sign a contract with a research unit. They will most probably have to go abroad or start to think about creating their own job (Ferreira et. al., 2016). This particular target group should be provided with "entrepreneurship experiential elements", which have potential to complement the research, thus an adequate entrepreneurship training programme should cover the whole life-cycle of business and is sensitive towards to PhD process of doctoral students to whom the programme is directed (Thursby et al., 2009).

Given the importance of entrepreneurship to surpass the problem of unemployment of this target (STEM students), the project SCIENT, an EU-funded project designated "A European University-Business Alliance aiming to foster young SCIEntists ENTrepreneurial spirit" (in the cope of Erasmus^{+}) will be implemented in order to develop an innovative entrepreneurship programme for PhD STEM students/graduates, developing their transversal skills and providing them with a new professional path.

SCIENT will enhance scientific entrepreneurship by focusing on young researchers. The goal is to make doctoral students and graduates aware of their career options and aware about the possibility of using their research findings and starting their own company, avoiding that they limit their prospects by considering only an academic/researcher career. The SCIENT Project has the following objectives:

i) Develop transversal skills (both hard and soft skills) for PhD STEM students/graduates and creating new professional paths for these individuals;
ii) Identify the obstacles that PhD students/graduates face in transferring their research findings into business ideas;
iii) Support and stimulate the exchange of knowledge between HEI and enterprises across the countries involved;
iv) Develop and test of a pre-accelerator programme for universities, research and entrepreneurship centres, accelerators and incubators;
v) Transfer best practices from North EU countries to South EU countries;
vi) Open up new learning opportunities through the practical application of entrepreneurial skills (start-ups, spin-offs, products, prototypes).

To put in progress such an ambitious programme, a consortium of 15 organisations from 8 countries: Cyprus, Malta, Italy, Portugal, Spain, Lithuania, Germany and United Kingdom was created. The project includes: Universities with relevant experience on entrepreneurship education field for higher education students (European University Cyprus, University of Beira Interior, Kaunas University of Technology, and University of Gloucestershire); SMEs with experience in research and consulting work on entrepreneurship (GrantXpert, Paragon); a Science and technological park (Parkurbis) and an accelerator (Chrysalis Leap) providing vital input during the development of our training content; two Northern EU partners (despite UoG in UK), from Germany (ISOB, responsible for the Evaluation and Quality Assurance), a cluster of companies (SPS, which provided support and development to start-ups on a daily level), aiming to transfer best practices from these countries to Southern EU partners; one media partner (SigmaLive), responsible for the dissemination and exploitation activities; and a Business Angel Network, (CYBAN) to understand the perspective of the investor.

In line with the recent developments in the literature on start-up and business idea support the learning units have been identified and organized following a lean approach. Thus, SCIENT training course is composed of only 40 training hours during which it is necessary to give a framework on how to transform a business idea into a business plan. It this context it is necessary to:

1. Realize a "lean" training package, able to be easily adopted and mainstreamed into different University courses;
2. Give some inputs to evaluate the feasibility and the market potential of business ideas, in order to decide whether or not these can be turned into proper business plans;
3. Give students handy tools to let them work individually;
4. Provide PhDs with methodological instruments to be able to deepen knowledge acquired by them.
5. Provide each participant with instruments and concepts that could support the development of his/her business idea;
6. Have a large part of the courses (12 hours) dedicated to practical exercises.

The didactic approach SCIENT is based on a multiple set of instruments, tools and trainers that will closely follow the participants both in class (front lessons, class work etc.) and remotely (skype meetings or similar). Furthermore, each participant will be assisted and, in a way, "mentored" by the respective SCIENT partner by whom he/she has been selected, having a

small group of mentors involved in this process (successful entrepreneurs, business consultants, start-up experts, ICT experts, etc.).

Each SCIENT learning unit will be technically developed (main outlines for setting the framework of each lesson, tools as presentations and instruments for working sessions) by the organization that, within the consortium, is more expertise and competence for the particular subject.

Table 1 shows the structure defined for the SCIENT training.

Table 1
SCIENT TRAINING OUTLINE

Modules	Learning units
Innovation starts with you	▪ Self-assessment and how to model your personal skills ▪ Building a cross-disciplinary team and organisational behaviour issues/growth aspects
Innovation, research, technology transfer and entrepreneurship	▪ Value proposition ▪ Test your traction: minimum viable product; pretotyping; pivot or persevere
Get out of the building and test your customers	▪ Business model Canvas ▪ Development and commercialization
Plan business idea	▪ From business model Canvas to business plan ▪ Start to prepare a real business plan
Protect your business idea	▪ Handling IPR ▪ Open innovation
How to pitch: insights and common mistakes	▪ Pitching and finding investors

ICT Entrepreneur

Through an in-depth analysis of existing entrepreneurship programmes, accelerators and incubators in the EU, the project ICT ENTREPRENEUR aims to identify the existing gap in South EU countries and the best practices from North EU countries and develop a new, top-quality pre-accelerator programme for ICT students/graduates. Although the number of new starts ups have increased dramatically in the past few years, the percentage of youth participating in these programmes is small. Thus there is still a need to develop new, more targeted training programmes for those groups of the population that have the highest potential to propose innovative products and services to the market. ICT students/graduates are considered among the brightest minds, however they fail when turning their findings into marketable products, or considering entrepreneurship as an attractive career option. In fact, there's a deep concern about the specific obstacles ICT students/graduates face in transferring their project findings from university assignments into business ideas and that will be taken into account in the construction of the new programme.

Thus, ICT Entrepreneur is an innovative project, aiming to have a practical application once it is completed. This EU-funded project, entitled "A European University-Business Alliance aiming to foster the entrepreneurial spirit of ICT students" (in the cope of Erasmus^{+}) aims to develop an innovative training package that will help ICT students and graduates to enhance their entrepreneurial skills and put their knowledge into practice.

The ICT Project has the following objectives:

i) Foster the entrepreneurial spirit and develop transversal skills (hard/soft) for ICT students/graduates helping them to create new professional paths;
ii) Through an in-depth needs' analysis, identify the obstacles that ICT students/graduates face in transferring their findings into business ideas;
iii) Enhance scientific entrepreneurship levels within EU Universities, decreasing thus youth unemployment and boosting job creation and growth;
iv) Transfer best practices from North EU countries that have long-term experience in entrepreneurship and accelerator programmes to South EU countries;
v) Opening up new learning opportunities through the practical application of entrepreneurial skills, for the creation of start-ups and spin-offs, commercialisation of new services, products and prototypes.

The project partnership, involving 7 partners from 5 countries (University of Beira Interior from Portugal, European University Cyprus and GrantXpert from Cyprus, University of Gloucestershire from UK, Institut für sozialwissenschaftliche Beratung GmbH (ISOB) and Strategische Partnerschaft Sensorik (SPS) from Germany and FUNDEUN from Spain), has taken this EU initiative in an effort to open up new learning opportunities for the creation of start-ups and spin-offs and the commercialisation of new services, products and prototypes. Furthermore, the partners' aim is to enhance entrepreneurship levels within European universities, thus boosting job creation and growth.

A training programme will be created in order to open up new possibilities through practical application of entrepreneurial skills. Many people will be involved in the co-creation of the training content, such as academics and industry people.

In ICT the business loop "Build-Measure-Learn" is at the core of the approach - the ideas are turned into products, data about how the product is actually used by customers is gathered and analysed, and ideas for improvement are fed back into the product development process.

Based on the model concepts and ideas are grouped together to form a set of modules that follow a logical sequence and comprise all the following aspects: (i) design of the product/service: a start-up could only succeed if it will produce something (good or service) that will address specific consumer needs, either by enhancing a current product or service or by introducing something new; (ii) the lean start-up approach, that is, satisfying consumer needs with the minimum possible resources (this approach will be at the epicentre of the whole training programme and a cornerstone methodology); (iii) intellectual property protection; (iv) finance and marketing concepts; (v) personal skills, leadership and effective building of multidisciplinary teams; (vi) pitching techniques and funding.

The programme of 50 hours of training sessions will generally follow an original and practical approach. For instance, complicated concepts and ideas will be presented with visual tools as is that of the 'mind map' and simple charts which can instantly communicate a concept.

Table 2 shows the structure defined for the ICT Entrepreneur training.

Table 2
ICT TRAINING OUTLINE

Topic	Module
Who am I?	▪ Assessing your entrepreneurial mindset
Soft skills	▪ Developing your entrepreneurial skills
Team building and grow aspects	▪ Moving from "myself" to the "team": from your individual behaviour to team building
Idea generation and entry in the market	▪ From idea generation to commercialisation
Legal aspects and intellectual property	▪ IPR +Technology management: protecting your work handling IPR
Research, start up, market needs	▪ Business model canvas
How to prepare the business plan	▪ Lean business plan
How to sell your idea and get financing	▪ Pitching and finding investors
EU/other funding	▪ From bootstrapping to accelerating your business

CONCLUSIONS AND IMPLICATIONS

This study aimed to show how a lean start-up approach can be useful for development of EEP, presenting two European projects – ICT Entrepreneur and SCIENT - that evidenced that it was possible to integrate the lean start-up approach in the design of entrepreneurship training courses. The integration of the "build-measure-learn" approach, supported by these two European educational projects was explained and discussed. The implementation and assessment of EEP is valuable for variety of stakeholders. Thus, there are a number of players that might find this study useful and interesting.

A diversity of the entrepreneurship programs with broad range of goals, designs and philosophies arise in the HEI. However, while the general path of launching entrepreneurship programs seems to be established, further adjustment of the EEP is needed in order to fulfil the conceptual, operational, monitoring, or system gaps. Challenged with a variety of the EEP individuals, students, policy makers and other stakeholders claim better assessment criteria for recognizing an effective EEP. Thus, later, we intend to link our framework to other existing theories, as well as to follow the participants in the programs analysing the ones that create their own business and observing in loco the applicability of the lean start-up methodology in their enterprise daily routine.

HEI with their core missions of creating, adopting and disseminating knowledge are predictable to offer more and better educated individuals with better professional and entrepreneurial skills and preparedness to make things happen as active citizens. EEP have seminal effect on the attitudes and behaviour and have an impact to accommodate these goals. However, the conceptualization of the EEP is still in the early stage of development and future research areas relating to delivering knowledge, skill, as well as culture and philosophy of EEP are required.

In future, these kinds of Erasmus + programmes should be directed to modernise education and training and to promote innovation, entrepreneurship and employability, in a systematic and monitored way. A huge effort should be done in order to direct Erasmus+

programmes to fighting youth unemployment by helping young people to improve key skills such as proficiency in a foreign language, communication, adaptability or in learning how to live and work with people of different nationalities and cultures. Thus, on the policy level, there is essential to foster EE through benchmarking and best practice identification in different contexts. On the HEI level there is a cumulative stress to adapt the traditional educational programmes to the new complexities of the real and globalised world.

The lean start-up approach here explored could be a way in order to develop an EEP in HEI context. The lean approach reduces constraints by helping new start-ups launching products that clients really want, more quickly and cheaply than traditional methods and with less risk. Despite the importance of the use of the lean start-up approach, business model design should not be forgotten; it stands as a key issue for any individual willing to create a new business. What is necessary to have in mind is the dynamic of the business models that integrate basic insights of innovation and business processes. The lean start-up movement has not gone totally mainstream (Blank, 2013) and it has been associated with the technology industry but this approach is not confined to any specific sector (Ries, 2011). Thus, future work could focus on the effectiveness of the lean start-up methodology by making use of a quantitative research approach and eventually, a study concerning decision making process from a managerial point of view could be of interest for theory and practice.

EEP should care more about which pedagogy develops skills, and what is best appropriate to develop attitudes and entrepreneurial values and be more careful about adjusting the appropriate teaching, learning strategies, and pedagogy.

On the institutional level, the quality of the programs should be rewarded and encouraged to ensure that the incentives advanced will be used to promote a fair and professional conduct of all competing in this field. Collaboration and better use of partnerships with business sector and academic community would be desirable. Additionally, future analysis of European educational entrepreneurship based programs should be carried out aiming the improvement of the process of teaching entrepreneurship to new entrepreneurs.

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WHEN SCIENCE MEETS ENTREPRENEURSHIP: ENSURING BIOBUSINESS GRADUATE STUDENTS UNDERSTAND THE BUSINESS OF BIOTECHNOLOGY

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ABSTRACT

Bioentrepreneurship is considered by many to be more than simply entrepreneurship principles applied to the business value propositions of the biotechnology industry. This stems from the inescapable integration of science and business. In biopharmaceuticals, its most challenging sector, the entrepreneurial effort needed to reach product approval is scientifically complex, takes some ten-to-fifteen years to attain U.S. government registration, and requires over $2 billion of successive capitalization over that period, while only 12% of the drug candidates entering human clinical trials complete all phases and are ultimately approved. This entrepreneurial effort is framed by the BIEM 2.0 (Bioenterprise Innovation Expertise Model) model, which describes the essential expertise needed throughout the innovation phase, i.e., from scientific breakthrough to market-ready product.

This paper describes the global biotechnology industry and its entrepreneurial nature, the application of general entrepreneurship education principles to bioentrepreneurship education, and an overview of global bioentrepreneurship education programs. It further describes the goal of the University of San Francisco's Business of Biotechnology (BoB) program to enable students to easily apply the BIEM 2.0 model to every bioenterprise-related situation. The resulting automaticity-building "engaged analysis" pedagogy is presented, along with its cognitive psychology underpinnings, how traditional mainstream science-business media may be utilized to implement these assignments, the peer-reviewed literature basis for certifying these information sources for entrepreneurship education purposes, and how the "engaged analysis" pedagogy may be applied to general entrepreneurship education. Future research possibilities are also discussed.

INTRODUCTION

One challenge is present in every university course: While the lecturer lectures, the in-class activities are structured, the students are present, presumably listening and participating, and the assignments are assigned and completed, along with midterm and final exams, the question remains: Do the students actually internalize the material? Are they able to apply it with facility? This can be even more challenging when a portion of the subject matter being taught is in a discipline not the students' own. In the field of bioentrepreneurship education, science graduate students are unfamiliar with the discipline of business, while business graduate students are frequently unfamiliar with the levels of science needed for product breakthrough. This is the de facto challenge found in teaching entrepreneurship to graduate students seeking to enter the global biotechnology industry, a place where entrepreneurship is central, and science and business are inextricably linked.

This paper describes the global biotechnology industry and what entrepreneurship means in that context, a view of general entrepreneurship education vs. bioentrepreneurship education,

an overview of bioentrepreneurship education programs, the driving pedagogy of the University of San Francisco's Business of Biotechnology (BoB) program, including the design of its automaticity-building "engaged analysis" pedagogy, the cognitive psychology underpinnings which support its efficacy, and how this "engaged analysis" approach may be applied to general entrepreneurship education. Future research possibilities are also discussed.

THE GLOBAL BIOTECHNOLOGY INDUSTRY

Like any industry, the global biotechnology industry is often viewed in terms of its major, revenue-ranked market sectors: biopharmaceuticals, agricultural biotechnology, alternative fuels, and genetically-engineered industrial enzymes. In 2015, consolidated industry revenues were estimated at $323B, reflecting 564,000 employees and nearly 7,000 businesses worldwide (IBISWorld, 2016).

Of its various market sectors, the biopharmaceuticals sector is the largest and most closely followed in the business media. P&S Market Research reports $160B in global biopharmaceutical revenues for 2014 (P&S Market Research Report [P&S], 2015), currently accounting for some 20 percent of the traditional global pharmaceuticals market, while the market share for biopharmaceuticals is projected to grow (P&S, 2015). The agricultural biotechnology sector is more difficult to quantify as it contributes to multiple areas of the bioeconomy through the sectors of food, animal feed, and alternative energy, among others. In 2015, 450M acres (180M hectares) of bio-engineered crops were planted in 28 countries, representing some 12% of the land surface utilized in crop production worldwide (James, 2016; Bruinsma, 2005). The more cohesive industrial enzymes market sustained 2015 global revenues of $8.8B (Grand View Research, 2016).

This, however, is a picture of the biotechnology industry based solely on revenue, and does not begin to account for its substantive and independent entrepreneurial activities. Many biotechnology firms generate no revenue whatsoever, and are funded variously by venture capital, private equity, corporation partnerships, initial public offerings, and substantial loans, among other emergent investment instruments. While not all investment capital can be tracked, bioenterprise "raised $110 billion in 2015" from venture capital investment, IPOs, and debt sources, additionally receiving another $70B in partnership funding (Yang, 2016). This total, some $180B, is more than half of current $331B global industry revenues, and lends credence to the entrepreneurial profile of the biotechnology industry, where the goal of a bioenterprise can simply be to head toward commercialization, and exit at the first good opportunity. Exiting may take many forms, from licensing or selling outright to other companies in a position to market, manufacture, sell, and distribute, and it may occur at any stage from scientific discovery through to approved product, and for proactive and/or reactive reasons.

In terms of how the investment monies raised are distributed, the high cost and high risk of developing biopharmaceuticals are the most consuming. Once a drug compound has demonstrated promise and passed all animal and other preclinical studies, three successively more expensive human clinical trial phases (I, II & III) are required before FDA approval. For the successful drug, this typically takes over ten-fifteen years while "fewer than 12% of the candidate medicines that make it into phase I clinical trials will be approved by the FDA" (PhRMA - Pharmaceutical Research and Manufacturers of America, 2016). Since roughly nine out of ten compounds are abandoned at various stages in the clinical trials process, the investment into abandoned compounds is frequently weighted into the total cost profile, as solely considering the cost to develop the individual drugs that were successful would be misleading.

The Tufts Center for the Study of Drug Development examined some 106 new drugs from 10 pharmaceutical companies, including the costs of abandoned compounds during that period. The result assigned a cost of some $2.6B per drug at the time of market approval, with an increase to nearly $2.9B when all post-approval R&D costs are factored in (DiMasi, Grabowski & Hansen, 2016). All of this entrepreneurial activity is pre-manufacturing, and most notably, pre-revenue.

While entrepreneurial activity is present in all sectors, the scope of the biotechnology industry itself is changing. There is a growing biomedical devices marketplace, which, when it utilizes genetic tools or information, can be considered a part of the biotechnology industry. Its time-to-market and capital requirements are usually significantly less; however, problematic new technologies can take an undetermined period of time and investment, reflective of the experience of Theranos, Inc. with over $700M invested since 2003 (Siconolfi, Weaver & Carreyou, 2016, June 13).

Other emergent markets center around information. Whether tied to biomedical devices, diagnostics, or patient test results, there is also clinical trials data, health care management, consumer health, and more. With the rapid expansion of mobile devices, inexpensive communications technologies, and the seemingly limitless data storage in the Cloud, the move to mobile cannot to be considered separately, but rather as a potential part of every entrepreneurial play, biotech or otherwise (Kelly, 2016). McKinsey & Company reported that "digital healthcare attracted $4.2 billion in venture capital funding in 2014 alone (up 125 percent over 2013)" (Atluri, et al., 2015), while the TEConomy 2016 report also noted "rapid growth in investment made to IT-related companies". It went further to state: "This has caused the bioscience-related share of overall venture funding to decline during this period" (TEConomy, 2016). The idea that IT investments are somehow bleeding off bioscience venture capital misses the fact that the biotechnology entrepreneurial space is changing, and previous market sectors may not be completely relevant. Case in point is 23andMe, whose stated mission is "To help people access, understand and benefit from the human genome" (23andMe, 2016). Since its founding in 2006, it has collected the genetic material of over 850,000 humans, it is now monetizing access to it in deals with such biopharmaceutical firms as Genentech, and it has reportedly built an in-house therapeutics development team (Regalado, 2016, June 21; Zeleski, 2016, June 22). Is 23andMe, which started as a direct-to-consumer information company, transforming itself into a pharmaceutical feeder company? In which market sector should be it placed? Or will we need to draw the industry sector lines differently?

This is the entrepreneurial space of the biotechnology industry, where even today, its employment needs are growing. In the United States alone, the TEConomy 2016 report, using a definition of biobusiness which includes the entrepreneurial sector, reports that "[t]he bioscience industry employed 1.66 million in 2014 across more than 77,000 U.S. business establishments", adding "an additional 7.53 million jobs", either indirect or induced (TEConomy, 2016). This is the expanded view to which bioentrepreneurship education must be responsive.

ENTREPRENEURSHIP EDUCATION

Entrepreneurship education has its roots in the last century. In the United States, the University of Michigan offered its first course in 1927, Harvard Business School in 1947, and Babson College in 1964, while all three secured the highest three rankings in the 2016 Princeton Review of graduate entrepreneurship programs, in the order, Harvard, Babson and Michigan. (Princeton Review, 2016) By 2006, there were over 600 entrepreneurship degrees in the United States, and by 2008, there were 5,000 courses (Torrance, W.E.F., et al., 2013).

Still, there is, if not, controversy, a lack of cohesion among these programs. As recently as 2013, Steven A. Gedeon expressed: "It would appear that the current 'state-of-the-art' in entrepreneurship education may leave a lot to be desired. There is no common framework or acknowledged best practices" (Gedeon, 2013). Following a detailed analysis, he cites many options for educational goals, but ultimately proposes a new definition:

> *"Entrepreneurship education encompasses holistic personal growth and transformation that provides students with knowledge, skills, and attitudinal learning outcomes. This empowers students with a philosophy of entrepreneurial thinking, passion, and action-orientation that they can apply to their lives, their jobs, their communities, and/or their own new ventures" (Gedeon, 2013).*

While expansive, Gedeon's definition identifies "knowledge, skills, and attitudinal learning outcomes" for good reason. This specifically calls out the three categories of learning described in the Kirkpatrick framework, "the most accepted and influential in terms of educational evaluation", which in turn can be used for assessment of learning, required by business school accrediting agencies, including EFMD (European Foundation for Management Development) and AACSB (Association to Advance Collegiate Schools of Business) (Gedeon, 2013; Eseryel, 2002; Kirkpatrick, 2006). There is no distinction between starting up a business vs. working entrepreneurially in a large company, or being innovative vs. acting as a leader, or intentionally causing "creative disruption" vs. observing a small opportunity in a stable market. This dovetails with Donald F. Kuratko's perspective, noting similar sentiments with his definitions of entrepreneurship, focusing on the entrepreneurial firm, and "seeing entrepreneurship as more than the mere creation of business" (Kuratko, 2005). Rather, "entrepreneurship is a dynamic process of vision, change, and creation" (Kuratko, 2016).

With disagreement about the definition and goals of entrepreneurship education, it is not surprising to find similar disagreement on content. Solomon asserts, also quoted by Gedeon, "there is little consensus on just what exactly entrepreneurship students should be taught" (Solomon, 2007, p. 169; Gedeon, 2013). So the basic decision for any program is "What should be taught and how should it be taught?" (Kuratko, 2005).

Still, "who" might be taught entrepreneurial skills is also interesting. Curiously, while making no mention of qualifications in his design of a new MBA program, Gedeon makes the assessment that the likely pool of candidates will be "mostly engineering, science and technology students" (Gedeon, 2013, Table I, p. 235).

IS "BIOENTREPRENEURSHIP EDUCATION" NECESSARILY DIFFERENT?

It is tempting to suggest that a bioentrepreneur is simply someone who is an entrepreneur in the biotechnology industry, but it is more than that. The bioentrepreneur, and bioentrepreneurship itself, cannot extract itself from the science, most especially in the biopharmaceuticals sector. As Harvard Business School professor Gary Pisano contends in his seminal book, Science Business (Pisano, 2006):

> *"Perhaps in no other industry have science and business been as tightly interwoven as they have become in biotechnology. … From its conception, biotechnology was different. In biotechnology, the science is the business."*

This marriage of science and business places extraordinary pressure on both the bioenterprise, and the educational programs which seek to support it. First of all, the complexity,

cost and duration of biotechnology endeavors are significant, while the risk is relentless throughout the science-to-product life cycle. Furthermore, with the integrated challenge of both science and business, learning "about" the essential traits of bioentrepreneurship in lecture courses is one thing, being able to recognize the characteristics of the challenge in actual practice is another. Thus, we are educating students not only to be entrepreneurial, but also to be prepared for a biotechnology industry where the enterprises themselves are by definition entrepreneurial, and where the path to success is dynamic and subject to change in unexpected ways.

> *"The endeavor carries innate risk. Simply stated, the bioenterprise must drive nascent science to stable, commercially-available and ultimately profitable products and services, an exercise for which success can neither be predicted from the outset, nor at numerous points along the way. Achieving commercial success requires a multi-disciplinary and creative entrepreneurial organization, which can operate within a continually-challenging and unprecedented business context." (Gunn, 2013)*

For the remainder of this paper, the biopharmaceuticals sector shall be used as the primary reference, given its revenue contribution to the global biotechnology industry, the substantial amount of investment capital currently driving innovative efforts, the complexity of these endeavors, the length of the entrepreneurial effort necessary before a commercial product can emerge, and risk.

BIOENTREPRENEURSHIP EDUCATION PROGRAMS

A relatively new educational field, bioentrepreneurship education programs follow a complement of strategies. Given the core need for an understanding of science, as well as a capacity for innovation in scientific research, most educational programs require scientific qualifications and seek to address the business aspects of bioenterprise.

John Hopkins University offers the most diverse choices in graduate entrepreneurship programs, including an MBEE (Masters in Biotechnology Enterprise and Entrepreneurship), a dual MS in Biotechnology/MBA, and a Certificate in Biotechnology Enterprise. The Johns Hopkins' MBEE literature notes that "The curriculum is designed so that scientists can gain an understanding of the entire biotechnology enterprise and considerations that are unique to the biotechnology industry. As a result, graduates will be prepared with the tools and knowledge necessary to commercialize their product ideas and/or manage a biotechnology organization" (Johns Hopkins University, 2016). For both the MBEE and the certificate in Biotechnology Enterprise, a bachelor's degree in the life sciences is recommended or preferred.

At one viewing, the conundrum of science-business is revealed. Is it more science? Is it more business? Must you have both? Where does this fit in the science-to-product life cycle? This leaves room for other educational strategies.

Case Western Reserve University's Masters in Entrepreneurial Biotechnology requires at a minimum a bachelor's degree in biology or biology-related field (Case Western Reserve University, 2016). Karolinska Institutet's Master's Programme in Bioentrepreneurship is "tailored for students with a background in biomedicine, pharmaceutics, biotechnology, healthcare or medicine with courses addressing the central themes of how to manage and develop life science companies", and requires a complementary undergraduate degree (Karolinska Institutet, 2016).

In an entrepreneurial move itself, the Copenhagen Business School offers an MSc in Business Administration and Bioentrepreneurship, wherein the first year of its two-year program must be taken at another university, as it requires in-depth life science (biology/biotechnology).

Approved educational institutions include the University of Copenhagen, the Danish Technical University, or "any Danish or international university offering an equivalent course package" (Copenhagen Business School, 2016). In this way, the entrepreneurship portion of the program can be independent, while remaining interconnected with graduate science curriculum.

At the same time, the MPhil in Bioscience Enterprise program at the University of Cambridge, housed in the Department of Chemical Engineering and Biotechnology, receives applications "from all over the world from candidates with a first degree in life or physical sciences, medicine, law, finance, economics or an allied discipline," with further emphasis that "economics, biophysics, bio- and chemical engineering and financial or legal backgrounds are as likely to be admitted as those with a purely biological focus" (University of Cambridge, 2016).

A separate note should be made regarding bioentrepreneurship education in relation to the emergence of Professional Science Master's degree programs in the United States (Professional Science Master's, 2016). In the 1990's, a general consensus emerged that the U.S. innovation economy required its scientists and engineers to have more industry training. This was called for directly in the 1995 report "Reshaping the Graduate Education of Scientists and Engineers", published jointly by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine (Griffiths, P., et al., 1995). In 1997, the Alfred P. Sloan Foundation took action, funding the "Sloan Foundation PSM Initiative", awarding grants to research universities in support of creating master's programs which integrated science and business into one degree. The Sloan Foundation seed funding ceased in 2002, yet new PSM programs continued to be created. Today, the Keck Graduate Institute (KGI) oversees PSM accreditation in concert with the National Professional Master's Association (NPSMA) (Professional Science Master's, 2016). There are 350 PSM accredited programs at 163 universities, primarily based in the U.S., although there are also programs in Australia, South Korea and the UK.

Of the 24 official subject areas on which a PSM degree may be based, in fields related to Biotechnology, some 34 PSM programs in the field of Biotechnology have gained accreditation. The aforementioned Case Western masters' degree is the only one which has the accreditation of PSM/Entrepreneurial Biotechnology, while others have the accreditation of PSM/Bioinnovation and PSM/Bio/Pharmaceutical Discovery and Development. Even for those PSM/Biotechnology programs not focused on the entrepreneurial start-up, they may include explicit bioentrepreneurship coursework, while all are directed toward employment in the global biotechnology industry, itself a primarily entrepreneurial endeavor.

A list of selected schools with bioentrepreneurship programs was published by Nature Biotechnology in its "Bioentrepreneur" section (Langer, 2014). Additionally, a number of universities have developed singular bioentrepreneurship courses in various science, engineering, medicine and business departments.

The University of San Francisco's multi-faceted Business of Biotechnology program is described in detail in subsequent sections.

THE BIOTECHNOLOGY INDUSTRY IN THE SAN FRANCISCO BAY AREA

Within the global biotechnology industry, San Francisco is often referred to as the birthplace of biotechnology, as well as the world's largest biocluster. The greater San Francisco Bay Area is home to such research universities as Stanford University and the University of California campuses at San Francisco, Berkeley and Santa Cruz. Add to this, the highest regional concentration of biotechnology companies nationally, its co-location with Silicon Valley, and the

numerous venture capital and private equity firms located on Sand Hill Road in Menlo Park, the San Francisco Bay Area is a significant national and global center for entrepreneurship. (Bloomberg, 2014, December 4) (SVbizLaw Venture Capital Directory, 2016)

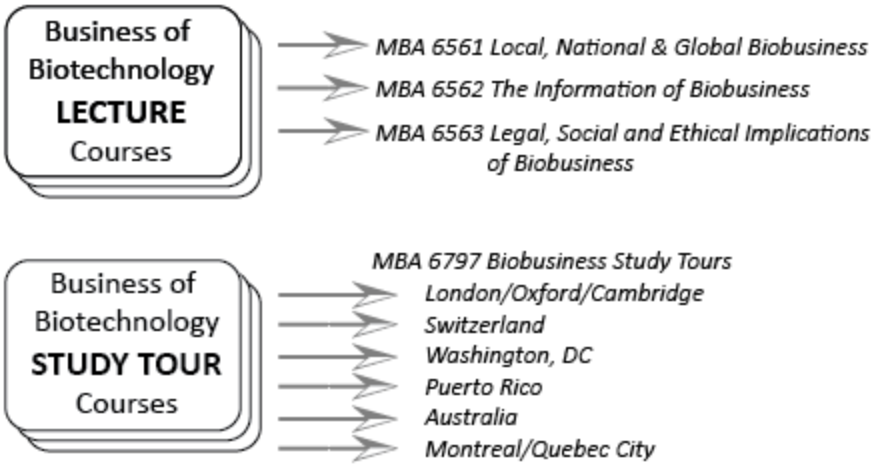
Life sciences venture capital investment directed to San Francisco area biotechnology firms in 2014 reflected over 100 deals with a combined investment in excess of $2B. (SFCED, 2015) (NVCA, 2016) With over 1,600 biotechnology firms, and direct and indirect biotechnology employment of over 250,000 employees, the San Francisco biocluster largely supports the biopharmaceuticals sector and biomedical device research and development. (TEConomy, 2016)

USF'S BUSINESS OF BIOTECHNOLOGY PROGRAM

The Business of Biotechnology (BoB) program is a part of the School of Management at the University of San Francisco, a Jesuit university founded in 1855 and located in San Francisco, California, USA. Its two campuses in San Francisco and four regional campuses in Northern California serve a total student population of approximately 10,000, including 4,000 graduate students. The Business of Biotechnology (BoB) program was originally conceived and proposed in 2006 as a concentration in the Masters in Information Systems (MSIS/Biotechnology). In 2009, the program was expanded to include MBAs, JD/MBAs, and any graduate student in the university with a subject area valuable to the biotechnology industry. The pedagogical concept was to teach all students together, as they would ultimately work together, in the biotech industry. Its goal was to give perspective to the global, national and local biotechnology industry, while introducing entrepreneurial biobusiness concepts to any graduate discipline needed by bioenterprise in its innovation stage, i.e., from scientific or science/technology breakthrough to market-ready product. In 2013, the PSM/Biotechnology was founded in the College of Arts and Science, and graduate science students began enrolling in Business of Biotechnology MBA courses.

The Business of Biotechnology courses are of two types: lecture courses and biobusiness-intensive study tours. Three lecture courses are taught each year, while two biobusiness-focused one-week study tours to a rotating set of global bioclusters are offered. All courses are designed to be taken individually, and in any order. There is no official science prerequisite, other than high school biology. For non-science students, the philosophy is one of "minimalist science", explaining enough for each student to understand the science-business value proposition and attendant risks, regardless of scientific knowledge. For science students, the presumption is that they have no business or entrepreneurship background, and that all must be taught. The Business of Biotechnology pedagogical development is described in detail in "An agile, cross-discipline model for developing bio-enterprise professionals", published in the Journal of Commercial Biotechnology. (Gunn, et al., 2013) The USF Business of Biotechnology courses are cited in Figure 1.

Figure 1
USF'S BUSINESS OF BIOTECHNOLOGY MBA COURSES



FOUNDATIONAL PEDAGOGY: THE BIEM 2.0 MODEL

While the San Francisco Bay Area is largely the targeted region for USF biobusiness graduates, the program pedagogy instills a global view. In the two years prior to conceiving the Business of Biotechnology courses, Gunn conducted one-on-one interviews with 150 national and global biotechnology industry professionals, including CEOs, Chief Scientific Officers, bioscience researchers, industry leaders, policymakers, elected officials, and educators (Gunn M., 2007). While studying various models of entrepreneurship and bioenterprise in the peer-reviewed literature, business books, and the business press, in addition to closely watching the biotechnology industry, Gunn also became interested in business failures. Looking at why biobusinesses fail, Gunn developed a twelve-point model for essential capabilities necessary in the entrepreneurial science-to-product phase of bioenterprise.

> *"When viewed from this perspective, successful bioenterprises were observed to assemble the right expertise at the right time at every turn in the biotechnology innovation life cycle. Agile organizations had an appreciation for a larger spectrum of expertise than did less flexible ones." (Gunn, et al., 2013)*

The result was the BIEM model, the Bioenterprise Innovation Expertise Model, which identified only those expertise areas which were essential to the science-to-product life cycle, and it focused on the biopharmaceuticals space. As described in its first appearance in the peer-review literature:

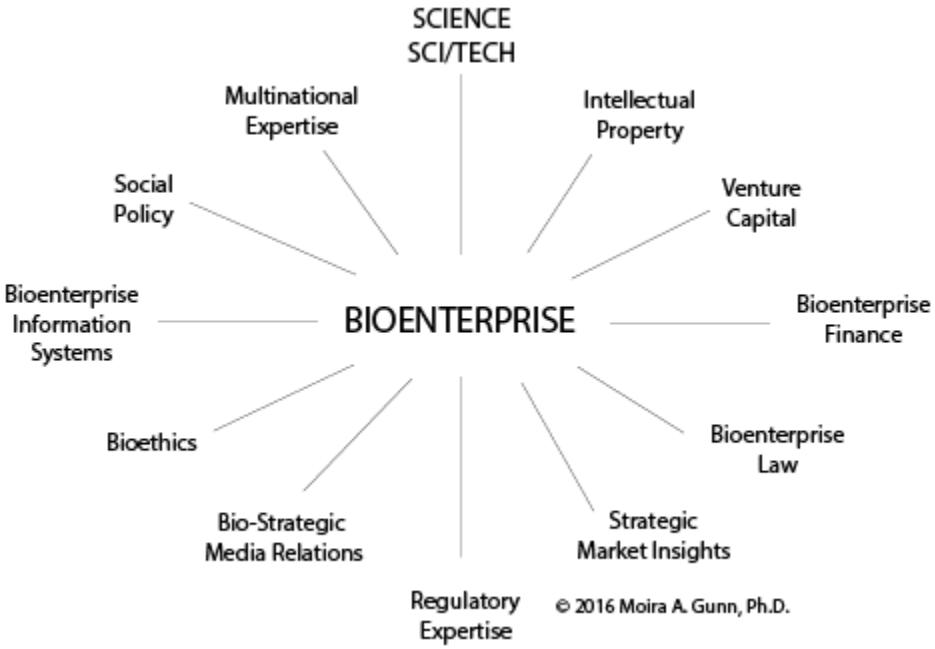
> *"The essence of this model reveals itself when considering the bioenterprise as a whole. While breakthroughs in science are expected, there are also scientific setbacks. The creativity and resilience required to ensure that investment capital is in place goes hand-in-hand with a readiness to construct previously unexplored investment vehicles … How last year's marketplace behaves may be completely different from this year's marketplace – there are competitor's products, a changing regulatory scene, negative and/or positive media, and much, much more. … The sudden perception by the public that there may be a bioethical or social problem can be made worse and/or better by the media, as well as by engaging, mishandling and/or avoiding the right and wrong players. Throughout this process, team dynamics in the science business arena takes on even greater meaning, with the need for high-functioning teams being absolutely essential.*

The Bioenterprise Innovation Expertise Model reflects a dynamic of the expertise needed to address the challenges of bioenterprise, which itself must be both robust and creative, and is frequently called upon to address situations which are arguably unprecedented. Such is the nature of science-business." (Gunn, et al., 2013)

Following this effort, work began on developing a model for biomedical devices. It became clear that the original BIEM model also applied, but with two minor differences. First, in the biomedical device sector, the product could be a standalone device, or an embeddable technology, be it hardware, software or both, which required a greater emphasis on technology. As a result, Science/Technology, or Sci/Tech, was added to the expertise area identified as "Science". The other feature which is not observable in the graphic representation of the BIEM model is that the timeline to market-ready product for biomedical devices is usually much shorter, often just a few years, and the investment capital requirements significantly less, bearing in mind the experience of Theranos, Inc (Siconolfi, Weaver & Carreyou, 2016, June 13).

The current version of the BIEM model, as presently utilized in USF's Business of Biotechnology courses, is BIEM 2.0. It is depicted in Figure 2.

Figure 2
BIEM 2.0 (BIOENTERPRISE INNOVATION EXPERTISE MODEL) – ESSENTIAL CAPABILITIES



The importance of comprehending the BIEM model in terms of bioenterprise entrepreneurship was sufficiently paramount that the model went beyond necessary knowledge for bioentrepreneurship students, and it became an overall driver of context for all subject matter. All courses were created using two sets of rubrics, one for factual knowledge and a second for contextual reference using the BIEM model. For example, factual knowledge would be the difference between biologics and traditional pharmaceuticals, and the protections and limitations of GINA, the Genetic Information Nondiscrimination Act. Contextual knowledge makes these

relevant to various aspects of bioenterprise via the BIEM 2.0 model. Its specific relevance within each of the courses is identified the original article on the program. (Gunn, et al., 2013)

Validating the BIEM Model

The original BIEM model appeared in the peer-review literature in 2013 and 2014 (Gunn, et al., 2013; Gunn & Lorton, 2014). The addition of biomedical device innovation to biopharmaceutical development was introduced in BIEM 2.0, and shared with a number of biotechnology industry professionals at many levels of the bioenterprise.

In 2016, a formal validation study for BIEM was undertaken. In the biopharmaceuticals space, twenty experienced venture capitalists were surveyed regarding the relative importance of each expertise listed in BIEM 2.0 in the science-to-product life cycle, while some in the biopharmaceutical. "Sci/Tech" was split into two disciplines: Science and Technology. Given the long lead time – some ten-fifteen years to a successful drug approval, and the fact that nine out of ten drugs attempted fall out somewhere along the way, the most senior venture capitalists were sought out. With a minimum qualifier of twenty years' experience in the biotechnology industry, their careers averaged 30 years in the biotechnology industry, all had served on numerous corporate boards, 90% had been board chairs, and 80% had been CEO's and/or presidents in the biopharmaceutical sector. All were still active venture capitalists, and while the subjects surveyed reflected a relatively small sample size, they were experts in a very small, experienced field, validating its predictive viability (Kaufman et al., 2006). In short, the findings validated the BIEM model.

> *"The experienced biopharmaceuticals venture capitalists had a very cohesive response to the importance of the innovation expertise capabilities identified by the BIEM model. The data shows an inter-rater reliability of .950 for average measures (F = 19.9; p< .001) pointing to a high level of agreement among VCs when evaluating the 13 items listed. This demonstrates that the venture capitalists are 95% in agreement." (Gunn, et al., 2016)*

The innovation expertise disciplines considered "extremely important" were intellectual property, science, regulatory expertise, venture capital and technology, in that order. The least important, although still regarded as "moderately important", were multinational expertise, social policy and media relations, this last being the lowest ranked. No expertise was eliminated, and while some rewording of definitions resulted, no new innovation expertise emerged.

Unexpected secondary findings relate to the venture capitalists' perspective of their own expertise in relation to the BIEM model. While having made investments in the biopharmaceutical area for many years, only 30% had one or more degrees in the life sciences, yet 60% had MBAs. Recognizing that expertise grows over 30-year careers, the venture capitalists were asked which parts of the BIEM model reflected a primary expertise they felt they personally possessed, and which reflected a secondary expertise for them, if at all. While venture capital was identified as the highest ranked expertise needed, only one venture capitalist (the sole attorney) listed intellectual property as a primary expertise, 75% listed intellectual property on their secondary expertise list, and 20% did not list it as a personal expertise.

The complete findings and details of the BIEM 2.0 Verification Study can be found in the Journal of Commercial Biotechnology (Gunn, et al., 2016). Its findings were introduced into the Business of Biotechnology courses in fall, 2016.

TEACHING THE BIEM MODEL IN PRACTICE

In designing both individual biobusiness courses, as well as the integration of these courses together within a total Business of Biotechnology program, "knowledge, skills, and attitudinal learning outcomes" are paramount (Gedeon, 2013). The factual "knowledge" component was clearly defined (Gunn, et al., 2013, Table 6, p. 82) and is tested directly using standard evaluation techniques, with knowledge-related objectives updated yearly depending upon changes in the biotechnology industry, e.g., the June 13, 2013 U.S. Supreme Court ruling in re: Myriad Genetics and the patenting of gene sequences (Supreme Court of the United States, 2012).

Jumping ahead to the "attitudinal" learning outcomes, differential attitudinal measures have been in place for some time, and the results have been published in the peer-reviewed literature (Gunn & Lorton, 2014). This particular extension of ongoing attitudinal research was spurred by changing biotechnology industry employment needs. As more products were reaching later stages in the science-to-product life cycle, and the biotechnology industry itself was maturing, Nugent and Kulkarni reported on an emergent complement of qualities being sought in prospective employees. In the September, 2013 issue of Nature Biotechnology, their ariticle, "An interdisciplinary shift in demand for talent within the biotech industry" cited an "orientation towards the life sciences industry", "the ability to work effectively across disciplines", and "a commercial market-based mindset versus an academic mindset" (Nugent & Kulkarni, 2013).

While working across disciplines was intrinsic to the program design, and the commercial mindset of the BIEM model was present throughout, testing for an "orientation towards the life sciences industry" was more challenging. Such evaluation clearly falls as an "attitudinal" learning outcome. As the biobusiness lecture class sessions were scheduled through the regular semester, measuring attitudinal changes could not rule out external influences over this period; however, the one-week biobusiness study tours were immersive in nature, and might well produce measurable attitudinal changes without external influences.

As a part of the ongoing GLAS (Gunn-Lorton Attitudinal Surveys) project, work was already underway to attempt to identify non-science students who had a positive and/or negative orientation to science, in general, as well as other attitudinal aspects relating to technology and mathematics. A study of students over multiple biobusiness study tours enabled attitudinal change toward the biotech industry to be measured. Prior to study tours, all students, i.e., MBA, JD/MBA, MSIS, and PSM/Biotechnology, registered high levels of confidence in their own field of study. Post-trip, "non-science students on first-time biobusiness immersive study tours, with no prior biobusiness courses, experience a statistically-significant increase in their confidence levels with respect to biobusiness, information systems, law and the federal government" (Gunn & Lorton, 2014). Additionally, since the science students had taken at least two biobusiness lecture courses prior to attending a study tour, they started the study tour already registering high comfort levels in biobusiness, presumably from their lecture course experience, and yet still gained new and statistically significant comfort levels with general business, solely from the experience of the study tour. This circularly confirmed the absence of general business knowledge on the part of science students.

The details of the study are published in the journal Technology Transfer and Entrepreneurship in "Measuring the Effectiveness of Global Immersive Study Tours to Attract Non-Scientific Working Professionals to the Bioenterprise" (Gunn & Lorton, 2014). Continued measurement of attitudinal change on subsequent study tours confirm the original results, while other attitudinal data continues to be collected.

The final category of Kuratko's learning outcomes, indeed the subject of this paper, is the acquisition of "skills", for which the goal of automatic application of the BIEM model was set (Kuratko, 2015). To that end, the Business of Biotechnology courses were designed to instill in each student the capacity to evaluate anything they read, anything they heard, anything presented to them whatsoever about bioenterprise, and to be able to quickly evaluate this information using the framework of the BIEM model. In this way, they could qualify the information they were absorbing, as well as identify what essential points might be missing. This educational goal reaches beyond a student being able to repeat back the BIEM model on a test. It, instead, seeks to address the challenge laid out in the Introduction: "Do the students internalize the material? Are they able to apply it with facility?" Could they apply the BIEM model automatically? Unconsciously? And how might the courses be structured such that this goal could be accomplished? This is the very definition of an acquired skill.

Applying the BIEM Model with "Automaticity"

"Automaticity" is defined as "expertise learned through practice", so that it becomes automatic (Anderson, 2015). Each of us has experienced this in any number of ways, whether intuitively understood or anecdotally acquired. It is the fact that repetition of process enables that process to become automatic. But how automatic? This is a matter of sliding scale, as "Automaticity is a matter of degree" (Anderson, 2015). Processes that are well and deeply experienced, in fact, permit parallel processing, i.e., enabling the process to be performed while leaving capacity to perform other, non-repetitive processes. This has been well-documented in the literature for some time, but readers will easily recall learning to drive a car for the first time, while now, years later, they are able to drive a car through a variety of situations, even while carrying on a conversation with a fellow passenger. Still, when presented with unfamiliar driving environments, such as on travel in a rental car in a new locale, perhaps with a local language unknown to them, these same drivers may well find casual conversation with a passenger at best, problematic, and at worst, impossible. It requires much more mind capacity to drive in the unfamiliar environment, then with a familiar vehicle over familiar terrain (Wikman, Nieminen & Summala, 1998; Underwood, 1974).

Similarly, both noticing and evaluating the BIEM model innovation expertise disciplines should take less time with practice, and with repetition, the process is presumed to become increasingly automatic. In fact, following a sufficient degree of practice, "participants [lose] their awareness of the automated activity" (Anderson, 2015; Spelke, Hirst, and Neisser, 1976). In its best realization, the students might apply the BIEM model unconsciously, while concentrating consciously on the effort at hand, the factual details of the information they are attempting to absorb about a bioenterprise or any biobusiness-relevant situation. All details will always have a contextual framework.

The challenge was to create "engaged analysis" assignments. How could we engage the student with the BIEM model while teaching the required bioentrepreneurship curriculum?

"Engaged Analysis" PODCAST Assignments

A typical audio podcast assignment is similar to a reading assignment, wherein the point is to extract a set of facts, but the concept of "engaged analysis" requires more. While the extraction of information while listening to the podcast is identical, the students must also place this extracted information into the larger contextual framework of the BIEM model.

The cognitive functions required for such an "engaged analysis" podcast assignment are:

1. listening to the podcast for content in terms of relevance to bioentrepreneurship
2. matching this content to expertise in the BIEM model
3. entering particular items under each BIEM expertise element as appropriate
4. writing up the BIEM analysis upon completion, noting if any elements are not present

The audio format of the material is important to engagement, as well. "Speech comes in over time, which means that the auditory information must be held long enough to determine the meaning of what is being said." (Anderson, 2015) Without going further into cognition theory, reading a written transcript of an interview engages a different set of cognitive functions. In the audio format, it requires the student's attention at a more involved level, especially with the added requirement to classify the information in the BIEM context. With the added goal of achieving automaticity, a series of these "engaged analysis" podcast assignments were designed to introduce intentional repetitive practice. The first challenge was to qualify bioenterprise-relevant podcasts suitable for university education.

Kuratko identifies three primary sources of entrepreneurial learning as providing "the background for entrepreneurship education as we know it today" (Kuratko, 2005). He lists:

1. research-based and popular publications
2. direct observation of practicing entrepreneurs
3. speeches and presentations by practicing entrepreneurs

Under "research-based and popular publications", Kuratko lists ten categories of valid entrepreneurial education information, with textbooks on entrepreneurship, academic journals, books about entrepreneurship, and news periodicals, among them. Under "news periodicals", Kuratko lists as the sole examples: "Business Week, Forbes, Fortune, and The Wall Street Journal" (Kuratko, 2005). These are all traditional mainstream media publications, which have the qualifying feature that each follows published journalistic standards. For example, The Wall Street Journal follows the Dow Jones Code of Conduct, which covers confidential information, appropriate business relationships, compliance with laws and regulations, securities transactions, and political and civic activities, among other aspects (Dow Jones, 2016). Special instructions for news department in The Wall Street Journal, Newswire and MarketWatch are also detailed (ASNE, 2016). All providers of content and all material released by traditional mainstream media are covered by comparable policies. Furthermore, traditional mainstream media requires editorial oversight ensuring that these standards are met.

In 2005, the periodicals listed by Kuratko were essentially print-on-paper publications, with a print-on-screen web presence. Since that time, mainstream media has rapidly expanded, and podcasts are regularly produced by traditional mainstream media. The Wall Street Journal issues multiple free podcasts every day, as does the Financial Times on its FT Audio site. The Washington Post has a line-up of podcasts with a subset focusing on entrepreneurship. Specialty entrepreneurship podcast series are also being created. In April, Forbes announced a new podcast network "targeting millennial women who embrace entrepreneurship" (Forbes, 2016, April 12). Independent of the form of multimedia, such as the written word, audio, video, or graphics, all materials issued by traditional mainstream media publications follow the organization's published journalistic standards.

On the topic of bioentrepreneurship, two traditional mainstream media podcast series were qualified using Kuratko's definition: The podcast version of BioTech Nation, which airs on

NPR's NPR Now SiriusXM satellite radio channel, and First Rounders, a podcast series from Nature Biotechnology (BioTech Nation, 2016; First Rounders, 2016). Both adhere to published ethical standards policies (NPR, 2016; Nature, 2016), and both are available free-of-charge on iTunes and other Internet websites (BioTech Nation iTunes, 2016; First Rounders iTunes, 2016).

BioTech Nation is a regular weekly segment of Tech Nation, which airs on a number of NPR and public radio venues. This biotechnology segment is extracted for separate podcast listening, providing 50-60 unique podcasts each year, with an available archive of just over two years (Biotech Nation, 2016). BioTech Nation interviews are usually 7-10 minutes in length, and are structured as follows:

1. What is the product you are trying to create, or problem you are trying to solve?
2. What is the science driving your product?
3. What is your science-business value proposition?
4. What/who is your competition?
5. Where are the biggest risks? Largest challenges?
6. Where are you in the science-to-product life cycle?
7. What is its status today? How far from an actual product?

Occasionally, long form interviews (up to 30 minutes) from the main Tech Nation program have bioentrepreneurship relevance, and they may also be used for "engaged analysis" assignments (NPR Now, 2016; Tech Nation, 2016). Two to five Tech Nation interviews may be relevant in any given year.

The Nature Biotechnology's First Rounders' podcasts feature a number of bioentrepreneurs discussing their first-hand experience in the biotechnology industry. Started in 2011, it is "a series of conversations with founders, financers and developers from biotech's past, present and future" (First Rounders Home, 2016). These in-depth, long form podcasts offer the insights and experience of starting and building companies, and they feature a number of recognized scientist-entrepreneurs. Not on a fixed schedule, two-to-seven podcasts are available each year.

Having validated the BIEM model and qualified bioentrepreneurship podcast information sources, the design of the "engaged analysis" assignments was straightforward. Matching the content of the podcasts to the learning objectives in each lecture course, and the sequence of lectures therein, a schedule of podcast assignments was created. As some fifty new BioTech Nation are available each year, and each are of short and focused duration, they are primary. About half of the podcast assignments are replaced on an annual basis, and occasionally long form Tech Nation interviews are utilized, as in the Tech Nation interview of Dr. Marshall Summar and Jim Powers in Table 1. The AY2015-2016 "Engaged Analysis" podcast assignments, and the specific learning objective for each assignment, can be found in Tables 1-3. The facts determined from the interview must be listed and placed under the relevant innovation expertise in the BIEM 2.0 model. Expertise which has no relevance must be clearly identified, as well.

Table 1
MBA 6561 LOCAL, NATIONAL & GLOBAL BIOBUSINESS
AY2015-2016 LECTURE COURSE PODCAST ASSIGNMENTS

A Platform Company becomes a Vaccine Company
Stan Erck, President & CEO, NovaVax
Partnering
James Sabry, Global Vice President and Head of Partnering, Genentech
Stem Cell Treatments
Martin McGlynn, Stem Cells, Inc. *
How viruses & bacteria fight disease
Dr. Rip, Ballou, Glaxo Smith Kline (GSK)
Dr. Tim Miller, Abeona Therapeutics
Dr. David Williams, Bactevo
Bioenterprise-Medical Center Partnerships
Dr. Marshall Summar, Children's National Medical Center
Jim Powers, Chair and CEO, Hemoshear Therapeutics
An Alternative Bioenterprise Start-Up Model
Darren Cunningham, CEO, Inflection Biosciences
A Venture Capitalist's View on Health and Tech Investments
Julie Papanek, Principal, Canaan Partners
A Product to Avoid Injections – Insulin/Diabetes, Juvenile Hormones/young teens
Dr. Michael Berelowitz, Chair, Scientific Advisory Board, Oramed Pharmaceuticals

* *On May 31, 2016, concurrent with its announcement that its Phase II study proved insufficiently successful, Stem Cells, Inc. further announced that its Board of Directors had "approved a plan to wind down the Company." (Stem Cells, Inc., 2016) This will be used as a case study in AY 2016/2017.*

Table 2
MBA 6562 THE INFORMATION OF BIOBUSINESS
AY2015-2016 LECTURE COURSE PODCAST ASSIGNMENTS

Patient-Centric Drug Development
Dr. Eric Topol, Director, Scripps Translational Science Institute,
& Author, "The Patient Will See You Now" *****
Dr. Paul Hastings, Chair and CEO, Oncomed Pharmaceuticals, and
Chair, BIO Patient Centric Drug Development Committee
Emergent Treatments, Medical Technology and Consumer Technology
Dr. Daniel Kraft, Founder and President, Exponential Medicine
And Chair of Medicine, Singularity University
Biomedical Devices and Device Platforms
Dr. Anita Goel, Chair and CEO, NanoBioSym
Dr. Sam Whitehouse, COO, QuantuMDx
John McDonough, CEO, T2 Biosystems
Global View of the Biotech Industry by Nation
Mike May, Editor-in-Chief, Scientific American WORLDview 2015
Dr. Yali Friedman, Head, Data Analytics, S.A. WORLDview Scorecard

* *Dr. Topol's book, "The Patient Will See You Now" is one of two texts used in this course*

Table 3
MBA 6563 LEGAL, ETHICAL & SOCIAL IMPLICATIONS OF BIOBUSINESS
AY2015-2016 LECTURE COURSE PODCAST ASSIGNMENTS

The World Trade Organization and Global Biobusiness
Keith Rockwell, Director, Information and External Relations
Antony Taubman, Director, Intellectual Property, Government Procurement, and Competition Division *
Global Intellectual Property Considerations
Gareth Williams, Intellectual Property Attorney, Marks & Clerk
Meeting Societal Need for Biopharma – New Bioenterprise Structures
Dr. Bernard Pecoul, Executive Director, DNDi (Drugs for Neglected Diseases Initiative)
Ethical Implications of Decoding Extinct Species and the Potential for De-Extinction
Dr. Svante Paabo, Director, Department of Genetics, Max Planck Institute for Evolutionary Biology, Leipzig, Germany **
Biotechnology Industry Ethics
Dr. Jennifer Miller, Founder and President, Bioethics International, and Editor, Good Pharma Scorecard
Consumer Biobusiness
Anne Wojcicki, Founder and CEO, 23andMe
Commercializing New Biotechnologies
Katrine Bosley, CEO, Editas Medicine (CRISPR-Cas9)
Government/Social Policy
Dame Sally Davies, Chief Medical Officer, England, Former Chief Scientific Advisor, Department of Health, England
Sir Andrew Dillon, COO, NICE (National Institute for Health and Care Excellence), England

* Mr. Taubman is the WTO lead, on the WTO – World Trade Organization, WIPO – World Intellectual Property Organization, and WHO – World Health Organization publication: ***Promoting Access to Medical Technologies and Innovation Intersections between public health, intellectual property and trade***. WTO ISBN 978-92-870-3839-5, WIPO ISBN 978-92-805-2308-9, WHO ISBN 978-92-415-0487-4. It *is one of two texts used in this course*

** *Dr. Paabo's book, "Neanderthal Man: In Search of Lost Genomes" is one of two texts used in this course*

The "Engaged Analysis" STUDY TOUR Assignment

Kuratko describes two other sources of information about entrepreneurial perspective besides "research-based and popular publications". These include "direct observation of practicing entrepreneurs" and "speeches and presentations (including seminars) by practicing entrepreneurs" (Kuratko, 2005). This is precisely the experiences of students attending biobusiness study tours.

The "engaged analysis" study tour assignment asks the student to synthesize the content of every business encounter, every speaker, every organizations visited during the one-week biobusiness study tour in the context of the BIEM model, and to bring that analysis together in a final report, organized by innovation expertise identified in the BIEM model. The student experience during a study tour is more closely related to presentations and introductory

engagements normative in the business sphere, and much of the information communicated is verbal.

From an instructional point of view it is important to note that the presentations have not been vetted, and so the actual content is not entirely within the instructor's control. Furthermore, different global bioclusters offer different biotechnology industry features; this total analysis enables the students to understand the biocluster from that perspective. Furthermore, the visitation schedule of the same organization may vary from one visit to the next. Thus, the final "engaged analysis" report changes with the experience of each study tour. Recent exemplar organizations visited are listed in Table 4. Clearly, the collective BIEM analysis of a study tour to Washington, DC will differ significantly from a study tour to Switzerland, while both are significant bioclusters in the global biotechnology industry.

Table 4
EXEMPLAR VENUES FOR THE 'ENGAGED ANALYSIS" STUDY TOUR ASSIGNMENT

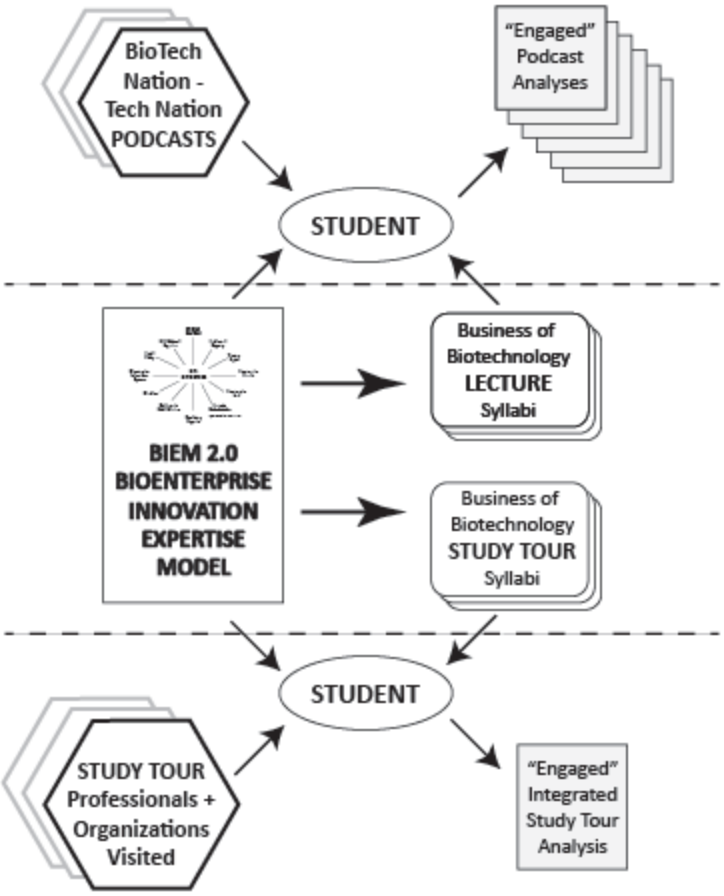
Switzerland	CelGene, DSM/ Sight and Life, EPFL MicroCity, CSEM (Swiss Center for Electronics and Microtechnology), Hoffman-La Roche (Roche), International Red Cross and Red Crescent Novartis, World Health Organization, World Trade Organization
London	EvaluatePharma, Genomics England, Imanova, Marks & Clerk (patent attys), MedCity London, NICE, OneNucleus (Seven biotech start-up presentations), PsiOxus Therapeutics
Washington, DC	FDA (Food and Drug Administration), Hemoshear Therapeutics, Motley Fool, NIH (National Institutes of Health), NSF (National Science Foundation), USPTO (US Patent and Trade Office), National Press Club, NPR, U.S. Supreme Court
Puerto Rico	PRIDCO (Puerto Rico Industrial Development Company), AbbVie Biotechnology, Amgen Manufacturing/Biological Products, INDUNIV, Johnson & Johnson (Janssen Ortho), Medtronic, Pfizer Consumer Healthcare, Pioneer Hi-Bred, University of Puerto Rico/Molecular Sciences Research Center

The Cumulative Effect of "Engaged Analysis" Assignments

Recalling that automaticity comes with repetition, and that a number of students elect to take all the lecture courses and at least one biobusiness study tour, there is a cumulative effect with regard to the "engaged analysis" assignments. A student who has completed all three lecture courses and one study tour would have had the experience of consciously applying the BIEM model 28-45 times. At some point, this will presumably become automatic.

The pedagogical structure for the incorporation of these "engaged analysis" assignments, their relation to the BIEM model, both lecture and study tour syllabi, and the BioTech Nation podcasts can be found in Figure 3.

Figure 3
THE BIEM-DRIVEN "ENGAGED ANALYSIS" PEDAGOGICAL STRUCTURE



APPLICATION OF "ENGAGED ANALYSIS" ASSIGNMENTS TO GENERAL ENTREPRENEURSHIP EDUCATION

Transforming a standard student assignment into an engaged analysis assignment is straightforward. Once basic learning outcomes are established, the elements of the enhanced "engaged analysis" assignment are:

1. a contextual framework, such as a formal model or "attributes list"
2. a qualified information source or first-hand experience

Whether a single assignment, or a series of integrated assignments, the goal for "engaged analysis" assignments is the application of a contextual framework to relevant material. When automaticity also becomes a goal, repeated assignments utilizing the same contextual framework are in order.

There are numerous generalized entrepreneurship models which can be applied, and that is the province of the institution and the instructor. With the recent popular emphasis on "agility" and "pivoting", one example of an applicable model could relate to the "lean startup." The students could be asked to consider how an enterprise or entrepreneur does and/or does not

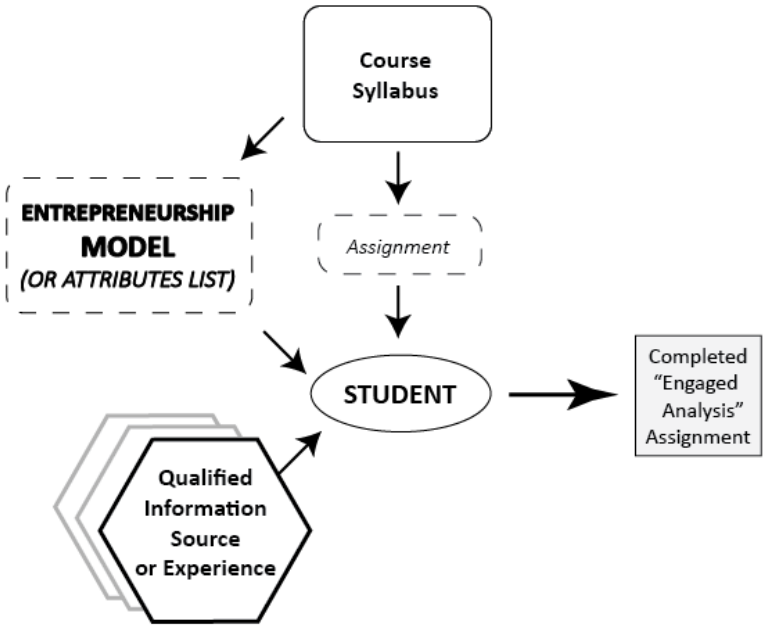
incorporate lean start-up principles. Used on its face, or translated to a list of attributes relevant to the model or course being taught, two references are helpful: Steve Blank's 2013 Harvard Business Review article "Why the Lean Start-Up Changes Everything", and Eric Ries' 2011 book, "The Lean Startup" (Blank, 2013; Ries, 2011).

The other essential characteristic of the "engaged analysis" assignment is in relation to a qualified information source or first-hand experience. With the explosion of information sources online, qualifying material to be assigned to the student remains a crucial element in constructing these assignments. According to Kuratko, suitable original materials may be obtained from academic journals, textbooks on entrepreneurship, books about entrepreneurship, biographies or autobiographies of entrepreneurs, compendiums about entrepreneurs, news periodicals, venture periodicals, newsletters, proceedings of conferences, and government publications (Kuratko, 2005). The advantage of textbook publishers, peer-reviewed journals, and traditional mainstream media is that accreditation mechanisms and editorial controls are naturally in place, ensuring that any material is both accurate and suitable.

As noted earlier, podcasts from The Wall Street Journal, FT Audio, Forbes and any traditional mainstream media may be used, as well as special podcast series produced by traditional mainstream media. Textbook publishers often provide additional instructional materials, and the source material need not be podcasts. It could be a written article, a video, or a graphic. First-hand experience is also a potential information source, so that assigning students to attend an event, listen to an in-class speaker, or participate in an activity can be a suitable source to which to apply the reference model or attributes list.

A generalized "engaged analysis" model for entrepreneurship education is depicted in Figure 4.

Figure 4
A GENERALIZED "ENGAGED ANALYSIS" MODEL FOR ENTREPRENEURSHIP EDUCATION



Creatively using the "engaged analysis" approach is not limited by the information sources listed by Kuratko. Today, some 12 years after publication, students are now equipped

with smartphones. Audio podcasts can be incorporated during tests, asking students to listen to the audio and perform their normal "engaged analysis" assignment during the testing period. Using a podcast during a test may require some 50%-100%-150% more time than the length of the actual podcast due to the engagement required. Some students listen through twice, while others do short rewinds and re-listen as they go.

This testing strategy should be viewed as distinctly different from listening to a podcast and them immediately being asked questions about it. "People can report an auditory stimulus with considerable accuracy if probed for it soon after onset." (Anderson, 2015, pp. 126-127) What this does test is the student's facility with the "process", i.e., applying what they heard with the context of the model. Care should be taken that students with learning challenges receive appropriate consideration and are accommodated.

CONSIDERATIONS FOR FUTURE RESEARCH

In considering future research, it is important to appreciate the deep and substantive research which has been ongoing in the larger framework of automaticity in the field of psychology and educational psychology. An important early reference in the literature is John A. Bargh's 1994 contributed chapter, "The Four Horsemen of Automaticity: Awareness, intention, efficiency, and control in social cognition" (Bargh, J.A., 1994). It focuses on understanding the nature of the entire automaticity process and its four essential characteristics. In simple terms, "awareness" centers on the idea that a person may or may not be aware of performing an automatic process, and similarly, unaware of its impact. "Intentionality" and "controllability" dovetail and range from recognizing that an action they are taking has been automatically instigated, to actively intending to perform an action, to controlling an action once it has started, and more. "Efficiency" anticipates that the action can, with practice, ultimately be done with little or no effort (Bargh, J.A., 1994).

The useful application of automaticity in an educational context can be found in the ubiquitous educational goal of teaching students to read. Most of us read with great facility, but it is the degree of automaticity within that capability that emphasizes its power. This is exemplified by the basic research question: Can a person who knows how to read, when presented with a word, choose not to read it? In a series of interrelated color experiments, combining the reading of words which named the actual color in which it was printed, with other words printed in a different color that the one it describes, and still other words which can intentionally avoid being read while still permitting the subject to identify its color, the results were profound: "Reading of words cannot be inhibited via voluntary intention alone" (Brown, et al., 2002). The automaticity of reading is so all-encompassing that a person cannot choose to not read; once this skill is learned, it has become "involuntary".

In contrast, the action of "engaged analysis" reflects what is considered a higher mental process then reading a single word, whose meaning is uniformly agreed upon, i.e., reading a word is a process where, for the most part, any single input has a single output. No information processing is required. "Engaged analysis", however, is a dual-level information processing task, the output of which may be different for any individual depending upon their expertise, experience and intention. At one level, the input requires some combination of reading, listening, watching and/or otherwise deriving information relative to a bioenterprise, while on another level; it requires applying the BIEM 2.0 model to the information derived. It is on this second level that automaticity is possible.

Research on automaticity with respect to higher mental processes indicates that while automaticity can also be achieved, the origins of the exercise are always "voluntary", since the individual's goals are presumed to be a result of conscious choice:

> *"Under the prevailing assumption that goals were put into place through conscious choice and decision processes, it [seems] that the limits of the extent of environmentally driven, automatic processes [have] been reached. They could determine the shape of inputs but not outputs in the form of memory storage, judgments, evaluations, and behavior" (Bargh & Ferguson, 2000).*

Bargh & Ferguson also considered the situation wherein the individual's goal was no longer conscious, but rather an automatic action was triggered by the environment itself. In the case of "engaged analysis", this could cause the individual to automatically apply the BIEM model whenever presented with information with respect to any bioenterprise.

> *"One possible route remained for higher order processes to occur completely without conscious involvement, and thus automatically. That would be if the environment itself could activate the person's goal within the situation, as part of the preconscious analysis of that situation… This became the so-called auto-motive model of environmentally driven, goal-directed behavior … That research showed that once put into motion by explicit instructions (as in a psychology experiment) or the individual's own intention to pursue the goal (as in life outside the laboratory), well-practiced information-processing and behavioral goals could operate autonomously, needing no conscious intervention to run to completion" (Bargh & Ferguson, 2000).*

Thus, the goal of applying "engaged analysis" beyond the classroom, and within bioentrepreneurship at every level, is realistic, and continued automaticity is possible. Still, is it beyond the student's control? The fact that "engaged analysis" is always, in part, a conscious activity ensures that it can be controlled.

> *"The concept of automaticity has attained a status commensurate with conscious or controlled information processing … [T]wo main developments have taken place over the past 5 years or so. First, no longer is automaticity assumed to result exclusively from a process of skill acquisition, in which a process always begins as a conscious and deliberate one, and only with experience becomes capable of automatic operation. Second … any process of sufficient complexity to be of interest … involves a complex interplay between both controlled (conscious) and automatic processes" (Bargh, J.A., et al., 2012).*

Clearly, "engaged analysis" is just such a process. The educational goal then encourages by practice that part of the process which can become automatic, while educating the student to consciously find, derive and qualify correct information with respect to a bioenterprise.

While the study of automaticity is deeply rooted in the field of psychology, and automaticity practices are present throughout education (think multiplication tables), it has not been widely applied in the entrepreneurship education space. Future research can branch in a number of directions, including:

1. Measurement of the degree of automaticity achieved with "engaged analysis"
2. Timeframe/engagement levels required to reach automaticity
3. Efficacy of different sources of material (print, audio, graphic, video, etc.) to achieve automaticity
4. Differences between different engaged analysis approaches
5. Gender differences
6. Automaticity retention characteristics
7. Identification/qualification of new models with the intention of achieving automaticity with "engaged analysis"

8. Distinguishing between failures of automaticity and failures of model to be applied
9. The ethics and standards when attempting to create automaticity in students
10. Introduction of alternative evaluation models for use in "engaged analysis"

Current specific research efforts include:

1. Completion of data collection from Biomedical Devices venture capitalists seeking verification of the BIEM 2.0 model so that it may be applied with confidence with respect to the Biomedical Devices sector.
2. Initial work to develop tools to test degrees of automaticity over time within an introductory course. A proposed example is a timed, in-class test, to be administered at intervals throughout the course. Several paragraphs describing a real or fictitious bioenterprise will be given to the students, followed by the single question: "What is missing?" The answer would be some number of the essential disciplines, while the BIEM 2.0 model would need to be recalled by the student from memory.

All of these questions, and more, may be examined in the future.

DISCUSSION AND CONCLUSIONS

Entrepreneurship education is a rich and expanding field with bioentrepreneurship education presenting additional challenges. In the biopharmaceuticals sector, the innovation phase is scientifically complex, of long duration, expensive, and risky. The need to understand the entrepreneurial effort in terms of the global biotechnology industry, as well as the science-to-market-ready-product life cycle, is essential. Thus, bioentrepreneurship education requires both content and context.

The creation of the "engaged analysis" pedagogy does just that. It incorporates a contextual framework into all bioentrepreneurship-related knowledge, while creating a specific skill: The ability to apply the BIEM 2.0 model to myriad real-life bioenterprise situations. Successfully incorporated in two ways – graduate MBA lecture courses and MBA biobusiness study tours – dual-level information processing actions within a single assignment are both possible and relevant.

The original intent of the "engaged analysis" assignments was to create a pedagogy so that the students could quickly assess the completeness of any bioenterprise value proposition before them. While the BIEM 2.0 model has been the reference of choice, the students now know that they can use *any* reference model for context. In the best case, this empowers students to create their own reference models (and/or attribute lists), reflective of their personal experience, expertise and goals, as they proceed throughout their careers. In the best case, by creating their own reference models, they may find an entrepreneurial edge, creating unique value in the innovation economy. This is the very definition of entrepreneurship.

ENDNOTES

1 Following first round acceptance of this manuscript, the author contacted Professor Donald F. Kuratko, the Jack M. Gill Distinguished Chair of Entrepreneurship, Professor of Entrepreneurship, Executive & Academic Director of the Johnson Center for Entrepreneurship & Innovation at the Kelley School of Business at Indiana University in Bloomington, Indiana. After reading the manuscript, and following discussion of a conference call, Professor Kuratko agreed with the assessment presented. He followed up with a letter, dated August 30, 2016, in which he states: "In my 2005 article entitled, 'The Emergence of Entrepreneurship Education: Development, Trends and Challenges' published in *Entrepreneurship Theory & Practice,* I spoke about the various sources of entrepreneurial learning including research-based and

popular publications. Within that category I mentioned the traditional print media (Wall Street Journal, Business Week, etc) yet the world has changed dramatically since the publication of that article with a major shift to this new digital age providing greater access to information than ever before. Please know that in developing the 10th edition of my textbook entitled, *Entrepreneurship: Theory, Process & Practice*, my publisher (Cengage/Southwestern) sought more expert interviews and digital representations for the practical applications of the entrepreneurial learning. So, it seems clear that newer forms of popular learning sources are needed and *BioTech Nation* certainly stands as one of those sources in this new age." The full argument is left within the text in order to qualify other materials as valid sources of entrepreneurial learning in future publications.

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ENTREPRENEURIAL SKILL ACQUISITION, PSYCHO-SOCIAL FACTORS AND YOUTH'S SELF-EMPLOYMENT IN MALAYSIA

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ABSTRACT

The study aimed to investigate the relationship between entrepreneurial skill acquisition, self-motivation, social influence and self-employment practice among Malaysian university graduates. Arguably, the technological advancement in any country could be made possible through innovative sciences, ideas and utilizing uncommon opportunities; and entrepreneurship is the best way to achieve this. Studies have shown that skill acquisition is the most critical factor in utilizing entrepreneurship opportunity for self-employment. However, researches have reported that most of entrepreneurship graduates from Malaysian universities do not go into entrepreneurship practice five years after graduation. To examine whether self-motivation and social influence could be possible reasons, the study adopted a survey method and a proportionate stratified random sampling method to collect data from 600 entrepreneurship graduates. Data were analyzed using descriptive statistics and correlation method. One of the findings indicated that self-motivation had higher influence on self-employment than social influence; though both had significant positive relationships. It was also found that most Malaysian youth graduates had low risk-taking propensity. The study recommended that parents, government, universities and youth organizations should place more emphasize on ability to create value to the society, as learning outcome, rather than on grades (As). This would produce creative and analytical thinking and problem-solving skills among the students, leading to enterprise creation after graduation.

Key Words: *Skill Acquisition, Psycho-Social Factors, Self-Employment, Malaysian Graduates*

INTRODUCTION

Entrepreneurship development is considered a vital link to an overall economic growth of a nation through its positive impact on economic development especially at the grassroots (Barringer & Ireland, 2012; Weihrich et al. 2008). Entrepreneurships help to create wealth and reduce unemployment, produce creativity and innovation, and increase the total production of a country (Shane, 2003). Aguably, the technological advancement or transformation in any country mostly can be made possible through innovative sciences, ideas and utilizing uncommon opportunities; and entrepreneurship is the best way to achieve this. People become gainfully employed through vocational training and skill acquisition (Ebong & Asodike, 2011; Ikegwu, 2014; Nwanaka & Amaehule, 2011).

Globally, entrepreneurship skill acquisition programs introduced into educational institutions were meant to provide the level of education or knowledge needed to exploit

entrepreneurial opportunity which could help the economic development of such countries (Emaikwu, 2011; Shane, 2003), and studies have shown that skill acquisition is the most critical factor in the utilization of entrepreneurship opportunity for self-employment (Ekpe et al., 2012). In line with this, the Malaysian government has put in place several entrepreneurship development programs, including the introduction of entrepreneurship courses and establishment of entrepreneurship departments in various universities in the country in order to train aspiring entrepreneurs. The aim of such programs was to impact skills, attitudes, aspirations and competencies mostly in the youths, and provides micro-credit, to enable them practice entrepreneurship or create self-employment as well as help generate employment for others (Abdullah et al., 2009; Samian & Buntat, 2012).

Each year, many students graduate from Malaysian public universities. For example, from the Universiti Malaysia Kelantan 2013 Convocation, a total of 538 Bachelor Degree students graduated in 2013 (Konvokesyen Ke-3, 2013, pp.18, 73-86). This number is a result of high school enrolment and attendance in the country. With such level of graduates, their contribution to the national economy is quite high in term skill, knowledge and competencies; and to their families in terms of financial supports. In this way, they are highly empowered to contribute positively to national economic, political and social policies as well as participate in community decisions affecting them. However, despite the numerous government entrepreneurship development programs and the importance of entrepreneurial skill acquisition to self-employment practice, it is observed, and previous studies have also reported, that most of entrepreneurship graduates from Malaysian universities do not go into entrepreneurship practice five years after graduation by identifying and exploiting entrepreneurial opportunities (Abdullah et al., 2009; Samian & Buntat, 2012). The question is: what could be the hindering factors? Could it be due to self-motivation and/or social influence?

Previous studies were available on the relationship between skill acquisition and entrepreneurial opportunity or self-employment (Abdullah et al., 2009; Ikegwu, 2014; Nwanaka & Amaehule, 2011; Ojo, 2009; Onuoha et al. 2013; Samian & Buntat, 2012) but there was scarcity of research that empirically measured entrepreneurial skill acquisition and self-employment practice, with psycho-social factors (self-motivation and social influence) as moderators especially in developing country like Malaysia. Entrepreneurial skill acquisition could not lead to self-employment practice without considering entrepreneur's characteristics or attitudes such as self-motivation, and social influence of friends, relatives, advisors and mentors.

Motivation is a general term applying to the entire class of drives, desires, needs, wishes and similar forces (Weihrich et al., 2008). As such, an individual can be motivated by personal drive or desire to achieve success. Attitudinal studies (e.g Ajzen, 1991) have also shown that a person's attitude correlates with his/her intention or commitment. Previous literature (Amadi, 2012; Ojo, 2009; Shane, 2003) have agreed that entrepreneurial skill acquisition is positively related to opportunity for self-employment. However, self-motivation can aid or hamper this relationship because a graduate who had received entrepreneurial skill acquisition may not venture into entrepreneurship practice if he/she is risk-averse characterized person, has a negative attitude to hard work, and misuses the acquired knowledge, talent or skill. This is in line with human development and welfare issues which places the 'individual' at the centre of employees' motivation. It is also observed that Malaysia does not have entrepreneurship programs at the Primary and Secondary School levels like other developing countries such as Nigeria; as such there is no enough motivation for youth entrepreneurs.

Again, it has been observed that the society, especially in developing countries, looks down on entrepreneurship compared to paid jobs upon graduation. Poor perceptions mostly come from social networks such as friends, family members, role models and advisors (Emaikwu, 2011; Mayer et al., 2007; Shastri & Sinha, 2010) and this can hinder entrepreneurial skill acquisition from maturing into self-employment practice. Hence, the inclusion of psycho-social factors (self-motivation and social influence) as moderators, and their empirical measurements in this study is a novel contribution which helped to strengthen the existing theories on entrepreneurship.

LITERATURE REVIEW

The study is linked with Schumpeter 1942 Entrepreneurship Theory (Jones &Wadhwani, 2006); Ajzen 1991 Theory of Planned Behaviour; and Blau 1964 Social Exchange Theory. For example, Social Exchange Theory (Blau, 1964) explains that social change and stability result from negotiated exchanges between parties. That is, human relationships are formed through subjective cost-benefit analysis. It could be argued that the country's investment in giving entrepreneurial education to the youths should be reciprocated with self-employment and employment generation among the youths.

Entrepreneurial Skill Acquisition

Entrepreneurial skill acquisition is a process whereby a person acquires or learns a particular skill or type of behavior needed for business through training or education (Amadi, 2012; Chukwunenye & Igboke, 2011; Ibru, 2009; IFC, 2007) in order to identify and exploit entrepreneurial opportunity for self-employment (Samian & Buntat, 2012; Stohmeyer, 2007). It also helps entrepreneurs to acquire self-confidence, self-esteem and participate in decision-making at household and community levels (Cheston & Kuhn, 2002; Rufai et al., 2013). Skill training and tertiary education could lead to business opportunities and impact on entrepreneurship (Emaikwu, 2011; Gatewood et al., 2004). Exploitation of entrepreneurial opportunity also depends on the entrepreneur's level of education, skills or knowledge acquired through training, work experience and social network (Shane, 2003; Shastri & Sinha (2010). Training and/or education produce prior experience which leads to preparedness for entrepreneurial activity (Shane, 2003).

The awareness of the need for entrepreneurial skill training and supports in order to stimulate entrepreneurial activity and reduce business failure have been increased among stakeholders in the industry, business and government of many countries because entrepreneurs could be born or made (Abdullah et al., 2009). It is also a vital source of developing human capital (Brana, 2008; Ikegwu, 2014). Though Rufai et al. (2013) and Dasmani (2011) found that entrepreneurship graduates could not get employment because they possessed low skills and low self-confidence required by industries since there was no industrial exposures while in school, however; numerous studies asserted that skill training and tertiary education could lead to entrepreneurial activity or self-employment (Amadi, 2012; Salman, 2009; Stohmeyer, 2007). Skill acquisition training was found to have positive effect on entrepreneurial activity in Nigeria (Ebong et al., 2011; Ibru, 2009; Ikegwu, 2014). Skill acquisition training was found to have positive effect on entrepreneurial activity in France (Brana, 2008). Skill acquisition training had positive impact on entrepreneurial opportunity in Germany (Stohmeyer, 2007). Skill acquisition

training was also found to have positive effect on entrepreneurial activity in Malaysia (Samian & Buntat, 2012). We therefore hypothesized that:

H1: Entrepreneurial skill acquisition is positively related to self-employment practice among youth graduates.

Self-Motivation

Weihrich et al. (2008) refers to motivation as a general term applying to the entire class of drives, desires, needs, wishes and similar forces. Therefore, one can be motivated by personal/self drive or desire to achieve success. Attitude towards behaviour means the degree to which an individual has a favourable or unfavourable evaluation of the behaviour (Ajzen, 1991). For entrepreneurial intentions to be translated into self-employment, it depends on the entrepreneur's personality and abilities (Majumdar, 2008). Studies, such as Crisp and Turner (2007), found that attitude and behavioural intentions are positively related; and attitude towards behaviour leads to intention which eventually leads to actual behaviour (Ajzen, 1991). It has also been posited by previous literature (Emaikwu, 2011; Onuoha et al. 2013; Salman, 2009; Shane, 2003; Stohmeyer, 2007) that skill training and tertiary education could lead to entrepreneurial activity or self-employment. Other studies also found a positive relationship between skill acquisition and self-employment (Kickul et al., 2007; Ojo, 2009; Samian & Buntat, 2012). However, self-motivation can aid or hamper these variables' relationship because an entrepreneurship graduate may not venture into self-employment if he/she is not determined to work hard, is risk-averse or misuses the acquired skill (Udida et al., 2012). This is in line with attitudinal studies (e.g Ajzen, 1991) which place the 'individual' at the centre of employees' motivation. We therefore hypothesized that:

H2: Self-motivation is positively related self-employment practice among youth graduates.

Social Influence

Similarly, the acquired skill may not lead to self-employment if there is a negative social influence. Social influence involves the social ties, the influence of friends and family, role models and advisors. This could affect aspiring entrepreneur's decision for self-employment (Asikhia, 2010; Shastri & Sinha, 2010). Society's perception about, and attitude towards, entrepreneurship is poor (Mayer et al., 2007); whereas social networks was found to be positively related to entrepreneurial opportunity for self-employment in USA, UK and Nigeria respectively (Carter & Shaw, 2006; Lawal et al., 2009; Shane, 2003). Perceived social environment also had positive impact on students' entrepreneurial intentions in China (Yun & Yuan-qiong, 2010). A weak relation was found to exist between social norms and entrepreneurial intention, indicating that social environment affect individual's attitude to entrepreneurial intention (Ajzen, 1991; Kruger, 2004). On the other hand, Vob and Muller (2009) concluded that entrepreneur's behaviour towards entrepreneurial activity is influenced by a set of factors such as personality in form of attitude, resources and environment. Other studies concluded that the possession of education, right attitude to risk, motivation and work experience aside; social environment could hinder identification and exploitation of entrepreneurial opportunity (Ekpe & Mat, 2012; Shastri & Sinha, 2010). However; Nasurdin et al. (2009) found that social identity (appreciation from family, friends and society if someone becomes an entrepreneur) did not have

any significant relationship with entrepreneurial intentions in Malaysia. We therefore hypothesized that:

H3: Social influence is positively related to self-employment practice among youth graduates.

METHODOLOGY

Survey Procedures

Using structured questionnaire, a survey of entrepreneurship university graduates from three public universities in Malaysia Peninsula who had received entrepreneurial skill training on business start-up, was employed. The questionnaires were mailed to the respondents through their contact addresses provided by their university alumni offices. Stratified random sampling was adopted to select the sample members from the research population. The population for this study was degree graduates, from Faculties of Business and Entrepreneurship, who studied entrepreneurship from Malaysian public universities and graduated from year 2009 upwards. The method was used because business and entrepreneurship faculties of the universities offer similar courses. The respondents were sourced from the convocation list and database of their previous universities, as were provided by their alumni offices. From 2009 to 2014 is five years. The benchmark of year 2009 was chosen because previous studies have found that five years period was enough for aspiring entrepreneur to start business after graduation (Stohmeyer, 2007); and to transit from practical or managerial experience resulting from paid employment to self-employment (Gatewood et al., 2004; Ikegwu, 2014).

Though scholars (e.g Cavana et al., 2001; Hair et al., 2010; Pallant, 2007) have suggested different methods for sample size determination; however in this study, a sample size determination for finite population by Israel (1992) based on Yamane's (1967) formula ($n = N/1+N\ (e)^2$) was adopted; where n is the required sample size, N is the population size and 'e' is the error margin or the alph level. With a total population of 600 students from the three university business faculties, a sample size of 240 students was chosen. However, 221 questionnaires were returned of which data for 121 respondents were usable for the analysis. Data analysis was done through descriptive statistics and correlation method.

Measures

Entrepreneurial skill training was measured as skill acquisition, general or business training, in line with previous studies (e.g Kickul et al., 2007). Self-motivation was measured in terms of determination to succeed (Osunloye, 2008). Social influence was regarded as influence of friends, families, role models and advisors, and the measures were adapted from Kennedy et al. (2003). Self-employment was defined in terms of the tendency to engage in new business or business expansion; and measured in line with Shane (2003), Tata and Prasad (2008). All measures are tapped on a 4-point scale.

RESULTS

Data Cleaning

The data used were free from errors. For instance, outliers were detected by comparing the Mahalanobis distance (D^2) or chi-square value of each respondent with the critical or table chi-square value, using the number of predictor variables as the degrees of freedom, at $p < 0.001$ (Hair et al., 2010). Extreme observations in a sufficient number of variables in multivariate and univariate detections were deleted (Hair et al., 2010). Normality was handled through skewness and kurtosis. Observations with Z-score above or below the critical value of 1.96, at $p = 0.05$ were deleted (Hair et al., 2010). Linearity was detected through Pearson correlation matrix and all predictors correlated with the criterion variable. The output of the hierarchical regression analysis indicated that the error term (as indicated by Durbin Watson statistics) were all within the recommended range of 1.50-2.50. There was no case of multicollinearity as the collinearity statistics of the regression output indicated Tolerance > 0.10, Variance Inflationary Factor < 10 and Condition Index < 30 in most cases (Hair et al., 2010). Homoscedasticity (equality of variance) was verified through an examination of the residuals of the regression output which showed no clear relationship between the residual and the predicted values (Coakes & Steed, 2003).

Goodness of Measures

The principal component analysis (EFA) for entrepreneurial skill acquisition revealed the presence of one component with eigenvalues greater than one, using Varimax with Kaiser's normalization rotation method. This one component was renamed 'training gave me assurance for success". The naming was done according to the items with the highest factor loadings in the component. The one component explained a total variance of 78.33%. Communalities were above 0.6 for most variables, anti-image (MSA) was above 0.5 for each item and Barlett's test of sphericity (sig.) was 0.000 which was <0.05. Kaiser-Meyer-Olkin' measure of sampling adequacy was 0.929 and factor loadings were above 0.5 as suggested by Hair et al. (2010). Self-motivation converged into two components renamed 'I do not fear risk-taking if I start business' and 'I attended most seminars on enterprise start-up' with a total variance explained as 64.57%. Communalities were above 0.6 for most items, MSA was also above 0.5 and Barlett's test of sphericity (sig.) was 0.000. Factor loadings were above 0.5 and KMO was 0.789. Social influence converged into two components renamed 'I have discussed my business ideas with my parents' and 'I will only start business if close friends agree' with a total variance explained as 77.21%. Communalities were above 0.6 for most items, MSA was also above 0.5 and Barlett's test of sphericity (sig.) was 0.000. Factor loadings were above 0.5 and KMO was 0.732. Self-employment practice (criterion variable) converged into one component renamed 'skill acquisition gave me opportunity to start a business' with a total variance explained as 68.03%. Communalities were above 0.6 for most items, MSA was above 0.5 and Barlett's test of sphericity (sig.) was 0.000. Factor loadings were above 0.5 and KMO was 0.616.

For proper understanding of the data analysis procedure, it is not out of place to state here that, after the principal component factor analysis (EFA), the data were standardized by finding the mean of items of each factor or construct which then became the variables for subsequent analyses such as 'reliability'.

Reliability test was performed on the factors after the exploratory factor analysis. Entrepreneurial skill acquisition had Cronbach's alpha of 0.956. Alpha for self-motivation (do not fear risk-taking) was 0.869. Alpha for self-motivation (attended most seminars on start-up) was 0.791. Alpha for social influence (discuss business idea with parents) was 0.885. Alpha for social influence (only start business if close friends agree) was 0.773, and alpha for self-employment practice was 0.768. Among the predictor variables, it is evident that entrepreneurial skill acquisition (M=3.58, SD=0.97), self-motivation (M=3.82, SD=0.79), and social influence (M=3.51, SD=1.00) were the critical factors that influenced self-employment practice among Malaysian youth graduates. The implication here is that, although skill acquisition is imparted upon the youths by the educational institutions, self-determination of the youths themselves and the encouragement from the society are also required to result in self-employment among the youths as well as employment generation for others in the country. Therefore, more advocacy programs are needed to solicit interest for self-employment among the youths and the society at large. The result of this descriptive analysis is presented in Table 1.

Table 1
DESCRIPTIVE ANALYSIS OF THE VARIABLES (MEAN, STD. DEV. & RELIABILITY)

Variable	Mean	Std. Dev.	Cronbach' alpha	No. of Items after EFA	Sample size (N)
Skill Acquisition (SA)	3.58	0.97	0.956	8	121
Self-Motivation (SM 1)	3.82	0.79	0.869	5	121
(SM 2)	2.80	0.97	0.791	4	121
Social Influence (SI 1)	3.51	1.00	0.885	4	121
(SI 2)	2.99	1.04	0.773	3	121
Self-Employment (SEP)	4.00	0.71	0.768	3	121

Pearson Correlation analysis was also carried out to test the variables relationships. That is, to show if any relationship exist between the predictor and the criterion variables, and to determine which of the predictor variables has higher influence on criterion variable (self-employment). The result was presented in Table 2.

Table 2
PEARSON CORRELATION ANALYSIS

	MSA	MSM1	MSM2	MSI1	MSI2	MSEP
MSA Pearson Correlation	1.000					
Sig. (2-tailed)						
N	121.000					
MSM1 Pearson Correlation	.032	1.000				
Sig. (2-tailed)	.725					
N	121	121.000				
MSM2 Pearson Correlation	.392**	.395**	1.000			
Sig. (2-tailed)	.000	.000				
N	121	121	121.000			
MSI1 Pearson Correlation	.377**	.252**	.422**	1.000		
Sig. (2-tailed)	.000	.005	.000			
N	121	121	121	121.000		
MSI2 Pearson Correlation	.257**	.035	.263**	.330**	1.000	
Sig. (2-tailed)	.004	.705	.004	.000		
N	121	121	121	121	121.000	
MSEP Pearson Correlation	.292**	.454**	.219*	.254**	.093	1.000
Sig. (2-tailed)	.001	.000	.016	.005	.309	
N	121	121	121	121	121	121.000

*Correlation is significant at the .05 level (2-tailed), **Correlation is significant at the .01 level (2-tailed).
Dependent Variable: Self-Employment Practice (SEP)
Note: SA=Skill acquisition, SM1=Self-motivation (not fear risk), SM2=Self-motivation (attended most seminars on start-up), SI1=Social influence (discuss business idea with parents), SI2=Social influemce (only start business if close friends agree)

From Table 2, it is evident that entrepreneurial skill acquisition (beta .292**, $p < .01$) was positively related to self-employment practice among Malaysian university graduates. Self-motivation (do not fear risk) (beta .454**, $p < .01$) was also positive related to self-emplyment. Again, another dimension of self-motivation (attended most seminars on start-up) (beta .219*, $p < 05$) was positively related to self-employment. In addition, social influence (discuss business idea with parents) (beta .254**, $p < .01$) was positively related to self-employment. However, the other dimension of social influence (only start business if close friends agree) (beta .093) did not have any influence on self-employment practice among the graduates.

DISCUSSION

The study set out to examine the relationship between entrepreneurial skill acquisition, self-motivation, social influence and self-employment practice, and what causes low enterprise start-up among Malaysian university graduates, especially those from business and entrepreneurship faculties. The above results proved that all the predictor variables had significant positive relationship with self-employment practice, except friend's influence which was another dimension of social influence. Furthermore, this study found that most Malaysian youth graduates do not venture into enterprise start-up due to lack of self-motivation occasioned by fear of failure risk, coppled with the fact that the government provides most jobs for graduate youths. The private sector also provides better paid jobs to graduates. This low risk-taking propensity may also be the reason while some of the graduates who could not secure better paid or government jobs decided to join their family businesses.

The current findings support previous studies in other contexts that skill acquisition training has positive effect on entrepreneurial activity in Nigeria (Ebong & Asodike, 2011; Ibru,

2009; Ikegwu, 2014), in France (Brana, 2008), in Germany (Stohmeyer, 2007) and in Malaysia (Samian & Buntat, 2012). The study also supported the fact that for entrepreneurial intentions to be translated into self-employment, it depends on the entrepreneur's personality and abilities (Majumdar, 2008). Therefore, self-motivation can only lead to self-employment if the entrepreneur does not fear risk, does not misuse the acquired skill and is determined to work hard (Udida et al., 2012). Similarly, this study also supported Dasmani (2011) who found that low self-confidence hindered youth's employment in Ghana. Previous studies (e.g Asikhia, 2010; Shastri & Sinha, 2010) have argued that social influence affects aspiring entrepreneur's decision for self-employment because society's perception about, and attitude towards, entrepreneurship is poor (Mayer et al., 2007). In support of previous studies conducted in USA, Nigeria, UK, India, and China respectively (Carter & Shaw, 2006; Ekpe & Mat, 2012; Shane, 2003; Shastri & Sinha, 2010; Yun & Yuan-qiong, 2010), this study found that social influence had positive relationship with self-employment. However; the second dimension of social influence (only start business if close friends agree) had insignificant relationship with self-employment among Malaysian youths. This also supported Nasurdin et al. (2009) who found that social identity (appreciation from family, friends and society if someone becomes an entrepreneur) did not have any significant relationship with entrepreneurial intentions in Malaysia.

CONCLUSION

Generally, the results of this study indicated that entrepreneurial skill acquisition, self-motivation and social influence had significant positive relationship with slef-employment among Malaysian graduate youths. Individual coefficients showed that self-motivation had highest positive influence on self-employment than social influence and skill acquisition. It was also found that most Malaysian youth graduates had low risk-taking propensity. The study recommended that parents, government, universities and youth organizations should place more emphasize on ability to create value to the society, as learning outcome, rather than on grades (As). This would produce creative and analytical thinking and problem-solving skills among the students, leading to enterprise creation after graduation. The youths themselves should have self-confidence in venture creation, and the society should encourage them in this regard. The study is limited to university business faculties. Future studies can investigate graduates from other educational institutions in Malaysia, such as secondary, technical and vocational schools.

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IMPROVING BUSINESS PLAN DEVELOPMENT AND ENTREPRENEURIAL SKILLS THROUGH A PROJECT-BASED ACTIVITY

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ABSTRACT

The present study reports the experience of a project-based activity similar to the ones developed by the Small Business Institute (SBI) program in which students are asked to plan an event. It is part of a Project Management course taught at Universitat Internacional de Catalunya, in an Undergraduate course in Business Administration. The activity has been designed in such a way that it is expected to help students develop technical and entrepreneurial skills as it requires the use of critical thinking, quantitative methods and tools to interpret data for decision-making.

The results show that active learning materialized in the form of project-based activities make courses more enjoyable for both instructors and students, and most importantly, contribute to develop students' skills such as teamwork and critical thinking. However, while it is useful for students to gain some exposure to the material through pre-class readings and overview lectures, students do not fully understand and realize about their importance until they actively take part and reflect on the meaning of what they are learning.

INTRODUCTION

In recent years, the interest in entrepreneurship education has experienced a significant growth, what has required expanding the traditional business programs such as SBI to include entrepreneurship courses (Liang, 2014). Typical entrepreneurship courses are structured around the generation of a business idea and the development of the corresponding business plan. However, quite frequently, students find it difficult to find a feasible business idea and to develop a full business plan based on that. This difficulty is especially relevant in undergraduate students that, due to their age and inexperience, are frequently unable to generate an idea that is technically feasible, economically sustainable and market-attractive among other characteristics.

The Project Management course at Universitat Internacional de Catalunya has been designed as an introductory module for the later Entrepreneurship course. We proposed the students to develop a project-based activity. The idea behind this endeavor was to introduce students, in an interactive and highly participative way, to several tasks like planning, budgeting, decision making or data analysis that are needed when developing a business plan. In a way, the activity confronts students with many of the challenges that a standard business plan would include, but in a more directed and structured manner, so that it helps students get the idea and develop the skills necessary to complete a business plan later on.

It is worthy to say that this project is designed in order to help students to become entrepreneurs but also intrapreneurs as organizations are increasingly using project-based methods to accomplish tasks.

A project is a temporary endeavor undertaken to create a unique product, service or result. It is temporary in that it has a defined beginning and end in time, and therefore a defined scope and resources. Delivering complex projects on time and under budget constraints is a daily challenge.

Education programs are now adjusting their teaching methodologies to the students' need to know how to plan and evaluate a project, competencies that will be required in their professions. In this respect, there are several voices that claim that teaching methods should include active learning methods in which students adopt a leading role (Ayaz & Söylemez, 2015). Project-based activities respond to this typology of teaching methods and are found to lead to better academic results. Particularly, Fruchter (2001) expresses the usefulness of introducing projects since they help to improve and broaden students' skills. Furthermore, project-based activities engage students in the investigation of authentic problems (Blumenfeld et al., 1991; Kubiatko & Vaculová, 2011).

In this context, this study reports the experience of a project-based activity in which students are asked to plan an event. The project activity has been designed in such a way that it is expected to help students develop the acquired technical skills while it requires the use of different quantitative methods and tools to interpret data for decision-making. This activity is part of a Project Management course taught at Universitat Internacional de Catalunya, in an Undergraduate Degree in Business Administration.

THEORETICAL UNDERPINNINGS

With the rapid advancements and requirements of our society, universities have had to adapt their ways of teaching by shifting their focus on preparing students for their future careers. Higher education has to provide learners, as an industry demand, with skills that can be transferred to other fields (Boyles, 2012; Ruizacárate Varela, García-García, González-García, & Casado-Sánchez, 2013). The idea of making universities closer to industries' requirements is not something new, as it has been done in programs such as SBI for a long time. In this sense, in the SBI program students are challenged to solve small business issues by working in teams (Hoffman, Snyman, Bechtold, & Murphy, 2016). This way, learners are able to foster their competencies and skills by facing business problems in the real world (Lacho, 2009).

Following this line, educators have increasingly emphasized the need of providing students with tools that increase the effectiveness of presentations and writing, boost critical thinking, promote the use of new technologies, enhance teamworking and facilitate the management of projects (Pulko & Parikh, 2003). The application of new teaching methodologies based on the development of skills provides students an invaluable lifelong learning (Kember, 2009; Star & Hammer, 2008). However, students usually have a short-term and goal-oriented point of view, what makes them less aware of the advantages of being educated in skills (Lane, Hunt, & Farris, 2011). Learners' vision can be broadened by involving them in entrepreneurial projects, as they do not provide short-term results.

The necessity of new teaching practices has changed the traditional lecturing at universities, formerly centered on teaching for "knowing-what", to an active learning methodology, with a focus on teaching for "knowing-why" (Fruchter, 2001). Active learning consists of involving students in the learning process, making them participate in activities that improve their performance during and after the course, thus increasing their skills (Bell & Kozlowski, 2008; Prince, 2004). This student-centered approach makes learners more independent and responsible, but they are also accompanied in their striving for solutions by the

educator, who acquires the role of a guide or facilitator (Doppelt, 2003). The positive effects of active learning activities, such as higher academic results and motivation to learn, and a deeper understanding of the content, have been proved in a number of studies (Michael 2006; Phillips, 2004). The previous advantages are especially relevant in the area of entrepreneurship, where students have the aim of creating and leading their own project, what explains why active learning has become the favorite practice for teaching entrepreneurship (Åsvoll & Jacobsen, 2012).

In order to implement an active learning methodology there is a wide variety of activities that can be used. Projects are considered some of the most relevant ones (Friedman, 2000). Project-based learning activities make students find solutions for real problems, facilitating in this way the acquisition of skills that can be used in real-life situations, such as teamwork, critical thinking, and communication skills (Macho-Stadler & Elejalde-García, 2013). For a proper consecution of the project, students need to be able to think, communicate and organize the tasks to do, to collaborate with others and follow the lecturer's guidance. It results in an experience that boosts not only their skills but also their autonomy and responsibility (Kubiatko & Vaculová, 2011) and, more importantly for the objective of the course, increases significantly the ability of students to later develop a coherent, complete and well-thought business plan.

Taking into account the benefits of the project-based learning, the activity presented in this study consists on developing a project designed with the aim of improving the following skills in the short-term: teamwork, as a tool that allows students to obtain better results than working alone (Cortez, Nussbaum, Woywood, & Aravena, 2009; Michael, 2006); and critical thinking, which can serve as a mean to understand concepts and practices needed for the correct consecution of the activity. In the long-term the objective is to develop these skills that will later help the student develop a more robust business plan.

DESCRIPTION OF THE ACTIVITY

Context

Undergraduate students that undertake an entrepreneurship course are sometimes too young and unexperienced to start directly developing a business idea and a business plan. Very frequently they do not know what to do and how to do it when they face a big and complex task like generating a business idea and developing a complete, exhaustive and realistic business plan.

Before creating a business plan, students must have some knowledge about measuring costs, doing realistic sales forecasts, evaluating risks and developing critical thinking. All these skills are absolutely necessary to do a high quality business plan.

In that respect, at Universitat Internacional de Catalunya we have developed a project-based activity similar to the ones developed by the SBI program which main objective is to develop the necessary skills to become an entrepreneur in the near future. The project based activity simplifies the task of building a business plan into a smaller and simpler activity. In this case the idea/project/event is given and the students have to fully develop it and think about all the factors that should be taken into account to perform it successfully. In line with the University mission of positively contributing to society, students are required to consider as one of the most important factors, the social impact of the initiative. Later in the academic year the student will develop a full business plan and the knowledge acquired in this activity helps them a lot to undertake the task with confidence.

Courses on project management provide students with the knowledge, tools and skills to manage projects in an efficient and organized way. The activity described here is part of a course on Project Management taught in the Undergraduate Degree in Business Administration offered at Universitat Internacional de Catalunya. Consistent with the managerial perspective of the course, the course strives to provide a balance between a qualitative and an analytical-oriented approach. Accordingly, the teaching method combines theoretical and practical readings, simulations exercises and case studies, being the "Organization of an event" activity the project in which students will work.

The experience reported in this paper was hold during the first semester of 2015/16 academic year, with a class size of 44 students. Students that participated in this course came from different countries and had different educational backgrounds.

Description

The main objective of this activity is to develop a project plan. This assignment is designed to develop student's skills in actual applications requiring the use of different quantitative methods and tools in interpreting data for decision-making. Acquiring these abilities will be very helpful for later developing a full robust business plan.

Students, working in groups of 5 or 6, are asked to plan an event and assess its feasibility in terms of resources, costs, risks, and impact assessment (environmental and social dimensions). They should imagine that someone has hired them to organize an event (e.g. a conference, an exhibition, a concert, a workshop) where different stakeholders are going to be involved. Not all events are, however, valid. The event should address a social opportunity, meaning that students have to envision and event that respond to a social need or help an underserved population. This event (of their own choice) is scheduled in a two-month period.

The project should cover the following points:

1. Project scope.
2. Market opportunity: fit between value proposition, customer segment and customer expectations.
3. Stakeholder analysis.
4. Work breakdown structure.
5. Project plan.
6. Project and cost scheduling.
7. Risk assessment.
8. Impact assessment: environmental and social impact.
9. General overview.

At the end of the project, each group should deliver the final report and give a 10 minutes oral presentation. The structure of this presentation is similar to entrepreneurial pitches and students are given the instruction to act like if they are facing a potential investor.

The instructions of the project are given one month prior the final delivery. During this month, students will have 3-hours per week to work in the project in class and discuss its progress with the lecturer. The topic of the project (that is, the event to be organized) should be approved by the instructor.

Assessment

This activity contributes in a 30% of the final grade of the course on Project Management. The assessment takes into consideration three main aspects: class meetings (25%), content (50%), and the oral presentation (25%).

Class meetings refer to the active participation of students in working in the project in class. Although all group members are expected to discuss regularly about the project, and must have equal participation in completing the group work, their engagement might be different. Accordingly, this score might not be the same for all the members of a group. The final report is limited to 25 pages and should cover all the points detailed above (see section 3.2). Lastly, an oral presentation is scheduled for the last day of class. It should take no longer than 10 minutes per group. Two members of each group would be presenting the work to the whole class. In order to ensure that all students have been involved in preparing the presentation, the lecturer chooses these students the same day of the presentation.

Both the report and the support material to be used during the presentation must be submitted though the online platform of the course one day prior to the oral defense. Failure to submit these documents on time will result in a penalty in the final grade of the project.

In order to boost critical thinking students are given an evaluation sheet (in the form of a rubric) to self-evaluate the own work, in a scale form 1 (poor) to 5 (outstanding). Also, during the presentations, students are required to evaluate their classmates as if they were investors looking for projects to backup. The instructor also uses the same rubric to assess the projects presented (see Table 1).

Table 1
RUBRIC TO ASSESS THE CONTENT AND THE PRESENTATION

Criteria			Description
Content	Event idea		Original, interesting, well-justified
	Economic feasibility		Reasonable planning, budget and use of resources
	Information		Proper description on how to organize the event
	Risk assessment		Risk impact, contingency plan, control plan
	Impact assessment		Social (adequate target population and perceived need) and environmental
Presentation	Design	Slides	Creativity, originality, clarity, text font choice, style
		Structure	Logical sequence
	Oral defense	Non-verbal skills	Eye contact, body language, posture
		Verbal skills	Elocution, enthusiasm
		Comprehension	Subject knowledge

Two additional questions are included in the evaluation sheet. First, students should adopt the role of an investor and decide the two projects in which they would decide to invest their money in order to execute the project. Second, students are encouraged to self-reflect and analyze in which degree each team member feels accountable and engaged with the project (how tasks were distributed) and their opinion with respect the other team members.

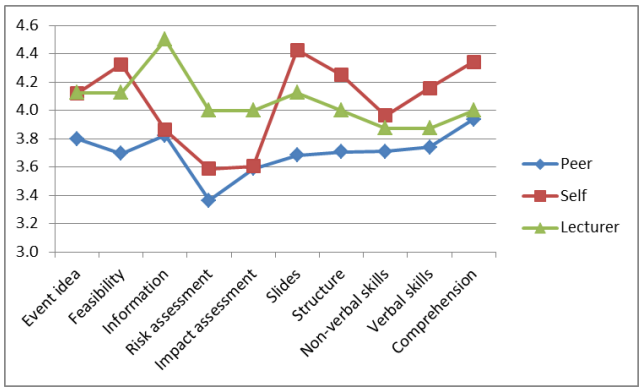
RESULTS

Figure 1 graphically illustrates the evaluations from classmates (in blue), the members of the group presenting (in red) and the lecturer (in green). From this figure it can be interfered that

students tend to be more critical with others' work rather than with their own project. One explanation for this lies in the fact that students are evaluating others' work based on the oral presentations, while when evaluating themselves have the full picture of their work.

It is noteworthy to point out that there are three criteria where lecturer's score were higher than self- and peer- evaluations. The rationale behind this may lay in the fact that the assessment of the lecturer was not only based on the information given in the presentation but also based on a careful reading of the full report. Because of the limited time allowed for presentations students from other groups might find difficult to evaluate the cost structure, the risk assessment and the impact of the project.

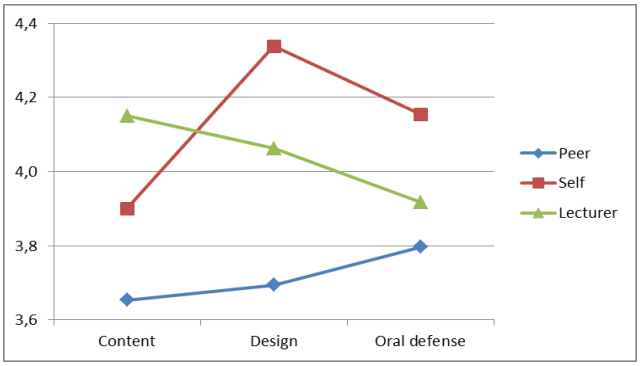
Figure 1
COMPARISON OF THE PEER-, SELF- AND LECTURER'S EVALUATION FOR EACH OF THE CRITERION



When assessing their own work, results indicate that students are quite confident in terms of their verbal skills, knowledge on the topic as well as in the design of the support material for the presentation. Because during this course on Project Management students have to perform several presentations, results indicate that students have developed communication skills that help them presenting their work naturally in front of other people. This result is very important, as in their daily profession, project managers are constantly asked to lead meetings and negotiate with the different stakeholders involved in a project.

Following the rubric provided in Table 1, Figure 2 groups the items in three main dimensions: Content, Design and Oral defense. Results confirm the previous observations.

Figure 2
COMPARISON OF THE PEER-, SELF- AND LECTURER'S EVALUATION FOR MAIN DIMENSIONS



Lastly, all students were assigned with a "class meeting" grade which assessed their participation in class. This session was devoted to discuss the project in class. Table 3 summarizes all the records. Grades from the items included in the rubric were then transformed into a 0-10 scale. The dimensions of "design" and "oral defense" were equally contributing (50% each) to the "presentation" score.

We also analyzed the correlation between instructor's grades and the self-evaluations performed. Results indicate that there is no correlation (p-value=0.5727).

Table 2
RUBRIC TO ASSESS THE PROJECT AND THE PRESENTATION

Group	Topic	Content [50%]	Presentation [25%]	Class meetings* [25%]
A	Basketball tournament	9.2	8.5	8.5 (0.55)
B	Barcelona tour	6.8	8.0	8.0 (0.00)
C	Bear pong competition	8.0	8.8	10.0 (0.00)
D	Solidarity Racing for breast cancer's cure	8.0	8.3	7.0 (2.19)
E	Food truck meeting	8.0	7.3	8.0 (1.41)
F	University Day	8.4	8.0	9.2 (0.41)
G	"Unplugged day" for Google employees	8.6	8.0	9.0 (0.00)
H	Wine workshop	7.6	6.8	7.6 (1.95)

* Standard deviation in brackets

With respect to the self-reflection questions, students show a high degree of satisfaction with the activity. They assess positively certain aspects such as the design of the activity, working in class and receiving the lecturer's orientation, the choice of two people for the oral presentation without previous advice, and the application of concepts learned in class. Moreover, students also gave a positive feedback on having worked in teams, by organizing and dividing tasks in a balanced and fair way, and achieving a high degree of commitment with the project. They express having contributed to the proper consecution of the activity, acknowledging not only their tasks but also others' work. Most of the students also report having understood the importance and usefulness of activities such as the one described in this paper.

DISCUSSION AND CONCLUSIONS

Active learning materialized in the form of project-based activities make courses more enjoyable for both instructors and students, and most importantly, contribute to develop students' skills such as teamwork and critical thinking. However, while it is useful for students to gain some exposure to the material through pre-class readings and overview lectures, students do not fully understand and realize about their importance until they actively take part and reflect on the meaning of what they are learning.

As for the specific experience described in this paper, the objective of which was to serve as a more guided and easy introduction to full business plan development, it has greatly accomplished its purpose. Compared to students of the same course of previous years, who did not do this project-based activity, the business plans later developed were of much higher quality. The information displayed in the business plan developed later in the course was much more structured, steps were clear, data came from more reliable sources and the overall analysis was of much higher quality.

Although the activity has been demonstrated to be of great profit, from direct observation during the session and the feedback obtained from students there is still room for improvement. Particularly, it is possible to envisage some aspects that need to be considered for future editions:

1. Consider the peer-assessment within the project's global mark.
2. Introduce the project at the very beginning of the course, and, as the course progresses and the contents are presented in class, start working in the project.
3. Include peer-assessment of the project's report, so that each group is assigned to another project and should perform a critical review and elaborate a report with their comments.

Several challenges were also faced:

1. The course enrolled a large number of students which impedes a sole instructor to fully gather all the concerns and feedback during the "class meeting" sessions.
2. The course enrolled both engineering and business administration students which showed that business students needed more help as they were not used to project-based activities.

All in all, and based on our experience, we posit that project-based activities are useful for: (i) embedding all the concepts of the course in a single integrative project; and (ii) developing critical thinking through the students' own work and peer-work. Therefore, we argue that there is an urgent need to introduce project-based activities at all levels, but particularly in master courses, where students are expected to be challenged with real (or simulated) cases, as they will be in the near future, when entering in the marketplace.

Studies such as the one presented here highlight the importance of approaching university students to real business situations, something that has been doing by programs like SBI for almost 45 years. Taking in consideration the rapid advancements and requirements of our society, it is of paramount importance that academics devote time and effort to investigate how to best adapt teaching methodologies to this new reality. Project-based activities, flipped classrooms, working in real business projects, etc. are just some examples of how teaching practices are evolving, aiming at close the gap between academia and industry. The application of these approaches in entrepreneurial courses can result in a source of motivation and help students acquire and develop the competences and skills that one might expect from a successful entrepreneur.

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ENTRANTS AND WINNERS OF A BUSINESS PLAN COMPETITION: DOES MARKETING MEDIA PLAY A ROLE IN SUCCESS?

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ABSTRACT

Governments and institutions worldwide are constantly looking at ways and means to assist SMMEs (Small, Micro and Medium Enterprises) to survive and grow. The ultimate aim is to ensure that these businesses survive and contribute to the development of the economy, and in the process, ensure job creation and poverty alleviation. This has resulted in many institutions looking at various ideas to ensure the survival of these businesses, and looking at unique ways to encourage entrepreneurs to start their own businesses. One method used all over the world is Business Plan Competitions - with the aim of getting more people interested in starting a business and to obtain skill in the activities involved in developing such a plan.

The research was conducted among the participants of a business plan competition which was offered and presented by a government institution. The focus of the event was on all entrepreneurs – new and existing – to draft and present a business plan. Entrants were expected to attend a set training schedule which would assist them in the development of the draft plan. The research found that 59,2% of participants have already started their businesses, while 40,8% had not. The research has found that more can be done to market these competitions and that available means of marketing include the use of the internet, the official website of the involved institution, as well as newspapers and magazines to generate interest in these events.. This research study aimed to establish whether there are differences in the perceived value and usefulness of media that are used to market these competitions. It was found that there are some differences in media platforms consulted between the winners and entrants, and in general, winners are 30 years and older compared to the entrants who are generally younger implying that the marketing methods used to promote these competitions should be focused differently.

***Key Words**: SMMEs, Business Plan Competitions (BPC), media consulted, internet, social media, website information, marketing events*

IMPORTANCE OF A BUSINESS PLAN

In the world economy today it has become the norm for entrepreneurs to come forward and start their own businesses or implement their ideas into viable business propositions. This however requires the development of a sellable and well-structured business plan in order to secure finance.

Generally the aim of a business plan is to provide some sort of blueprint for the entrepreneur on how to successfully manage and operate his or her business. On the other hand, the purpose of a business plan is to attract investors or financial support providers to invest in the business venture and/or assist in the next growth phase of the initial business (Nunn & McGuire, 2010).

Lawrence (n.d.) is of the opinion that a business plan has three primary functions, namely:

1. To serve as an action plan;
2. To serve as a road map; and
3. To serve as a sales tool.

If the plan is well designed and based on proper and thorough research, these functions will be easily achieved and be a strong guide for the way forward. It will cover the aims and objectives of the business, indicate the strategies that need to be followed to reach these objectives, cover potential threats and opportunities the business may face, as well as ways to solve these threats or capitalise on the opportunities. A business plan furthermore assists in structuring the organisation, and lastly indicates the amount of financial support required to be successful and break even. Preparing a business plan is important when starting a new business as it will pave the way forward.

BUSINESS PLAN COMPETITIONS (BPCs)

In order to generate interest in business plans, competitions have been devised with the aim of ensuring that current as well as prospective entrepreneurs are skilled in the development of these plans and to ensure a structured and planned approach to starting a business. A Business Plan Competition (hereafter BPC) can be defined as a structured competition in which individuals compete in developing a feasible and practical business idea. The evaluation of these ideas is based on set criteria developed and adapted according to international standards by business practitioners and industry specialists.

BPCs are powerful learning tools that can stimulate creativity, but more importantly prepare participants for the real world of entrepreneurship (Desplaces, Matthews, Kirsch, Roer & Lenge, 2008). It can be argued that such competitions reflect the imperative elements of any successful entrepreneurship programme by fostering experiential learning, networking, mentoring, partnership with entrepreneurship organisations and community involvement (Desplaces et al., 2008). Businesses create profit and drive economies; therefore it is important that countries develop systems that will lead to progression within the country. Globally, there has been an enormous growth in encouraging entrepreneurship and innovation as a means to foster economic health (Russell, Atchison & Brooks, 2008). As this is not the only concern within nations, these BPCs are seen to provide a platform for emerging entrepreneurs to learn through actual participation. South Africa as a developing country has embraced this platform and has developed its own competitions. These competitions vary from industry to industry and all have dissimilar aims and objectives.

Although BPCs worldwide are largely developed to encourage the creation of new business ventures, participants obtain vital and long-term benefits such as entrepreneurial skill development, increased self-confidence and risk-taking susceptibility, contact with mentors and the opportunity to network (Bell, 2010). Bell (2010) stated that a competition such as BPCs help to encourage entrepreneurship by providing possibilities for individuals with ideas and those involved with start-ups can network and discover and develop business ideas. Multiple BPCs exist in industry and will only succeed if the idea is positively evaluated. If it is not, the initiative might not be able to attract funding or obtain access to potential suppliers and customers (Bell, 2010).

It is important that BPCs are implemented worldwide, as well as in South Africa in order to provide opportunities for entrepreneurs with brilliant ideas that will assist in improving the economic growth of the country and subsequently, decrease the unemployment rate. In today's competitive market place and tough economy, it is difficult for young individuals to find jobs without a proper education or relevant experience. BPCs can therefore help these individuals to start their own businesses by providing them with the skills, knowledge, motivation, possible resources and funding to start and grow their business successfully. The main concern for any entrepreneur is funding and the necessary resources needed to conduct their business. Business plan competitions can provide these entrepreneurs with the opportunity to present their ideas or concepts to a panel of specialists and advisors and have the opportunity to draw attention and obtain funding and relevant resources from sponsors or service providers. Also important is that a business plan should not only aim to identify the best idea, concept or viable business plan, but also provide support, assistance and feedback to the unsuccessful participants, in order for them to improve upon their current business plan and encourage them to persevere.

From another perspective, the expectations from organisations and sponsors are to increase their reach, market their businesses, attract more clients or customers, make use of their services or products, and ultimately increase their profits.

These competitions' success will largely depend on the effective marketing of the competition and marketing is indicated as a component for the best practices associated with these competitions. An overview of some business plan competitions in South Africa and internationally is briefly discussed below.

Business Plan Competition in South Africa

It must be stated from the outset that this list is not exhaustive or complete, but rather serves as an indication of the types of Business Plan Competitions offered, and the stated aims of these competitions. Some of the more prominent and well known competitions are referred to below.

TechnoServe: Believe Begin Become Competition

Believe Begin Become is a Business Plan Competition (BPC) developed by TechnoServe to support and grow new businesses in Africa (TechnoServe, 2006). This programme is implemented in Kenya, South Africa, Ghana, Tanzania and Swaziland (TechnoServe, 2006). The main objectives of this Business Plan Competition include:

1. Supporting entrepreneurs to create scalable and sustainable businesses through training and mentoring.
2. Catalyse networks incorporating the public, private and Non-Governmental Organisation (NGO) communities to create a business environment supportive of Small Business Enterprise (SME) development.
3. Facilitate connections between entrepreneurs and financial service providers to stimulate business growth.

JCI Best Business Plan Competition

This Business Plan Competition was launched by JCI in 2001 in partnership with the International Chamber of Commerce (ICC) to foster the entrepreneurial spirit among its members. The competition runs at a national level targeting specifically young people across all

provinces of South Africa (JCI South Africa, 2012). The main focus of the competition is to encourage entrepreneurs to integrate the principles of social responsibility into their businesses (JCI South Africa, 2012). Social responsibility principles include human rights, labour, environment and anti-corruption (JCI South Africa, 2012).

The adjudication process of the competition is outlined clearly in the rules and need to be strictly adhered to (JCI, n.d.). Judges are instructed to make decisions based upon the following criteria, these are thereby seen as the critical factors in a business plan and forms part of the criteria from which the entrants to the competition are evaluated.

1. Criterion 1: The Executive summary gives a clear overview of the mission, vision and the values of the proposed business
2. Criterion 2: Innovative character of the service/ product offered
3. Criterion 3: Feasibility of the project or product or service offered
4. Criterion 4: The products' or services' profit projection
5. Criterion 5: The benefits to the local community outlined
6. Criterion 6: Compliance with the UN Global Ten Principles

During the final round, judges are then instructed to base their decisions on the following criteria (JCI, n.d.). These are the specific success criteria utilised:

1. Criterion 1: Innovative nature of the service or product offered
2. Criterion 2: Potential impact on local communities or the business community
3. Criterion 3: Service's or product's profit projection
4. Criterion 4: The relevance or feasibility of the service or product
5. Criterion 5: Compliance with the UN Global Compact Ten Principles
6. Criterion 6: Presentation
7. Criterion 7: Personal evaluation

The criteria used can be seen as those areas what is regarded as being of relevance and importance and as part of what they consider best practice.

SAB KickStart Competition

The South African Breweries (SAB) youth entrepreneurship development programme, SAB KickStart, attracts hundreds of aspiring entrepreneurs nationwide (SAB KickStart, 2012). Individuals between the ages of 18 and 35 years are encouraged to enter their businesses or business idea into the programme (SAB KickStart, 2012). The programme focuses on providing entrepreneurs with the most effective tools to build and run sustainable businesses. The KickStart competition has five phases (SAB KickStart, 2012):

1. Phase 1: Awareness campaign, recruitment and selection
2. Phase 2: Training
3. Phase 3: Business plan improvement and adjudication
4. Phase 4: Success enhancement - Growth strategy definition and mentorship
5. Phase 5: National Awards

SAB KickStart competition offers a number of services, including training, funding, mentorship and market linkages to assist entrepreneurs to grow, especially for the youth.

IDC BMF Sefa Business Plan Competition

IDC BMF Sefa Business Plan Competition was launched to encourage the growth of entrepreneurship within townships and encourage local entrepreneurs to enter their business plans. The competition is distinctly different to most Business Plan Competitions, as instead of limiting recognition to the top three entrants alone, the competition provides training to the top fifty applicants, and reward winners in a variety of categories (Show Me, 2012).

Shell LiveWire South Africa

Shell LiveWire programmes around the world aim to offer help and support to enable young people to start and run viable businesses. The Shell LiveWire South African Business Plan Competition is aimed at instilling a culture of entrepreneurship among young South Africans, by promoting business awareness through training, mentoring and assistance. The programme offers potential entrepreneurs the opportunity to develop the necessary business planning, management and financial skills needed to start and run a business venture successfully (Shell LiveWire, 2012).

Shell LiveWire South Africa is aimed at addressing the following objectives:

1. To assist in addressing the country's unemployment problem
2. To support the Government's national objectives regarding skills development
3. To encourage young people to consider starting a business
4. To contribute to the development of local economies

All LiveWire programmes have a common objective to raise awareness of the option of starting a business among young people in addition to general promotions of entrepreneurship.

Enablis – Business LaunchPad Competition

The Business LaunchPad competition aims to create an opportunity for anyone with a business idea or existing business, and who finds it difficult to secure conventional commercial funding; to be considered for access to start-up or expansion funding. The competition process evaluates all the entries and scores them on the basis of their business viability and sustainability for the funding criteria of the competition's funding partners. The process of entering the competition often assists the entrepreneur to clarify refine and focus their business idea, which in itself is a valuable step (Enablis, 2012).

Limpopo Youth Biz Competition

The Limpopo Youth Biz Competition was launched in 2009 by the Department of Economic Development, Environment and Tourism. The Department provided a training session throughout the province in all local municipalities. The main aim of the competition is to provide the youth of Limpopo with an opportunity to establish their business and to evaluate their business insight. The competition was opened to any individual who is unemployed, between the age of 18 and 35 years, and residing permanently in Limpopo. The Department held compulsory training sessions for all entrants, and only candidates who have attended these training sessions will be allowed to enter the competition.

The main aim of the Limpopo Youth Biz Competition is to inculcate a culture of entrepreneurship among the youth of Limpopo. The Competition aimed to achieve the following four objectives to be successful:

1. To reduce unemployment and poverty
2. To develop a skill base necessary to economic growth through youth in the province
3. Ensure that youth entrepreneurs are provided with the necessary support to become successful
4. To embrace socio-economic goals of the province that ensures that the youth become part of the mainstream economy

In this section, various successful Business Plan Competitions, which were held in South Africa, were discussed. The main success factors of each of the discussed Business Plan Competitions are listed in the next section.

Success Factors of South African Business Plan Competitions

From the various Business Plan Competitions that were hosted in South Africa, the success factors of each are listed in order to determine the best practices that set these competitions apart from others. This information is useful for institutions to set their standards against the benchmark of successful competitions. The success factors from these Business Plan Competitions are listed in table 1 below:

Table 1
SUCCESS FACTORS OF VARIOUS SOUTH AFRICAN BUSINESS PLAN COMPETITIONS

South African Business Plan Competition		Success Factors
1	TechnoServe – Believe, begin, become	- Provide financial support for entrepreneurs.
2	JCI Best Business Plan Competition	- Encourage entrepreneurs to integrate the principles of social responsibility into their businesses.
3	SAB KickStart Competition	- Various marketing campaigns were run in the regions and nationally. - All entrants received training, not only participants who were shortlisted. - Entrants where obligated to attend training and workshops. - Only once the training is completed can the entrants start with their business plans. - The winners in Phase 3 have been mentored and receive further training. - Phase 3 winners also stand a chance to win prizes. - A reward ceremony is hosted. - Feedback was provided to all entrants who requested it. - Set separate criteria for entrants who have already started their business.
4	IDC BMF Sefa Business Plan Competition	- Recognition was not only given to the top three candidates, but the top 50 applicants received training. - Top 10 were invited for specialised training. - Winners were chosen and rewarded in various categories or industries.
5	Shell LiveWire Competition	- Provided continuous training, mentoring and support. - Strengthening existing economic development initiative to assist with funding.

Table 1
SUCCESS FACTORS OF VARIOUS SOUTH AFRICAN BUSINESS PLAN COMPETITIONS

South African Business Plan Competition		Success Factors
		- Attract authorities to assist with funding (not only for winners). - Provided outreach programmes and activities.
6	Enablis – Business LaunchPad Competition	- Prize was start-up funding for the winners. - Attracted funding partners to assist in start-ups. - Categorised business plans into eleven sectors. - Each sector was judged separately and one winner was chosen from each sector (therefore, 11 winners). - Industry specialists were available from each sector for more specific information and support.
7	Limpopo Youth Biz Competition	- Only unemployed young individuals (18-35) could participate in the competition. - The competition only focused on one province's development and growth. - For entrants to enter the competition, they were obligated to attend the training sessions. - The judging process was held in various districts of Limpopo. - The prize money was paid to the winner in increments to ensure it is used for the start-up of a business venture.

The first noteworthy success factor from these business plans is that a Business Plan Competition should be divided into categories, whether according to industry or sector, urban or rural areas, new business ideas and already established businesses and big or small businesses. This ensures that all participants are given an equal chance to be successful.

The SAB KickStart Competition held an awards ceremony, where the winners received recognition and were exposed to other participants, investors and industry partners. It is crucial to provide all participants with feedback and recognition. Through the provision of feedback, acknowledgement and continuous assistance, it will allow individuals to learn further, grow and develop successful business ventures.

Another important factor is that funding is the most prominent reason why people participate in such competitions. Continuous training throughout the Business Plan Competition is crucial. Make the training sessions compulsory – this will ensure that entrants gain something from participating in the competition, even though they have not won. This will also assist them in developing a business plan or improving their current idea in order to get funding or attract investors.

The above discussion not only provides an overview of Business Plan Competitions in South Africa, but also provides some guidance of how to improve the Business Plan Competition and to make it better. It is particularly important to understand what the other organisations are doing and which procedures are implemented throughout competitions. The following section focuses on international competitions as well as the procedures used to evaluate entrants' business plans. Lessons learned from these competitions need to be incorporated in future plans.

International Business Plan Competitions

The discussion below focuses on Business Plan Competitions held internationally. It must be noted that there are many competitions being offered globally and depending on the country or institution, all regard their competitions as meeting their requirements and regard them as best practice. The fact is that in each case the prevailing conditions in the state or country must be taken into consideration as best practice cannot be unilaterally applied without considering these conditions.

The reason why these particular competitions have been selected is because their focus was on developing sustainable endeavours. Since developing sustainable business ideas is a feasible way of improving the South African economy, these common practices can therefore be used as a benchmark.

NYC Next idea global Business Plan Competition

The NYC Next Idea global Business Plan Competition was launched by Mayor Bloomberg and the New York City Economic Development Corporation (NYCEDC) in March 2009 (NYC Global partners, 2011). The competition aims to highlight New York City's standing as a global centre for innovation and entrepreneurship (NYC Global partners, 2011). The goals and objectives of this competition include:

1. Enhance New York City's global image as a centre for entrepreneurship
2. To underscore the contribution that innovative new businesses make to the City's economy
3. To attract top foreign entrepreneurial talent to the city

As with any venture, it is imperative that organisers undergo a process of evaluating the success of the venture. A clear understanding needs to be developed as to whether all the goals and objectives that were initially set out had in fact been achieved. The success of the NYC Next Idea was therefore measured both qualitatively and quantitatively (NYC Global partners, 2011). Feedback was collected each year which therefore informs the design of subsequent competitions (NYC Global partners, 2011). For example, for the 2011- 2012 competition year, the rules had been modified to allow entrants to form teams representing a mix of universities, a concession to the many regions were business schools and engineering schools do not share a common university parent as a matter of course (NYC Global partners, 2011). These same surveys demonstrate the value that the participants find in the creation and the associated instructions in writing a business plan (NYC Global partners, 2011).

The UC Berkeley Business Plan Competition

The UC Berkley Business Plan Competition is a competition that provides members of the UC Berkeley and UC San Francisco communities with a forum in which entrepreneurs, venture capitalists and ideas come together to create new businesses (Shazeeye.com, 2011).

Each of the eight finalist teams participating in the final round had to go through a rigorous selection process over several months (Shazeeye.com, 2011).

The best practices used in this competition to evaluate the business plans were based on the following criteria:

1. Is the business fundable?
2. The quality of product(s), service(s) and/ or solutions(s) provided in the business plan
3. Market opportunities and competition
4. Team qualifications
5. Overall attractiveness of the venture

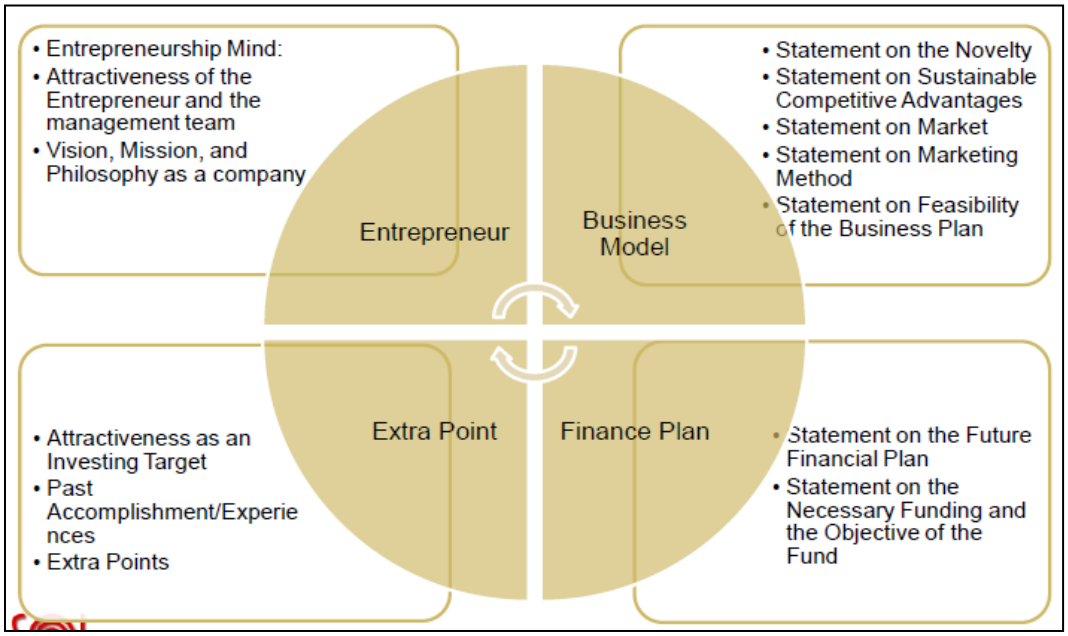
Business Plan contest at the SOI Asia

The aim of the School on Internet (SOI) Asia is to cultivate an environment for potential entrepreneurs in the region and to prepare and provide efficient fund matching opportunities with research assets originating from universities. This competition engages in entrepreneur assistance and is supported by Keio University Incubation Center (SOI Asia, 2012).

The major differences this competition has compared to other Business Plan Competitions include:

a. **Disclosure of evaluation criteria in advance:** The evaluation criteria was developed by venture capitalists, accountants, consultants, business executives, researchers at universities and the faculty members of universities. In addition, this competition has adopted a high disclosure policy including a criterion that can contribute to improving business plans. The criterion is illustrated in the figure 1 below:

Figure 1
EVALUATION CRITERIA AND THE SCALES IN EACH CATEGORY



b. **Business plans are judged by judges from multiple fields:** The first group of judges is from the SOI partner University faculties who are specialists in management and administration. The second group of judges is from the fields of IT and technology, management, intellectual property, the financial sector and accountancy.

The U.S. Small Business Administration

The U.S. Small Business Administration (SBA) does not offer a Business Plan Competition but is rather an organisation that aids economic growth through fostering entrepreneurship. The reason for including their actions in this article is indicated below. Even though they do not run competitions the services and assistance given may be useful to incorporate in the structuring of future Business Plan Competitions. SBA provides assistance through the following functions:

> **Access to capital (business funding)**: SBA provides small businesses with an array of financing for small businesses from the smallest needs in micro-lending to substantial debt and equity investment capital.
> **Entrepreneurial development (education, information, technical assistance and training):** SBA provides free individual face-to-face and internet counselling for small businesses and low-cost training to promising entrepreneurs and established small businesses throughout the United States.
> **Government contracting (federal procurement):** The office provides small businesses with subcontracting procurement opportunities, outreach programs and training.
> **Advocacy (voice for small business):** this section was established in 1978 and therefore reviews Congressional legislation and testifies on behalf of small businesses. In addition, it conducts a vast array of research on American small businesses and the small business environment.

These offerings are similar to those offered through means of a Business Plan Competition. Like in any economy, the biggest challenge aspiring entrepreneurs' face is a lack of funding. SBA is therefore committed to providing promising ventures with capital.

BEST PRACTICES FOR RUNNING A BUSINESS PLAN COMPETITION (BPC)

It is important to note that successful practices in Business Plan Competitions are not industry specific but rather a winning recipe that can be altered to suit a unique situation. There are no set guidelines for best practices but rather aspects of different competitions and approaches that can be taken to further enhance the quality and standard of a competition. The trick is to find the combination that works for a specific industry or country.

The following discussion focuses on the best practices that have led to the success of many Business Plan Competitions.

The selection assessment criteria for entrants to receive free coaching on project development and further structuring, design and presentation of business plans could be based on the following (CTI PFAN, 2012):

Value Proposition and Business Model

It is important that the participants clearly state the underlying project or the business rationale. This is where they need to understand why their business exists. The investment proposition must therefore be clearly stated. In addition, the commercial feasibility and profitability of the business needs to be provided as well as the business model described. Lastly, the proposition itself needs to be attractive to investors.

Market Understanding and Analysis

The participants and entrepreneurs need to have identified a market segment they wish to target. An analysis and knowledge of the market size, trends, barriers and prospects must be

provided. A description of the businesses' competitive strategy, strengths and weaknesses need to be provided. This is important as no business can operate in a void environment. There are external and internal factors that will impact the success or failure of the new business. It is therefore imperative that these be acknowledged. The strengths and weaknesses of the business are particularly important as they provide a clear view of what the business can do under trying times.

Management Team

When evaluating the business plan, it is essential that the experience and track record of the team be evaluated. This will ensure that the applicants have the right people with the right knowledge to make a success of the entity. Secondly, the capability of the team to deliver the project needs to be assessed. Lastly, are the solutions provided in the business plan for potential management gaps?

Operations and Implementation Plan

The operations and implementation plan needs to address a number of issues such as the construction and implementation of the value chain, inbound and outbound logistics and the analysis of the activities necessary to transform the inputs/ activities into the final project/ product/service.

Financials

In such global economic turmoil, it is essential that entrepreneurs are encouraged to provide realistic financial projections. This section of the business plan is important and should therefore address the overview of capital expenditure, revenue and cost. An explanation of assumptions should be included with the proposed financing structure. Financial projections and scenario analysis should be included as well as an exit plan. Judges should also determine from the business plans submitted whether financials mirror the verbal projections of the plan.

Risk Analysis and Mitigation

This section comprises of determining whether the principle risks and appropriate mitigation strategies are clearly identified. Mitigation is therefore defined as the elimination or reduction of the frequency, magnitude or severity of exposure to risks, or minimisation of the potential impact of a threat or warning.

Environmental and Developmental Benefits

International trends that have grabbed the attention of many entrepreneurs include the effect companies have on the environment. More and more entities have begun taking responsibility of their actions. This can come in the form of using less paper or saving as much energy as possible. This section is therefore important and should therefore be included. The business plans submitted need to have a clear discussion on how Greenhouse Gas (GHS) will be reduced. Other environmental and developmental benefits such as job creation, health welfare should also be discussed.

Project Maturity

The nature of a Business Plan Competition is to encourage ideas and innovation, however, entrepreneurs should realise that these ideas should be implementable. It is important that entrepreneurs explain how mature the idea is and how soon it can be implemented. Lastly, the achievements achieved thus far should also be included.

Growth or Replication Potential

It is important that the business be evaluated also on its potential for organic growth or replication.

The discussion above provides a clear picture of what practices are used in Business Plan Competitions. These practices focus on the critical factors used to evaluate the business plans throughout the competition stages.

Best practices were derived from secondary research that was conducted by means of evaluating both local and international BPCs whereby the critical success factors identified in each BPC were considered a best practice due to their tendency to enhance the success of the BPC. The following table briefly explains the best practices for running a successful BPC. These steps are illustrated in table 2 provided below:

Table 2
CRITICAL SUCCESS FACTORS FOR RUNNING A BUSINESS PLAN COMPETITION (BPC)

Phases/stages in the Business Plan Competition (BPC)	Best practice, Critical success factors
Step 1: Planning for the competition	• Establish the structure of the competition • Disabled participants • Acquiring sponsors • Acquiring service providers • Find qualified judges • Set up temporary offices in underdeveloped areas
Step 2: Preparation of the competition	• Marketing • Acquiring resources • Staff training
Step 3: Registration and submissions	• Submit business plans based on the category or industry • Multiple mediums must be available for participants to register for the competition • Same mediums must be used to submit business plans.
Step 4: Judging process	• Judges should be qualified industry experts per category • Business plans must be judged based on the adapted judging criteria • Judging process must be conducted openly
Step 5: Prizes and acknowledgments	• Prizes should reflect the amount of work and effort put into the competition by participants. • Prizes should be reflective of the work and effort put into the competition. • Voucher redemption of prizes should be easy. • All participants should be acknowledged based on their contribution by means of a certificate.
Step 6: Feedback	• Procedures need to be put in place to facilitate effective dialogue and more channels need to be opened up. • Provide participants with feedback on their business plans. • Provide recommendations to participants on their business ideas.

Table 2 CRITICAL SUCCESS FACTORS FOR RUNNING A BUSINESS PLAN COMPETITION (BPC)	
Phases/stages in the Business Plan Competition (BPC)	**Best practice, Critical success factors**
Step 7: Post competition procedures	• Hosting organisations determine whether winners have successfully started their business ventures or have grown to what it is capable of achieving by following up on them. • Hosting organisations build ongoing relationship with non-winning entrants by following up and communication with them.

As indicated in the table, marketing forms a central part of the success of these competitions and it is for this reason that the focus of this research falls on the media used to market the competition.

AIM AND RESEARCH METHODOLOGY

The main aim of this research study was to compare the opinions and profiles of the entrants to a BPC, and the winners of such a competition, in terms of the more applicable media to be used in the marketing of such an event. This approach will enhance the body of knowledge for future structuring of business plan competitions as well as to obtain an understanding of what moves entrepreneurs to enter these competitions and to what extent their expectations are met. It further serves as a guiding factor in the marketing of these competitions and to identify the more suitable marketing methods to entice more entrants – and good entrants. This study can serve as a benchmark for future research and assist institutions to better market their events as well as to improve the overall level of applications. It specifically focused on:

1. The demographic profile of entrants and winners.
2. The media platforms they were exposed to and which of those they felt were suitable or effective in the marketing of the competition.

A self-administered online questionnaire consisting of quantitative questions was used to collect primary data. The questionnaire was divided into two major sections. The first section was the demographic section, which describes the profile of the respondents in terms of age, race, gender and level of education. The second section of the questionnaire addressed the objectives as indicated.

The questionnaire was administered to small business owners nationally. The sampling methodology utilised was that of non-probability, convenience sampling, which enabled the researcher to collect data quickly and easily. A sufficient number of questionnaires were distributed to achieve a confidence level of 95% and an error margin of 5% at 50% response distribution. A total of 764 usable responses were received. Given the sample size, the results will give a good indication as to the perceptions held by SME owners towards the meeting of their information and assistance needs that government offers to them. The quantitative data was analysed using IBM SPSS Statistics V22. The data was checked, coded, corrected and descriptive statistics (frequency counts) were used to describe the findings. A total, 966 entrants and 36 winners were included in the research.

RESEARCH FINDINGS

This section reports on the key findings from the research conducted.

The Demographic Profile

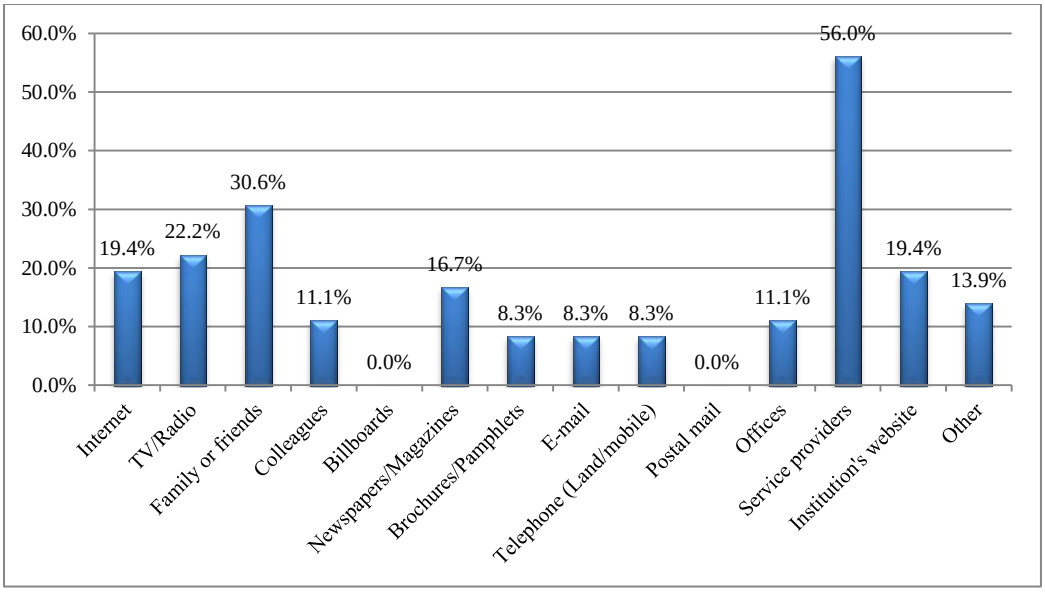
The demographic profile of the respondent groups is presented in Table 3 below. The majority of entrants fell in the age group 26 to 30 years (26,5%), compared to 8,3% for the winners. The winners of the competitions would seem to be more mature as more than 80% were older than 30 years. From these responses it would seem that the younger entrants to these competitions are not as successful as the older entrants. A total of 37,9% of respondents held a certificate or diploma, while 52,8% of the winners fell in this category with their qualifications. The fact that more winners were in possession of a certificate or diploma might serve as an indication that the more practical and/or application approach usually associated with these qualifications, are benefitting SMME owners in the market. It is significant that only 11,1% of winners of these competitions held only a matric qualification and this would seem to support the concept of SMME owners having some sort of post matric qualification to assist them in their business.

Table 3
DEMOGRAPHIC PROFILE

Demographic Profile of respondents		% of Total: Entrants	% of Total: Winners
Gender	Female	34,7%	44,4
	Male	65,3%	55,6
Age	18-25	18,5%	11,1
	26-30	26,5%	8,3
	31-35	19,1%	30,6
	36-40	12,5%	27,8
	Older than 40	23,4%	22,2
Qualification	No matric	5,4%	
	Matric	25,8%	11,1
	Certificate/diploma	37,9%	52,8
	Degree	12,3%	
	Post-graduate degree	12,0%	30,6

The winners were asked to indicate how they had heard about the BPC. This question was posed as a multiple-choice, multiple-response question. From the responses it can be seen that 30,6% or 11 of the respondents had been exposed via family and friends, 22,2% (8) via radio or television and 19,4% (7) via the Internet and the official website of the institution respectively. These results are indicated in figure 2:

Figure 2
HOW DID YOU HEAR ABOUT THE BPC? (WINNERS) (N=36)

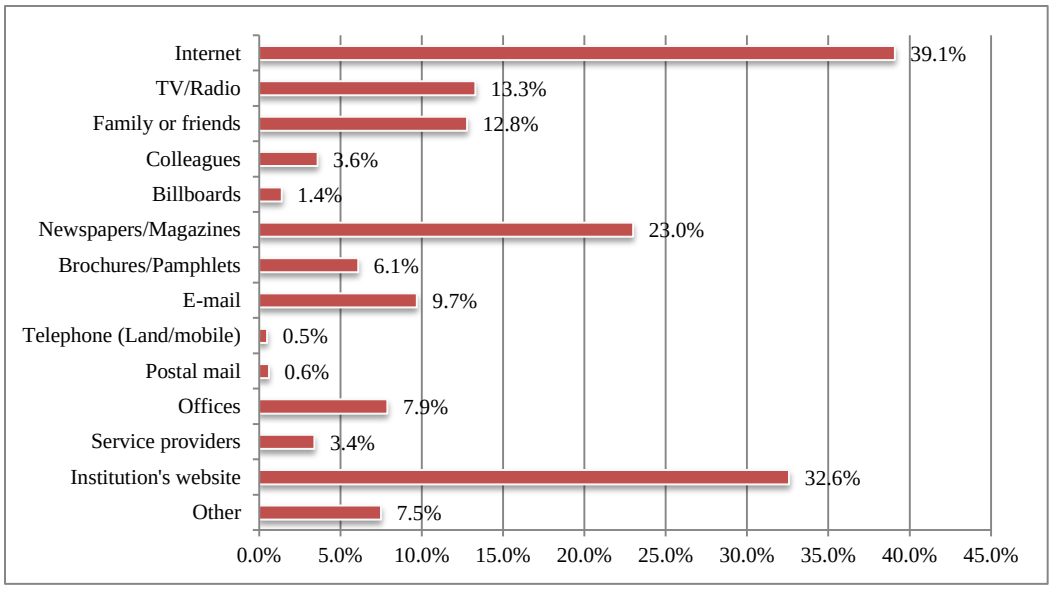


The other media winners indicated:

1. "poster"
2. "Facebook"
3. "consultant"
4. "I am part of a financial institutions SMME programme and received the info from them."

The entrants were also asked how they heard about the BPC, and their responses (see figure 3) differ significantly from that of the winners. In total 39,1% of entrants heard about the competition via the Internet, compared to only 19,4% of the winners. Where winners were mostly informed by family and friends of the competition, only 12,8% of entrants were informed by this group. When looking at these groups, it would seem that the three most important communication media platforms that can be pursued by organisers of such a competition are the internet, newspapers and magazines, and the institution's website.

Figure 3
HOW DID YOU HEAR ABOUT THE BPC? (ENTRANTS) (N=966)

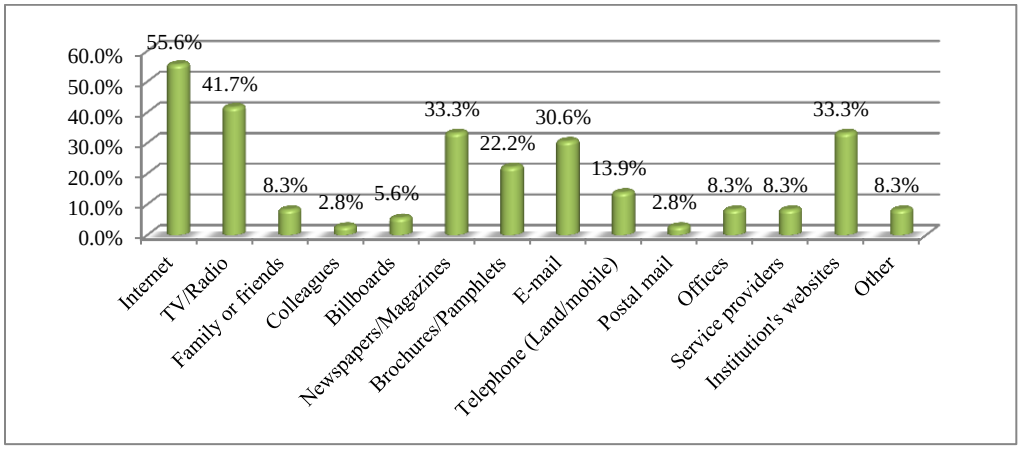


** Total responses does not equal n as this question was a multiple-choice multiple-response question. Percentage was calculated using the frequency count per category divided by n.*

It is clear from the responses received that more than one communication media platform required to market such an event. Of the media listed in Figure 2 above, institution's website, newspapers and magazines and the internet proved to be the most suitable when marketing this type of event. In the case of the winners, the same apply as family or friends and colleagues who often informs entrants, are typically those also reached by the mentioned most suitable media. This however does not imply that other communication media platforms are not important.

As an additional question, winners were asked what promotional material they were exposed to for the competition.

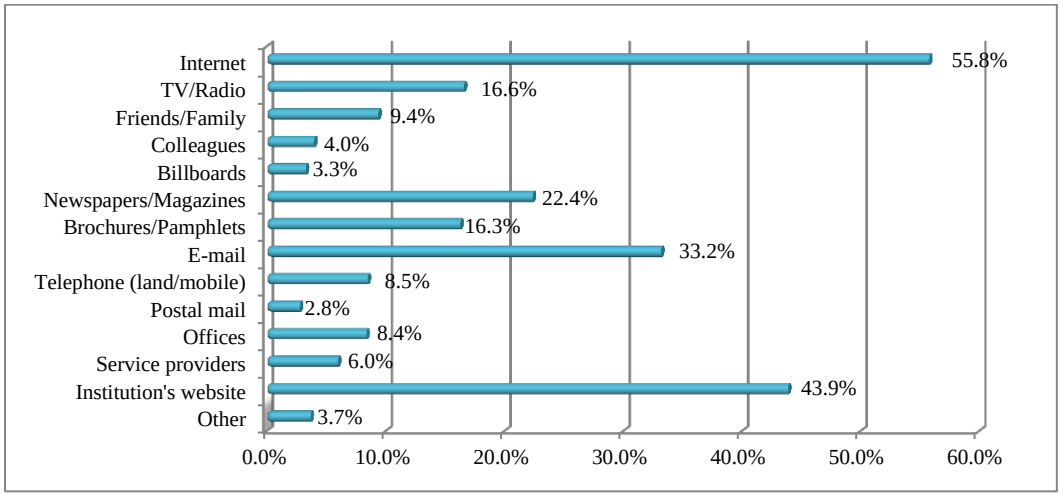
Figure 4
WHAT PROMOTIONAL MATERIALS WERE YOU AS A WINNER EXPOSED TO WHEN ENTERING THE BPC? (N=36)



Whereas the previous question asked respondents where they first heard about the BPC, this question asked the winners which were the mediums that they were the most exposed to. A total of 55,6% (20) stated the Internet, 41,7% (15) stated radio and television, 33,3% (12) stated the newspaper and magazines as well as the institutional website respectively, and finally 30,6% of the respondents (11) stated that they experienced exposure via e-mail.

Entrants to the competition were also asked which promotional material they were exposed to throughout the BPC. The results were similar to those of the winners, with the Internet being the main source of information (55,8% or 539) followed by the institutions website (43,9% or 424). The main difference was that entrants received promotional material more from e-mail (33,2% or 321) than from newspapers and magazines (22,4% or 216) as indicated below. The promotional material to which entrants were the least exposed to were postal/mail (2,8% or 27), billboards (3,3% or 32), and colleagues (4% or 39). These results can be viewed in figure 5.

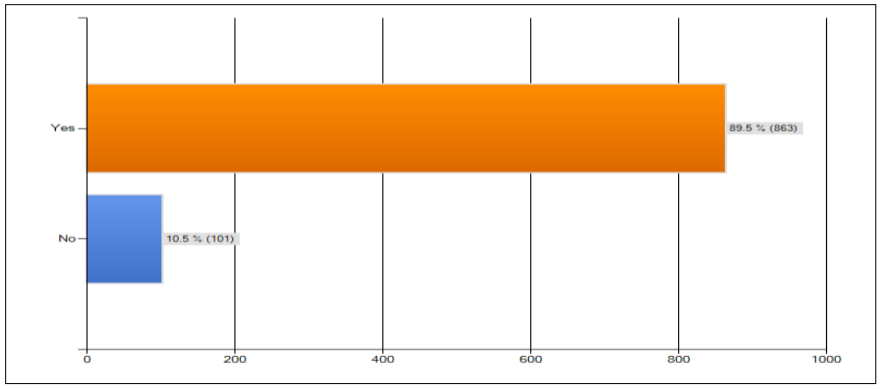
Figure 5:
WHAT PROMOTIONAL MATERIALS WERE YOU AS AN ENTRANT TO THE BPC EXPOSED TO? (N=966)



The responses to this question are a good indication as to the media platforms that can be effective in marketing competitions and events to existing and potential SMMEs.

In the last question, winners and entrants were asked if they had access to the specific institution's website for more information and if they found it to be useful. Indicated in figures 5 to 8 are the results of these questions. In total, 964 entrants answered this question.

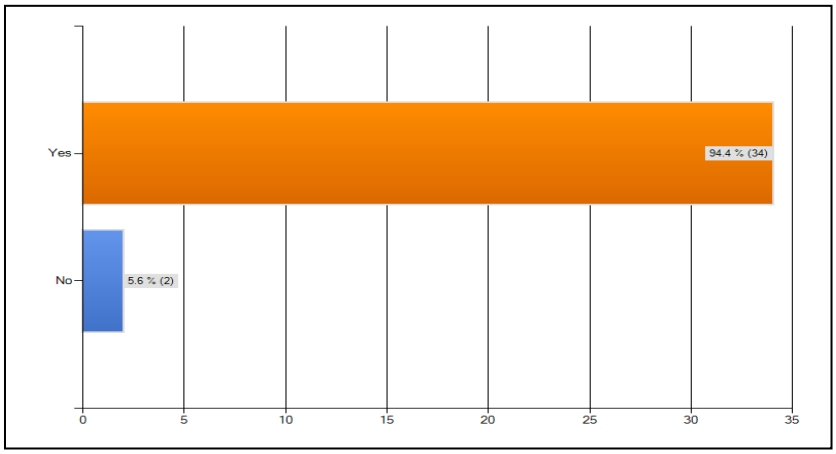
Figure 6
ACCESS TO INSTITUTION'S WEBSITE: ENTRANTS (N=964)



The finding indicates that 89,5% or 863 of the entrants had accessed the institution's website, while 10,5% or 101 of entrants did not do so.

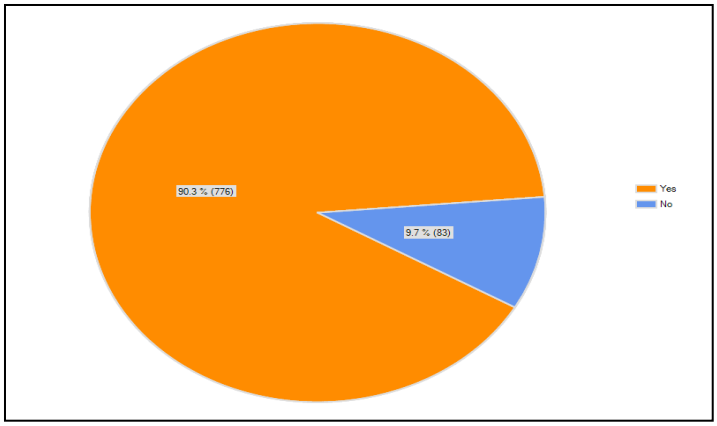
The responses for winners were also overwhelming that the website was accessed with 94,4% or 34 indicating that they did access it, and only 5,6% or 2 who did not.

Figure 7
ACCESSED THE INSTITUTION'S WEBSITE: WINNERS (N=36)



The respondents that indicated that they had visited the institution's website were then asked whether the website was user-friendly or not.

Figure 8
USER-FRIENDLINESS OF INSTITUTION'S WEBSITE: ENTRANTS (N=859)



The findings show that the majority of entrants found the institution's website easy to use (90,3% or 776), while 9,7% (or 83) of respondents felt that the website was not user-friendly. The responses from winners were very much in line with the results of entrants and 94,4% were of the opinion that it is user-friendly. This is a very important aspect as it is a clear indication that the website is a valuable tool to people and that it is adding value. Respondents of both groups gave the following reasons as to why they found the website to be unfriendly:

1. Had access to the internet, but the website was unavailable.
2. The site is unstable and keeps 'bombing' out.
3. There is not a lot of information that explains in detail what to do or where/how to do it.
4. Struggled to get the right information.
5. The menu/graphic interface does not always direct you to the correct information - maybe because the terminology used in labelling of the graphic buttons is too technical and cluttered.
6. Not enough information.
7. The website should contain more information on different industries, industry sizes, players, where and how to obtain certain information.
8. Not easy to understand and not up to date. Most contact details on the site are not working.
9. Pictures and documents are hard to download on slow Internet in rural areas.
10. Struggled to submit business plan electronically.
11. The website is not interactive.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study the following conclusions can be made:

1. The Internet (39,1%), the institution's website (32,6%), and newspapers/magazines (23%) were regarded as the most popular communication media platforms from which entrants were made aware of the BPC. This serves as a strong indication of media that can be used in the marketing efforts.
2. The majority of the entrants (55,8%) indicated that they were exposed to the Internet throughout the competition which serves as a further endorsement of this media as a marketing tool.
3. A third of the entrants (33,2%) indicated that they used e-mail as a source of information throughout the competition, while the majority of respondents (89,5%) indicated that they had accessed the institution's website on a regular based during the competition.
4. Of the entrants who had accessed the institution's website, 90,3% indicated that they felt the website was user-friendly and easy to use. This is encouraging as it implies that if the website is user friendly more entrants or potential entrants will use it to good effect.

5. The research indicated that winners (30,6%) had been exposed to the institution's BPC via family and friends, 22,2% via radio or television, and 19,4% via the Internet as well as institution's website. It is a worrying fact many entrants were only made aware of the BPC via others and were not directly exposed to the BPC.

Based on the findings of the research the following recommendations can be made:

1. From the findings of this project it is recommended that the Internet, the institution's website and newspaper/magazines be optimised as promotional platforms for the marketing of events such as the BPC's as they proved to be the media consulted by the majority of respondents. These methods can be synchronised in order to achieve the maximum effect as a combined marketing effort.
2. As there are a large number of potential entrants that may not have access to the Internet alternative options can be considered. These options can me to mail invitations for entering the competitions; to use mobile phone invitations via SMS or even direct calls to invite participation and to ensure all respondents receive the same information related to the competition.
3. Social media is becoming an important phenomenon in everyday life and the growth in the number of people that have access to social media sites such as Facebook or Twitter, implies that institutions should focus more on the use of these media in future and ensure that it is used extensively to communicate to the market when running a competition. Due to a BPC being a professional initiative, one would expect a professional social network such as LinkedIn to be included in the marketing actions. The use of LinkedIn should therefore form an integral part of any such event marketing in future in order to reach the broadest possible base of potential entrants.

AREAS FOR FUTURE RESEARCH

This study focussed only on some aspects related to business plan competitions but has also unearthed a number of other areas for future research in this field. Some areas that can be investigated are highlighted below.

The reason why entrants enter a business plan competition should be explored further in order to obtain more detailed information as to what motivates entrepreneurs to enter these competitions except for funding purposes. It is generally accepted that entrants aim to secure funding for a new venture, but this may not always be the case or the main motivating factor. There may be other reasons why they enter these competitions such as to expand their business, to conduct a proper market analysis which they might not have done, to explore new areas of possible business, or simply because they were intrigued by the competition. These issues can be investigated and used in future marketing drives.

The information needs of entrants are too often assumed to be known without proper investigation of the real needs of potential entrants. Many entrants of these competitions enter in the hope of securing useful information that can assist them in starting a business and not necessarily to try and win the competition. In such a case it would be useful to explore what type of information these entrants are looking for and how this correlates with what is being offered in such a competition.

Follow up from the providers of the business plan competition among all entrants is an area that needs serious attention. Business plan competitions usually lead to a large number of entries and a huge database which can be utilised in various ways. The question that arises is to what extent these databases are mined by the respective organisers. These databases can be a source of leads to additional services such as financing, consulting, workshops and so forth. The fact that an entrepreneur participated in such a competition implies a potential need for additional

services. This can be explored further and even lead to the expansion or fine tuning of these competitions.

Division between types of entrants to these competitions need to be investigated further. It would be interesting to see to what extent the information needs differ between existing businesses and new start-ups that enter business plan competitions. There are definite differences in the needs of a start-up and an established business – which may justify either a two tier approach to competitions or to be more specific in the invitation to participate.

Lastly the use of applicable marketing media needs to be further researched. There are many ways to market a business competition and it is important that the level of sophistication of the targeted businesses or potential entrants be considered when marketing to them to enter a competition. The selection of the most suitable media should be based on research on the preference of entrants.

It is clear that much more research can be done in terms of the offering of business plan competitions and to make it more specific to either selected entrepreneurs or to include a broader base of entrants. This type of research has not been done in the past and can make a meaningful contribution to the body of knowledge regarding the offering of BPC's as well as other types of competitions and events.

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AN EXPLORATORY STUDY OF ENTREPRENEURSHIP EDUCATION IN MULTI-DISCIPLINARY AND MULTI-CULTURAL ENVIRONMENT

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ABSTRACT

Global entrepreneurship has recently gained much attention around the globe as a driving force of business expansion and economic growth. Experiential learning has been emphasized in entrepreneurship education in a multi-disciplinary and multi-cultural environment. This research re-examines the role of diversity and reports an entrepreneurial initiative as an exploratory study of a replicable and scalable education model for higher education institutions. The findings from this program confirm that entrepreneurial learning has been very effective when students from diverse cultures and disciplines are immersed in intensive two-week period programs.

A two-week intensive immersive learning in entrepreneurship was conducted in 2014 and 2015 with 177 undergraduate and graduate students from six countries. The program focused on experiential entrepreneurship learning in multi-disciplinary and multi-cultural environment. Examining the observational data and outcomes from entrepreneurial start-up exercise and feedback, we find that: Students have bonded rapidly and committed to their relationships with the classmates through social media and other collaborative tools; Experiential learning has become more engaging when real life projects were assigned; Students have become more interactive and motivated, requiring less time on lectures and more time on guidance of the projects, and; their learning retention measured in terms of interest beyond the two weeks remained high. Throughout the four distinct classes held in India and the US, we continuously evolved the curriculum and developed a model that we believe will be replicable and scalable, and also complementary to other classroom educational models. We offer suggestions for developing or improving an effective entrepreneurial educational program, as well as highlight limitations of current research and directions of future research.

INTRODUCTION

The interest in entrepreneurship and thus, in entrepreneurship education has increased substantially in last 2 decades. Boyle (2012) observed that the new economy and the opportunities perceived for new ventures in the areas of knowledge and service have contributed to the groundswell of interest and program development in entrepreneurship education. The entrepreneurship education has increased substantially in last 2 decades, with over 1,500 colleges and universities offering some form of entrepreneurship education. Charney and Libecap (2014) conclude that, because there is no set approach to entrepreneurship education and because entrepreneurship generally is outside traditional discipline boundaries, it has been possible to experiment with pedagogy and curricula. Winkle (2013) in introducing The Changing Face of

Entrepreneurship Education stated that "Some educators focus on developing a skill set in their students. Some focus on developing a mind-set in their students. Some take a more holistic competency approach, or a tool box approach, or some similar verbiage. Whatever the approach, whatever the content, the fact is that entrepreneurship exists in the pantheon of education around the world." Additionally, research and education on entrepreneurship has recently gained much attention around the globe. Promoting and nurturing entrepreneurial spirit and global orientation is well recognized as a driving force of business expansion and economic growth for both advanced and emerging or transitioning economies. Exploring the domain of international entrepreneurship research in the twenty-year period of 1989–2009, Jones, Coviello, and Tang (2011) conclude that international entrepreneurship has rich, diverse, and coherent potential for future research and theory development. In a case study of entrepreneurial firms operating in Ghana, Boso, Story, and Cadogan (2013) confirm that high levels of entrepreneurial orientation significantly improve the business performance when social and business network ties are well managed.

Globalization of entrepreneurship has become a phenomenal, emerging trend in recent decades; for example, entering the global market took just five years for Amazon, while thirty years for Wal-Mart, since their enterprises began (Le and Rathlauf, 2008; Tarafder, 2010). For successful product development and market entry, entrepreneurial ventures require collaborative, inter-disciplinary efforts in the early stages of their business start-ups. In their survey study of ninety-eight business owners, Gielnik, Frese, Graf, and Kampschulte (2012) confirm that divergent thinking has significantly positive impact on venture growth through effective generation and screening of original business ideas. Educational concepts and frameworks, such as Business Model canvas and Lean Start-up, emphasize a collaborative and non-sequential process to take new ideas to reality, since adding the global dimension to the venture is a challenging task for both the academic research and industry practice. Experiential learning has also been emphasized in entrepreneurship education in a multi-disciplinary and multi-cultural environment.

This research re-examines the role of diversity in the multi-disciplinary and multi-cultural learning process and reports on entrepreneurial initiatives as an exploratory study of a replicable and scalable education model for the higher education institutions. We begin with a brief review of the literature on the role and impact of membership diversity in entrepreneurship education, specifically the process and outcome of group projects by a group of undergraduate and graduate students with multicultural and interdisciplinary backgrounds. Second, we streamline the research questions for this exploratory research on entrepreneurship education, specifically on the associations between the membership diversity and project performance. Third, we introduce the global entrepreneurial programs initiated at the business school of a leading U.S. public university, University of Massachusetts Lowell, focusing on the structure, contents, and outcomes of the program. The key findings from this program were: For the 177 undergraduate and graduate students from six countries going through four programs in 2014 and 2015, entrepreneurial learning has been most effective when students from diverse cultures and disciplines are immersed in an intensive two-week period programs; Students have bonded rapidly and have continued the relationships with their classmates, and most instances expanded beyond that, through social media and other collaborative tools; Experiential learning has become more engaging when real life projects are assigned; Students learned from each other and became more motivated, requiring fewer lectures and more faculty guidance, and; Their learning retention measured in terms of interest beyond the two weeks remained high. We discuss the implications of our program development and implementation for the effective entrepreneurial educational practice, and then

conclude with a summary of the contributions and limitations of current research, and the directions of future research.

A BRIEF LITERATURE REVIEW

Research on entrepreneurial orientation, business start-up, and education has intensively examined the role of diversity for enhancing the performance of entrepreneurship (Donelan, 2003; van Burg and Romme, 2014). For example, Gielnik, et al. (2012) report in their study of survey data from business owners that divergent thinking has significant effect on venture growth through generation of original business ideas. Wincent, Thorgren, and Anokhin (2014) confirm in their study of strategic network organizations that functional diversity among network board members promotes network-level entrepreneurial orientation. In a study of entrepreneurial firms operating in Ghana, Boso, et al. (2013) also observed that aligning high levels of entrepreneurial orientation and market orientation improves business performance, particularly when social and business networks are well developed and managed.

In a literature review of international entrepreneurial orientation, Covin and Miller (2014) conclude that international entrepreneurship has moved through the process of differentiation, mobilization, and legitimacy building. In a study of 194 publicly held new ventures involved in strategic alliances, Milanov and Fernhaber (2014) found that internationally experienced domestic partners positively influence the new venture's international intensity, particularly when substituting for the lack of new venture team's international experience, or when complementing the insights about foreign markets received from foreign alliance partners. In a multi-firm study of new venture internationalization, Autio, George, and Alexy (2011) identify the capability development and learning implications of internationalization as the fundamental character of organizing processes in start-ups, while in a study of longitudinal data on 138 small and medium- sized enterprises, Naldi and Davodsson (2014) report that the acquisition of knowledge from international markets fuels growth through in during the period of 1989–2009 and conclude that international entrepreneurship is growing in coherence and is rich in theoretical potential.

This trend raises interesting questions: Is the present higher educational model offering adequate education that covers multi-cultural and inter-disciplinary content? Is the traditional classroom education model adequate, where exposure to multi-cultural groups may not be longer lasting? Is there a complimentary model that can meet the growing needs of budding entrepreneurs around the globe? Do the typical management strategies for global market entries require an entrepreneurial orientation?

There is a lack of research to addressing above questions. Finkle, et al (2009) has addressed an immersive, collaborative entrepreneurship education for regional development in Northeast Ohio. Lee, et al (2006) have addressed students attitude towards entrepreneurship education in 4 countries. Key finding include stronger attitude towards entrepreneurship education in less matured (Fiji) economies versus more matured economies (US). Experiential- vs. book-learning is prominent in US, Korea and Fiji compared to China. Global entries were more concluded in Korea and China. Lans, et al (2013) have studied inter-disciplinary and have noted importance of team and diversity in greater understanding of entrepreneurial aspects.

RESEARCH QUESTIONS

Functional Diversity in the Interdisciplinary Educational Environment

The association between membership diversity and the functioning of a work group has been reported as coming from high degree of heterogeneity in the backgrounds leading to diverse approaches to opportunity identification, situation analysis, problem solving, and decision making (Donelan, 2003; Gielnik, et al. 2012). The functional heterogeneity in experience or skills facilitates group work by providing diverse task-related knowledge and expertise (Simons, et al. 1999; Yoon, 2012), despite the possibility of increased conflict among the group members at a high level of functional diversity (Harrison, et al. 2002; Wincent, et.al. 2014). Diversity in knowledge strengthens a group's ability to evaluate environment, generate alternatives, and assess outcomes (Gomes, et al. 2003). In an entrepreneurship educational program whose participants are mostly international students, the high degree of diversity in the academic and industry backgrounds and functional areas of expertise is expected to support the following proposition backed by the theoretical reasoning and empirical findings in the literature.

RQ 1: Diversity in functional background among the members of a learning and integration oriented work or study group is positively associated with the quality of interaction and learning of participating group members.

Demographic Diversity in the Multi-cultural Educational Environment

Attributes of demographic diversity have been reported as being related to the functioning of a work or study group (Sarker, et al. 2003), often situation specific, i.e. varying across the project type and degree of diversity (Cox, et.al. 1991; Watson, Kumar, and Michaelsen, 1993). In an entrepreneurship educational program whose participants are mostly international students, a high degree of diversity in the cultural backgrounds and many other aspects of demographics is expected to support the following proposition.

RQ2: Diversity in demographic and cultural characteristics of a learning and integration-oriented work group has positive association with the quality of interaction and learning of the participating group members as well as the outcome of the project.

Interactive Learning of the Members and Quality of the Group Project

Effective interaction among the members of a work group is the key for enhancing the learning of individual members and completing the group project successfully (Song and Dyer, 1995; Autio, et al. 2011). Interactive effort helps a work group achieve a better performance through effectively monitoring how the internal and external forces evolve, estimating how changes in those forces would affect the progress and outcome of the project, and deciding how to modify the project schedules or the approaches to the project (Gomes, et al. 2003; Boso, et al. 2013). Page and Donelan (2003) argue that the interaction among the group members is critical for building a learning culture and enhancing the educational achievement and that, when the members of a work group share common goals and values, diversity is particularly beneficial to group work (Jehn, et al. 1999). In an entrepreneurship educational program whose participants actively interact with the other members, the learning outcome of the individual members is expected to support the following proposition.

RQ3: The quality of interaction among the members is positively associated with the quality of individual learning as well as the quality of the group project.

Previous research has suggested that the success of a work group hinges upon the group members' ability to employ their differences in knowledge and perspective (Jehn, Northcraft, and Neal, 1999). A work group can effectively integrate the results of individual efforts through mutual learning among them, i.e. embracing others' knowledge and experience rather than avoiding disagreements (Gruenfeld, Mannix, Williams, and Neale, 1996; Milanov and Fernhaber, 2014). The literature in education has reported that group work is an important learning tool (Bowen, Bok, and Burkhart, 1999; Gurin, et al. 2002; Thomas and Ely, 2001). In an entrepreneurship educational program whose participants are highly learning oriented, the interdisciplinary and multicultural learning environment is expected to support the following proposition backed by the theoretical reasoning and empirical findings in the literature.

RQ 4: The quality of individual learning from group work is positively associated with the quality of the group project.

When individuals participate in group work, in order for the outcome to be positive, a synergy must develop between the group members, essentially turning them from a group into a team (Kemery & Stickney, 2014; Lawford, 2003). Elenurm (2013) reports universities that bring students with multi-disciplinary and cross-cultural backgrounds together find opportunities for increasing the collaboration and new entrepreneurship ideas. Cox, Lobel, and McCloud (1991) note that students with different multi-cultural backgrounds need time to understand ways to collaborate with each other since they bring different perspectives to the group, influenced by their cultural knowledge. Communicating this information to group members prior to the process may help them better understand their differences at an earlier stage.

Impact of Non-traditional Classroom

One area of research interest understands the impact of non-traditional classroom education, specifically the immersive entrepreneurship education in a multi-cultural, multi-disciplinary setting in which social interaction may influence both the overall learning and the quality of the group project. Maritz and Brown (2012) state, "Because of the disadvantages of traditional methods in teaching the inherently practical and creative process of entrepreneurship, many 'non-traditional' methods of teaching have arisen and are becoming more common" (p. 243). Morris, Webb, Fu and Singhal (2013) observed that entrepreneurship courses that focus heavily on teaching business basics may be underemphasizing the development of critical capabilities in such areas as opportunity identification, risk mitigation, or resource leveraging. Developing entrepreneurship education programs with two or more components, including experiential learning, short-term, interdisciplinary, multi-level, and multi-cultural, is beginning to surface. There is a need to gain a better understanding of the methodology for these programs, along with the format and structure of operating such programs.

Lans, Oganisjana, Mäks, and Popov, (2013) in their case study of a 10-day short-term summer program, report that heterogeneity contributed to learning, but also note that it was not a smooth process. Groups, due to their heterogeneity, experienced some confusion of understanding in the context of entrepreneurship education. Students were not always certain where their knowledg and expertise fit into the projects, thus facilitators had to coach students on sharing their expertise within their groups. Lans, et al. note the need for groups to find a solution to challenges in the areas of problem solving and decision making, too. These challenges can be guided through the entrepreneurial process by the instructors whose function is transformed from

lecturer to facilitator. In addition to a changing role of an instructor, experiential nature of the education leads to a more positive outcome. Substantial research in an experiential learning has shown promising results in enhancing students' skills and understanding of the entrepreneurial process. Niehm, Fiore, Hurst, & Sadachar (2015) had students involved in experiential service-learning community projects and found students skills enhanced in the process. Malach & Malach (2014) have incorporated experiential learning in the Principles of Entrepreneurship in the form of "Start Your Own Business Assignment" and found students deriving benefits of such education approach.

In an entrepreneurship educational program whose participants are part of an immersive approach, the interdisciplinary and multicultural learning environment is expected to support the following proposition.

RQ5: An immersive approach to a multi-disciplinary and multi-cultural environment may help in achieving an anticipated outcome(s) of entrepreneurship education.

PROGRAM DEVELOPMENT

Background

We started the multi-disciplinary global entrepreneurship education program with a pilot in winter 2014 between UMass Lowell (USA) and BVB College of Engineering & Technology in Hubli, India. This program was very successful based on students' feedback and potentials for follow-up entrepreneurial ventures. It was followed up with another program in summer 2014 when students from India came to the US, and again in winter 2015 when US students went to India. In all instances, students' feedback was very encouraging, and a decision was made to continue with an attempt to make the program sustainable. In summer 2015, we expanded the program to include students from Japan, China, Thailand, and Guyana, in addition to those from India and the US. The following describes the evolution of this experiment and how it has reached a level of maturity and sustainability.

Winter 2014 Hubli, India

Nine students from UML participated in this first program: 4 MBA and 2 undergrads from the business school, and one graduate and 2 undergrad from the nursing school. From the host college in India, 30 students representing 9 engineering disciplines joined: 5-Robotics; 4 Civil; 3 Industrial; 6 Comp Science; 9 mechanical, and; 3 others. All 39 students stayed at the Scholar's House on campus, a facility with comfortable accommodations and amenities. Students had their meals served at the House, enjoying typical Indian dishes. From the time students arrived in Hubli on January 5th, they were participating and engaged until leaving Hubli on January 16th! Students learned the principles of innovation and entrepreneurship in very interactive class discussions, including case studies; basic concepts; global entrepreneurship, and; process and entrepreneurship components such as marketing, financing, business model, building teams, and most importantly, presentation skills.

A typical day included morning discussion and instruction about the basics of entrepreneurship (concepts, examples, process, etc.) followed by afternoons of exercises, guest speakers, and projects. See Table 1.

Class Exercise: The class exercise covered the Ideation process where teams of 4-5 students were asked to choose familiar products (in daily use), identify primary and secondary applications, basic needs served by the product, problems or deficiencies in the product, and generate ideas to solve them. They presented their work to the class, during which we were able to see how the teams were beginning to develop collaboration skills and early relationships.

Table 1
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD
WINTER 2014 DAILY ACTIVITIES SCHEDULE

Day	Morning		Afternoon	
	Activity	Faculty	Activity	Faculty
Jan 3	Leave US			
Jan 5	Arrive in Hubli		Orientation/Introduction	BVB/UML
Jan 6	Introduction to Innovation & Entrepreneurship	BVB/UML	Class exercises (groups of 3 to 4 students)	BVB/UML
Jan 7	Lecture: Entrepreneurship in Global Economy	UML	Lecture: Entrepreneurship in Global Economy – Focus on India	BVB
Jan 8	Forms of Entrepreneurship	UML/BVB	Forms of Entrepreneurship	UML/BVB
Jan 9	Essentials of entrepreneurship	UML	Class exercises (groups of 3-4 students)	BVB/UML
Jan 10	Entrepreneurship process	UML	Class exercises (groups of 3-4 students)	BVB/UML
Jan 11	Venture planning, implementation, growth & management challenges	UML/BVB	Explore Hubli; cultural visits	
Jan 12	cultural visits			
Jan 13	Field visit (AkshayaPatra)	BVB	Class exercises (groups of 3 to 4 students) – dealing AkshayaPatra	BVB/UML
Jan 14	Filed visit (TBD, possibly a technology company)	BVB	Class exercises (groups of 3 to 4 students) – dealing specific organization/company	BVB/UML
Jan 15	Students complete their projects	BVB/UML	Student feedback/brainstorming	BVB/UML
Jan 16	Final session-wrap-up	BVB/UML	Travel to US	

Technology Commercialization Project: Students worked on Technology Commercialization projects which were based on students' capstone work, from the US and from India. Seven projects were covered: Robotic Feeding Arm; Water Purification; Text-to-Speech; Sensory Driving Simulator; Home Automation; Plant Disease Identification; and Service Robots. US students were teamed with India students. They were given instructions on what to evaluate, how to structure their work, using Business Model Canvas methodology; and how to prepare a report and presentation with their recommendations. Students worked in-class and outside class, spending many hours researching, analysing data, discussing the project, sharing ideas, and having fun! They bonded so well, as if they had known each other for ages! Students made their presentations on the last day of this program. This was a highlight of the program, as students presented with such confidence and enthusiasm. There was a marked difference between their first day presentation and their last day final presentation. It was very evident that they not only grasped the basics of entrepreneurship, but also learned how to work in teams and communicate in a team environment comprised of members from a variety of functional backgrounds.

Guest Speakers: Students had an opportunity to listen to several guest speakers who were all entrepreneurs having established their businesses within BVB College incubation facilities or outside BVB College. These businesses included solar power, biologics and signal processing.

Field visits: Students had an opportunity to visit several technology companies, social organizations and cultural sites. These field visits further enriched their learning, and offered an additional opportunity for the students to bond together. See Table 1.

Summer 2014: Lowell, MA

The Program was an intensive 2-week learning experience held at the University of Massachusetts Lowell. Students worked on 7 projects including 3 from UML engineering, 1 from BVB, 2 from M2D2 and one from CVIP. 30 students participated in the program; 14 from BVB College (all engineering) and 16 from UML (14 businesses, 1engineering and 1 Nursing). See Table 2.

Table 2
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD
SUMMER 2014 DAILY ACTIVITIES SCHEDULE

Day	Morning Activity 9:00-12:00	Afternoon Activity 1:30-5:00
6/13		BVB students arrival
6/14	UMass Lowell Campus Tour	Visit to downtown Lowell
6/16	Open	Orientation/Introduction 2 hours, including dinner at Fox Hall
June 16 Mon	Welcome – Dean MSB Session 1 – What is Entrepreneurship?	Class exercises (groups of 3 to 4 students) Class Exercise: Idea Generation template
June 17 Tue.	Group project Case Study: Clocky: The Runaway Clock Guest Lecturer: Investments	Guest Lecturer: Managing Teams UML/BVB Projects (Group of 3-4 students) Guest Lecturer: Market Research Resources
June 18 Wed.	Session 2- Entrepreneurship in Global Economy and Entrepreneurship Forms Session 3 – Forms of Entrepreneurship Guest Lecturer: Marketing	UML/BVB Projects (Group of 3 to 4 students) Guest Lecturer: Presentation skills
June 19 Thu	Session 4 - Essentials of Entrepreneurship Case Study: Rock Health Visit to iRobot (Bedford, MA)	Visit incubators **Group Project**: Project review, scoping, market definition
June 20 Fri	**Group Project**	Guest Lecturer: Innovation 2:00 PM Field Visit: NERVE UML
June 21	BEACH TRIP	
June 22	Explore Boston	
June 23 Mon	Session 5 Entrepreneurship Process Guest Lecturer: Communications	Group Projects (groups of 3 to 4 students)
June 24	Field Visits to MKS (9 to 11AM)	Group Projects
June 25 Wed	Session 6 – Venture Planning, Implementation, Growth Management, and Challenges Case Study: How Venture Capitalists Evaluate Potential Venture Opportunities	Group Projects
June 26	Students complete their projects	Group Project – Final Write-ups
June 27	Student Feedback	BVB Students leave for NY

The learning experience included the following aspects:

1. Class room discussions of innovation and entrepreneurship frameworks, concepts and examples
2. Guest lecturers discussing Building and Managing teams, Entrepreneurial Marketing, Communication and Presentation Skills
3. Ideation exercise used as both an ice-breaker and for problem solving skills development
4. Visiting 2 technology companies (iRobot and MKS Technologies)
5. Visiting area incubators (Cambridge Innovation Center, Greentown Labs and Artisan Asylum)
6. And, most important, student group projects dealing with the evaluation of commercialization potential of student, inventors and faculty projects.

Winter 2015: Hubli, India

There were 17 students participating from UML, including 6 business graduate, 4 business undergraduate, 2 engineering doctoral, 1 nursing doctoral, 1 computer science undergraduate, 2 engineering undergraduate, and 1 economics undergraduate. From the host college, 33 undergraduate students joined representing 9 mechanical engineering, 8 electronics and communication, 5 biotechnology, 4 Information sciences, 4 computer sciences, 2 instrumentation, and 1 automobile. There were 9 teams formed consisting of 5-6 students each. These teams spent the first two days at different social organizations, technology companies and one hospital. The purpose was to understand these organizations' processes and challenges. Teams were required to articulate problems or opportunities within these organizations. The remaining days were spent on going through basics of entrepreneurship and working on these problems. A typical day included morning discussion and instruction about the basics of entrepreneurship (concepts, examples, etc.) followed by afternoons of projects. Each day the students were given tea breaks in the morning and afternoon sessions, along with eating lunch together. This time allowed the teams to increase their bonds between one another, and also provided an opportunity for the students to discuss the various projects, including ones they were not working on during the program. See Table 3.

Table 3
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD
WINTER 2015 DAILY ACTIVITIES SCHEDULE

Day	Morning Activity	Afternoon Activity
Dec. 31, '14	Leave US	
Jan. 1, 2015	Arrive Delhi	
Jan. 2& 3	Sightseeing Delhi and Visit Taj Mahal (Agra)	
Jan 4	Arrive in Hubli Teams and Opportunity Centers (OC) announced	UML students shall arrive from Delhi. Orientation - 2 hours
Jan 5	Visit to OC's, Introductions, Organization Study, Seeking Opportunities	
Jan 6	Finalizing 2-3 potential opportunities to work on	
Jan 7	Introduction to Innovation & Entrepreneurship Technology projects discussions	Class exercises (groups of 3 to 4 students) Presentations
Jan 8	Forms of Entrepreneurship	Group Projects
Jan 9	Essentials of entrepreneurship; Case Study	Group Projects
Jan 10-11	Entrepreneurship process; Case Study	Explore Hubli; cultural visits
Jan 12-14	Venture planning, implementation, growth & management challenges	Group Projects
Jan 15	Students complete their assigned projects	Presentations
Jan 16	Final session-wrap-up	Travel to US

Summer 2015: Lowell, MA

After receiving an introduction to entrepreneurship including a few examples, students were divided into groups to go through an Ideation Process. It was a quick entry into how to work in a diverse group. The students had to present their ideas to the class of 55 students and faculty: problems, ideas to solve, and how! One would not know that these students barely knew each other, had difficulties in communication, and never had any exposure to ideation. Students learned from UML faculty guest speakers on relevant entrepreneurship topics such as Innovation and Creativity; Team Building; Market Research; Lean Start-up; Financing Ventures; Protecting Intellectual Property; and Communication and Presentation Skills. These lecturers and their discussions were useful to students in understanding and applying basic concepts to their project work. Students also received important guidance from other UML resources. A UML Librarian helped students with market/industry research and databases. Business School's PhD students guided them for the group projects. Collectively, these special topic discussions motivated students to start thinking of taking their venture ideas to the next level (Tick Remover, Playable Therapy and Driver Pal). Students worked on several technological projects from different sponsoring companies and organizations. In most cases, they focused on business concept validation, applying concepts discussed in class including the Business Model Canvas, marketing research, and lean start-up. See Table 4.

Table 4
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD TECHNOLOGY COMMERCIALIZATION PROJECTS

Project	Sponsoring Organization
Customer Acquisition for DDG	Disease Diagnostic Group
Knee stim	Articulate Labs
TODDD™ -Topical Ophthalmic Drug Delivery	Amorphex Therapeutics
Gel4Med	Gel4Med LLC
Driver-Pal	BVB Hubli Student project
Net Lane	UML Engineering student project
Assistive Navigation for the Visually Impaired	UML Engineering student project
E-Tongue	UML Faculty Research
High Quality Mobile Audio Processing System	UML Engineering student project
Playable Therapy	Difference Maker - UML Student Project
Tick Remover	Difference Maker - UML Student Project

Each iteration of the program represents an improvement of the content and timetable of the program. As seen in Table 5, the class sessions were refined to include additional guest lecturers, providing a larger pool of expertise and network connections to industry. Students were able to live together in the residence life housing, take all their meals together, meet following the class to work on their projects, and explore the area surrounding Lowell. University of Massachusetts Lowell often invited students into their homes, prepared meals for them to share, and took international students to visit local areas of interest and for shopping. It was during this shared time the faculty began to see how engaged students became with each other. Without providing for free time in the schedule, students might not have become had the opportunity to get to know one another on a personal level. This became an important aspect of the program, and one that was valued as the program grew.

Table 5
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD
SUMMER 2015 DAILY ACTIVITIES SCHEDULE

Day	Morning Activity (9:00-12:00)	Afternoon Activity (2:00-5:00)
6/12 Fri		Students arrival
6/13	UMass Lowell Campus Tour	Visit to downtown Lowell
6/14	Open	Orientation/Introduction
June 15 Mon	Welcome by the Dean (MSB) Session 1 – What is Entrepreneurship?	Guest Lecturer: Building and Managing Teams; Class Exercise: Idea Generation
June 16 Tue.	Class exercises–Presentations; Projects; Introduction to Business Model Canvas	Guest Lecturer: Market Research resource Group projects
6/17 Wed.	Session 2- Forms of Entrepreneurship Guest Lecturer: Market Research	Guest Lecturer: Lean Start-up Group Projects
June 18 Thu	Session 3 – Essentials of entrepreneurship Guest Lecturer-Innovation & Creativity	Group Project 4:00 – 6:00 Meet and Greet event (University Crossing)
June 19 Fri	Session 4 - Entrepreneurship process Guest Lecturer: Financing Ventures	Group Project 3:00-5:00 PM Innovation Hub tour
SAT	Beach Trip Planned	
SUN	Explore Boston	
June 22 Mon	Session 5 Venture planning and challenges; Group Projects	Group Projects
June 23 Tue	Tech Company Visits (MKS & iRobot)	2:30- 4:00 Guest speaker: Business Law and Intellectual Property; Group Projects
June 24 Wed	Guest Lecturer: Professional Communications; Group Projects	Group Projects
6/25	Students complete their projects 10 AM - Student presentations	
June 26	Student Feedback Reflection Paper due	Open Farewell Dinner!

METHODOLOGY

A semi-formal method was used to collect student's feedback, which included anonymous surveys, open ended feedback sessions, project output feedback, and reflection papers. Anonymous and voluntary surveys asked students about their 2-week learning experience in terms of entrepreneurship content, understanding of basics of entrepreneurship, team and collaboration, inter-disciplinary and multi-cultural environment and peer learning. At the end of 2 weeks, an open-ended feedback session was held with host institution academic and administration leadership. There were occasions when leading entrepreneurs were present encouraging student questions and feedback.

Student projects were acquired from technology-based ventures. We provided these sponsors with student output and received their comments. These methods have provided us with considerable inputs to design a more formal approach for future programs along with several critical observations from these programs to-date. Faculty was very actively engaged in organizing, delivering and guiding students during our 4 sessions. Students were required to prepare Reflection Papers after they completed the 2-week program. The focus of these papers was to ascertain what they did take away from the program and how it will affect them in their lives, going forward.

OBSERVATIONS

As faculty, we had an opportunity to observe students from the time they applied for the program until long after the program ended. Faculty members continue to have an interaction with many of past participants of all sessions. These interactions include both direct (e.g. email and meeting) as well as indirect, such as social media. This has provided us with key observations regarding students' entrepreneurship learning and motivations. Though there is a general awareness of differences in cultures among participants, these were not fully understood at the start of a session. The participants were quite uncomfortable at the start of a session, which is understandable, given that they had just assembled from different time zones and different environments. To overcome initial apprehension, we mixed the teams with students of different majors and nationalities, both in terms of their living arrangements and group formation. For example, for group projects, we made certain that there were at least three different countries represented, and one business student on each team. This was designed to encourage quick cultural mixing resulting in a very interesting and positive outcome. One of the first activities was to put the students through a team building activity, designed to facilitate student knowledge of each other. This enabled students to see that even though they came from a wide variety of backgrounds, they had many similarities. Students bonded rather quickly; socialized easily; and, from an academic standpoint, group projects were completed on time and as expected. They learned from each other and they shared their work as if they were in a real venture development. The faculty role became that of a guide and facilitator.

An almost equal gender ratio was interesting when observing group dynamic, especially when different cultures were present. We observed that though there were very minor noticeable reservations initially, that was quickly overcome as soon the group was engaged in group project activities. The project planning and work sharing task was, in most instances, without any issues. Where there were any initial concerns, they were immediately handled by students themselves with little or no faculty intervention. For example, female students from a culture where time has an important value quickly understood, and accepted, a different value in a different culture. A male counterpart did not even notice or care. In terms of inter-disciplinary dimension, at the beginning of the class, there was a temptation, especially from students with technical background, to jump right to the solution to a problem. As faculty, we needed to temper this, and coach them to look beyond solutions, initially. At the end of the program, there was a noticeable difference in the approach towards a systematic evaluation and selection process. This was in large part managed by students themselves, either through a graduate business student taking an active role, or with faculty guidance and facilitation.

At the start of the program a perceived imbalance between students with different disciplines was present in certain students' behaviour, which quickly diminished as they were engaged in group activities starting with the Ideation exercise on Day 1. It was important that students from all disciplines understand that each one brought different strengths and viewpoints to the process. By guiding the students through the process, we were able to help students gain confidence in their ability to provide value to the project. The class format created an increased level of interaction among participants; students who were initially shy to speak up were more motivated to participate as they saw others actively engaged, resulting in a more creative and productive situation. Since the class was offered as an elective and students received credit from their institutions, there was always an eye on what will be "graded". Students were at times more

concerned about that and thus attempted to divvy up tasks to meet final deliverables rather than attending to the quality of output. Through careful coaching by the faculty members, students were encouraged to engage with the total experience, and not focus solely on the outcome of a paper or presentation. This is not to say that these weren't important, but rather that students were reminded that the program was an "immersion experience" and their personal and academic growth throughout the program was highly important.

One of the best outcomes of this program is helping and watching the students become independent learners. Students are placed on team projects based on their interests, wherever possible. The team builder exercise in the beginning, as a way for students to begin to know one another, is quite important. When this is complete, students often indicate that even though everyone in their group is from another country, they have many of the same values and beliefs. This helps them feel more comfortable with their team, and increases the team cohesion. Though the teams experience Tuckman's (1965) stages of development: Forming, Storming, Norming, and Performing, in a relatively short period of time, the 24/7 aspect of the program is a key factor of the teams' overall performance.

Over the course of the two week program, students gain confidence and knowledge in their ability to solve problems. This isn't always a smooth ride, but as the students learn to "pivot" when necessary, and experience successes, they develop a greater sense of their ability to find solutions. This impacts how they perceive their ability to take what they are learning and carry it forward into their lives. As faculty, to watch this happen is an incredible experience, but like the students, it is not a smooth path for us, either. There are expectations and conflicts between team members that need to be sorted out. For many students, this is the first time they've had input on a project from multiple instructors. However, this allows the instructors the opportunity to remind students that this happens in real life, too. For some students, this is an "aha" moment, when the realization that what they've been learning in school, and what they are learning from the project, are connected. As faculty, we don't always get to witness this, and it is extremely satisfying to see a student experience this growth. Students worked on real life projects, some of which were sourced from medical device start-ups. We received feedback from these start-ups commenting on students' work:

"I have read the final report several times and I'm very impressed with the level of detail and analysis that was provided. When you consider that the technology and market is new to the students and the amount of time they had to digest it, they created a remarkable report. In addition they uncovered some information that is new to me. I have passed the report along to my colleagues for their review and emphasized several sections. Thank you for allowing us to participate!" CEO and President

"Thank you for sending me the final materials and for offering this opportunity in the first place. They've offered a number of ideas that I had not previously considered and that I'm researching now. Given the quality they delivered in such a short span of time, I'd love to work with a group like this over a longer-term and on some of our other projects that aren't as far along as…", Co-Founder

"It was great interacting with your class. Thank you very much. We definitely gained from the case study. We will be adapting this model for a number of different departments within the company. We learnt as well." CTO

In summary, our observations support the five research questions specified earlier, RQ1 through RQ5, at least qualitatively, on the role of multi-disciplinary and multi-cultural diversity for international entrepreneurship education: (1) Diversity in functional background among the members of a learning and integration oriented work or study group is positively associated with the quality of interaction and learning of participating group members; (2) Diversity in demographic and cultural characteristics of a learning and integration-oriented work group has positive association with the quality of interaction and learning of the participating group members; (3) The quality of interaction among the members is positively associated with the quality of individual learning as well as the quality of the group project; (4) The quality of individual learning from group work is positively associated with the quality of the group project, and; (5) An immersive approach to a multi-disciplinary and multi-cultural environment may help achieving an anticipated outcome(s) of entrepreneurship education.

IMPLICATIONS

These programs were designed to be intensive and engaging. Additionally, there are four dimensions to the program: Inter-disciplinary; Multi-cultural; Multi-levels (i.e. undergraduate, graduate, doctoral); and Experiential. Collectively, these 4 program sessions have led to several outcomes and lessons which we believe can enhance how entrepreneurship education can be delivered. Each time we conducted a program, we made changes to the schedule and content, based on what was learned from the previous programs. We believe the balanced class format shown in Table 6 seems to have been most effective.

Table 6
MULTI-CULTURAL, MULTI-DISCIPLINARY STUDY ABROAD
BALANCED CLASS FORMAT

Formal Learning – 3 hours/day	Experiential Learning – 4-5 hours/day
• Basics of Entrepreneurship • The Process: Innovation, Creativity, Entrepreneurship • Business Model Framework • Lean Start-up • Marketing & Market Research • Financing and Investments Sources • Team Building & Management • Communication & Presentation skills	• Ideation • Group projects • Sponsored • Students • Incubator visits • Field visits to technology companies & social Org'ns • Entrepreneurs Guest speaker • Presentations
Total Immersion Experience	

Since students voluntarily participated in these programs, they have shown a greater interest and motivation to engage; this implies that an intense, inter-disciplinary multi-cultural educational program does seem to increase students' motivation to remain engaged and comprehend, and enjoy, their learning. The inter-disciplinary experience mimics the real world, and as such, provides students with an understanding of the need to communicate and function within a workplace environment. Such a format maybe applied to other entrepreneurship areas (e.g. product design & development; markets and customers) which can further result in deeper understanding and appreciation of ventures internationalization. We believe the program very

much compliments traditional classroom entrepreneurship education. This is an area of further research which can provide an enhancement to entrepreneurship education. There is an increased propensity to launch new ventures while completing academic programs. Several new ventures have resulted from this program, two of which have had an international dimension from the beginning. This is another area of future research: to understand necessary ecosystem needs to encourage internationalization of entrepreneurial ventures.

Students have gone on to build sustainable relationships through networking via social media including Facebook, SnapChat, LinkedIn, and Whatsapp, resulting in greater friendships and collaboration for past, current, and future projects. A Facebook group, Global Entrepreneurs and Innovators, was created to allow students to communicate with one another as they began to move into their career paths. Several teams continue to interact today, moving their products and businesses forward. As new groups of students participate in the class, the network continues to expand globally, and provide a source of information and support from current and past participants. The following are examples of feedback.

"In terms of global outlook, Campus Cloud and I have immensely benefitted from this program. Initially, my idea was focused solely on the Indian Universities. This program challenged me to think beyond my nation's borders and build solutions that satisfy the global need. This enabled me to build a truly international product and take my startup to the US in under a year." Student Entrepreneur.

"I always wanted to start my very own firm, and the exchange program just accelerated the process. The visits to the local industries and incubation centers were very inspiring. During these visits it occurred to me that I had to start early. The level of dedication and involvement of the entrepreneurs at these startups was really hard to ignore. This made me ask myself one simple question, 'If not now, when?' I couldn't find an answer, so I started." Student Entrepreneur.

"We were able to get interviews (through our awesome students who spoke Kannada) and confirmed that our price point, functionality, concepts, and aesthetics appealed to the patients. We got to witness the daily flow of the clinics, inventory their basic tools, and understand their issues. Our technology proved to hold up to a patient and we discovered some weaknesses to work on in our design in the upcoming months." Student Entrepreneur

The potentials of internships and employment at sponsor companies through experiential learning are some of the outcomes of the program, and we hope to continue to see this area grow. "The best thing is that our team's BVB students want to keep working with us! The clinic has agreed to let them come back in to work with patients and our device (which we can send them revisions on). We have actually been discussing offering unpaid internships (from our US companies) to the students who help us out, which can be very beneficial to their resumes. The students have already been keeping up with us and made sure we were home safe. I can't wait to continue working with them! They were always positive, were quick learners, and worked really well with our pre-formed team." Student Entrepreneur this team has gone on to do just that, provide internships for students, with a small stipend provided.

The focus of our program enhancement in the coming years will include replication and scalability of the program, optimal program size, new venture creation by participants, venture implementation and management, and long term impact of program participants in new venture creation. Based on our 2-year experience of program development and implementation, we suggest the following for an effective educational practice in the field.

1. The schools and colleges offering entrepreneurship education programs should consider creating an inter-disciplinary, multi-cultural course that is immersive and experiential. Such an accelerated course can be offered during inter-sessions (winter and summer). There are certainly challenges to take U.S. students aboard on such a program; however, such a study abroad program will most definitely enrich students' learning experiences. On the other side, students from emerging economies are very eager to come to the US and go through such a program with the US students. We have presently developed this course as an elective that can be taken by a broader student body; however, we will assess making it a requirement for students going through an entrepreneurship-specific program. A balanced curriculum with immersive, experiential learning with traditional classroom format will definitely enhance entrepreneurship education.
2. We see an opportunity for entrepreneurship faculty to research the impact of such a program in new venture formations that include multi-cultural teams and internationalization focus. The aspiring US entrepreneurs benefit from the knowledge of global markets (specifically emerging economies) and same applies to non-US entrepreneurs to access technology and resources. A research framework can be developed to understand if and how these bi-directional benefits are accrued. Key questions to research include: Is there a material impact in accelerating a start-up venture? Are there market- and resource-based opportunities resulting from in immersive educational program? Does a broad diversity enable greater levels of creativity and innovation? What should be an optimal mix of classroom lectures & discussions and experiential learning in an immersive, multicultural environment?
3. The International Institutions should consider a virtual collaborative initiative that can help in forming students' network for idea generation, teaming, educational workshops, access to ecosystems and incubation facilities (virtual and physical). We are presently conducting a pilot to virtually connect students from different international institutions to experience some of the core elements of an immersive learning discussed in this paper.
4. Innovation in the entrepreneurship education is a very timely and much discussed topic. Arvanites, Glasgow, Klingler, Stumpf (2006), Kuratko (2005) and McClure (2015) have very clearly stressed the importance of experiential learning, cross-functional education and entrepreneurship education curricular transformation to meet students' needs in a knowledge-based economy. An on-going research is needed in extending these themes to include multi-cultural dimension that will enhance and innovate the entrepreneurship education. Such research can not only help the entrepreneurship education but also add to the overall management and leadership research. One area, for instance, is the small business & family business, where intersection of entrepreneurship and management factors will help understand issues related to succession, generational continuity, persuasion and negotiations in different cultural environments, and other internationalization considerations. Based on our more recent experiences with students from several different Asian countries, we observed that extending Cialdini (2001) Principles of Persuasion, and other cultural differences considerations such as Hall (1989) Context Culture and Hofstede (1984) National Cultural Dimensions to diverse team building and collaboration would offer (i) a deeper understanding in ventures' internationalization; and (ii) strengthening entrepreneurship curriculum.

CONCLUSION: CONTRIBUTIONS AND FUTURE RESEARCH

The authors expect the main contribution of this paper to be demonstrating the process of development and implementation of a program opening opportunities that allow for a faster rate of internationalization of newly formed entrepreneurial ventures from all universities involved. For many students, the project-based learning system is the first time they have utilized their academic learning for a real life project. From an instructor perspective, the students' growth over the course of two weeks is incredible. In the beginning, students struggle with which direction to head, or what to do. We coach them, but we don't tell them what to do…we want them to figure it out. Students have input from more than one person, and they are also getting used to the differences among their team members. This can be frustrating to some of the students; but as they

begin to make their own way, they become more confident in their decision making, and this leads to synergy in tackling the project. At the end of the program, it is the impact of the overall experience that changes students' problem solving abilities and increases their creativity, resulting in students' confidence and knowledge increasing during the program, as indicated in the survey and reflections. Several of the students have gone on to start their own company, or further their own existing entrepreneurial venture.

The limitations of current research can be driven from a forefront question, "Is a change required in how entrepreneurship education is offered?" Thus, our future research would fully recognize the importance of the following concerns and specifically direct its focus on the following issues.

1. Inter-disciplinary classes should offer a much more comprehensive understanding of interrelationship between different business components in an integrative manner. Our future research needs to focus on how learning can be further enhanced by intensive and engaging experience on the basis of the diversity of cultures and the integrative relationship.
2. Short-term experiences can provide a positive impact on student success by allowing students to have an international multi-cultural, interdisciplinary experience that they might not have access to via other programs. Future research needs to address a question from the long-term perspective, i.e. how we can build the programs that are sustainable.
3. Faculty need to reassess how to deliver course content for entrepreneurship education, and be willing to adapt in a changing environment. Future research needs to examine the scalability of the program, and the feasibility of doing so should be further addressed.

In summary, future research should further upgrade the current entrepreneurial educational programs to open new opportunities for international collaboration with other universities, and provides a template for multi-cultural, interdisciplinary, short-term entrepreneurship education experiences.

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ENTREPRENURIAL COMPETENCIES OF WOMEN OWNING INFORMAL SECTOR ENTERPRISES: A CASE OF INDIA

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INTRODUCTION

Globalization of the economy during the 1990s contributed to the informalization of the economy in many countries and has significantly expanded during the recent recession (Jutting and Laiglesia, 2009; Horn, 2011; Williams and Youssef, 2015). 'Informalization' of the economy has been a unique feature of the present millennium (Williams and Gurtoo, 2011; Rodgers and Williams, 2009; Charms, 2009; Feige and Urban, 2008). There is an increased recognition that the informal economy today is integrally linked to the formal economy and contributes to the overall economy (Chen 2012). One of the interesting features of informal work is that monetary transactions are not declared to the state for tax and/or benefit purposes, but is legal in other aspects (Williams and Gurtoo, 2011). The sector is characterized by low paid waged work with no safety nets or social security (Oluwatoyin, 2010). Furthermore, large proportions of the population in the sector are self-employed and are being portrayed as entrepreneurs (ILO, 2002b) and display entrepreneurial qualities, attributes and traits (Williams and Gurtoo, 2011; Webb et. Al, 2009; Ventkatesh, 2006, ILO 2002a,b). There are a growing number of self-employed women in India. According to the 4th Micro Small and Medium Enterprises Census, approximately 98 percent of the women owned businesses are in the micro enterprise space and contribute to 3.09 percent of industrial output (Swaniti Initiative, n.d).

Entrepreneurship among women irrespective of the social class is becoming a global phenomenon today and it is widely acknowledged that the success, performance, and growth of any business are dependent on the competencies of the entrepreneur (Mitchelmore et al., 2014). Women are increasingly participating in the informal sector economy by establishing micro enterprises to earn a living for themselves and their families around the globe (Odero-Wanga et.al., 2013; Vossenberg, 2013; Nguyen, 2012; Sultana, 2012). Majority of the women venture into entrepreneurship out of economic necessity, but of these a large number are unable to find employment because of various reasons. Studies have been undertaken to explain why entrepreneurs operate in the informal economy across various countries (Williams 2008; Gurtoo and Williams, 2009; Webb et al, 2009; Gurtoo and Williams, 2011; Williams et al., 2011; Williams et al., 2012; Webb et.al, 2014). In India, women in the informal sector venture into micro enterprises because of low level of investment (Pradeep, 2013) and the structure of such enterprises places the entrepreneur in a critical position in the business operation (Capaldo et al., 2004). For sustenance and growth of any business, the owner needs a broad set of skills, abilities and competencies. While entrepreneurial competencies are important for all types of business, the imperative to develop such competencies in the context of women owned micro businesses in the informal sector is particularly strong. Although

entrepreneurial competencies are seen as important to business growth and success, competence development as an area has been a recent topic of research that needs to be studied further with reference to micro firms in the informal sector.

Before commencing on the study, it is however important to define informal sector entrepreneurship. As very aptly put by Anderson and Starnawska (2008, p.222) 'entrepreneurship means different things to different people', the author has looked at developing a definition appropriate to the study at hand. A women entrepreneur is defined for the purpose of this study as one who is actively involved in starting and setting up a business or is the owner/manager of a business (Reynolds et. Al, 2002; Harding et. Al, 2006) while entrepreneurship is 'the qualities which are required to innovate and start a new enterprise, accept the challenges and bear the risk' (Sugumar, 1996). The informal sector is defined on the basis of the ILO/ICFTU definition which categorizes the informal sector as own-account workers, who own and operate one-person business, who work alone or with the help of unpaid workers, generally family members and apprentices; unpaid family workers (World Bank, n.d). An understanding of entrepreneurship in the informal sector would include for example: street hawkers on bicycles selling baskets and simple bamboo-furniture; small eateries at the roadside; fruit, flower, fish and vegetable vendors who sell their produce from a cart; women who sell roasted corn-on-the cob at the roadside; women who sell goods such as beetle leaves and nuts, cigarettes at pavement stalls; photocopy outlets; small retail stores, mobile beauty parlours etc (Reaz Uddin et.al. 2014; Chaturvedi and Goyal ; 2012). In this paper, the intention is to identify and discuss the entrepreneurial competencies of women in the informal sector.

LITERATURE REVIEW: THEORETICAL INTERPRETATIONS

There have been various interpretations of the phenomenon of informal sector entrepreneurship. The structuralist interpretation of the informal sector economy views entrepreneurship as phenomenon of absorbing the surplus labour and providing self-employment opportunities to the poor and enables the maintenance of a low-cost of living by providing goods and services at a reduced cost (Williams and Gurtoo, 2011; Kapoor, 2007; Bhatt, 2006; Nelson and Bruijn, 2005).

The post-structuralist interpretation looks at entrepreneurship as a social phenomenon made out of lifestyle choices (Williams and Youssef, 2015). Informal sector activities are a source of income, which the urban poor households use to escape poverty. Studies by Tehrani and Ami (2000), Pisini and Patrick (2002), Danabakyum and Kurian (2012) and ILO (2014) reveal that informal sector entrepreneurship contributes to the socio-economic development of a region and their contribution cannot be underscored.

Entrepreneurial Competencies

Competency as a concept has many faces and applications and the models of entrepreneurial competence are grounded in these various approaches and notions of the concept of competence. A seminal work on competency mapping was done by Boyatzis and is seen as underlying characteristics of a person, which results in effective action and/or superior performance in a job. Entrepreneurial competencies on the other hand have been identified as a "specific group of competencies relevant to the exercise of successful entrepreneurship" (Mitchelmore and Rowley, 2010, pp. 93) and such entrepreneurship

development is usually linked with the development of small and micro businesses. Entrepreneurial competencies according to Man and Lau (2005) are grounded in an individual's background (traits, personality, attitudes, social role and self-image) and those that can be acquired either at work or through education and training (for example skills, knowledge and experience). They are seen as important to growth and business sustenance yet, despite its supposed importance, the deliberations on competencies of entrepreneurs in entrepreneurship literature are in its early stages (Brickmann, 2008; Mitchelmore and Rowley, 2010). The literature is further scanty with regard to informal sector entrepreneurship and more so in the case of women (Mitchelmore and Rowley, 2012; Nuthall, 2006; Colombo and Grilli, 2005; Lerner and Almor, 2002).

Over the years there have been some studies that have sought to examine the skills and capabilities of entrepreneurs. Markman et al., (2002) assess general self-efficacy and regretful thinking as two important capabilities among entrepreneurs in the context of technological innovation and report that both the capabilities are present among entrepreneurs and new business starters. In a more context specific study Wilkund et al., (2003) conclude that non-economic concerns like well-being, independence, and control over operations are important traits towards enterprise growth. Other studies in this context have focused on the small and medium enterprise (SME) sector and are region specific. Man (2001) categorized entrepreneurial competencies of service sector SME entrepreneurs in Hong Kong as opportunity, relationship, conceptual, organizing, and strategic and commitment competencies. In another similar study Man and Lau (2005) report that there are consistent patterns of competencies across wholesale trade and IT services industries. But, the entrepreneurs in the IT service industry have significantly higher ratings in innovative, strategic and learning competencies vis-à-vis wholesale trade industry. Among Kenyan entrepreneurs leadership, strategic thinking and organizational knowledge are classified as core competencies and they apply regardless of the function or type of organization. The other competencies are communication, interpersonal, administrative, motivation and organizational knowledge (Namusonge, 2003). Entrepreneurial competencies like opportunity, learning, ethical and familism were also strong predictors of business success among Malayasian SMEs (Ahmad, et.al, 2010). The study be Adegbite et.al, (2006) identified propensity to take risks, desire for goal setting, opportunity seeking and initiative, independence of thought and self-confidence, innovativeness, creativity and persistence as the entrepreneurial characteristics present in Nigerian entrepreneurs. While some other studies have identified flexibility, handling stress, positive appraisal of situations, strategic, commitment and conceptual competencies (Herriott, 2000; Wickramaratne et.al, 2014) and still other identified innovativeness, proactiveness, autonomy and competitive aggressiveness as entrepreneurial competencies among SMEs in USA (Vora, et al., 2012).

In the case of female entrepreneurs in the SME sector Diffley (1982) identified 56 competencies and clustered them as general, managerial, marketing and sales and accounting and financial competencies. In England and Wales, the entrepreneurial competencies have been broadly clustered as personal and relationship; business management; entrepreneurial and human relations competencies (Mitchelmore and Rowley, 2013). Furthermore, women entrepreneurs had managerial and business competencies, which they gained 'on-the-job' and rated themselves more competent than men on a number of issues when they first started their business (Walker and Webster, 2006). Studies have

also found entrepreneurial competencies to be strong predictors of business success (Ahmad et al., 2010; Mitchelmore et al., 2014).

Entrepreneurial Competencies and the Informal Sector

In the informal sector, very few studies have looked at entrepreneurial competencies and have revealed that it is associated with specific knowledge, motives and traits, which is the basis of starting and/or starting a business venture. Hiemstra et.al, (2006) identified that planning, identification of opportunities and reactive strategies were related to entrepreneurial success in the urban informal sector in Vietnam. In India, women ventured as entrepreneurs in the informal sector because of the ease of establishing oneself as self-employed, need for flexibility (Williams and Gurtoo, 2011).

Thus, there have been a limited number of studies in different context and countries that have been sought to generate a list of entrepreneurial competencies with varied categorization. Some researchers have used terms like skills or expertise to discuss competencies and these researches add to the general understanding about entrepreneurial competencies. It is important to note that the methods used by various researches to measure competencies are varied and are supported by different assumptions. Other researches focus on the significant knowledge or capabilities, which are thought to reflect entrepreneurial and managerial capabilities, while other researches have studied the relationship between entrepreneurial perceptions and entrepreneurial decision-making and their outcomes have taken a process perspective in measuring constructs related to entrepreneurial competencies. In this light this research has put substantial effort to map the competencies of women entrepreneurs in the urban informal sector. The literature enables the categorization of competencies of entrepreneurs as follows (Table 1).

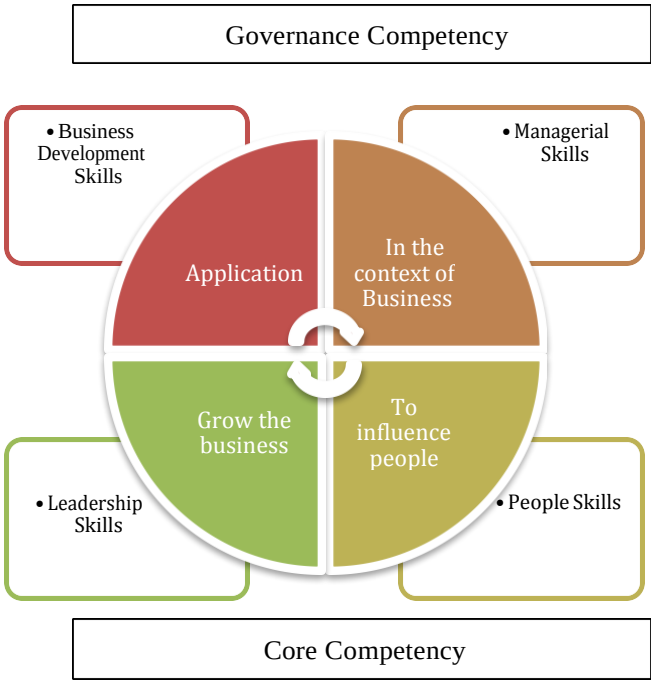
Table 1
COMPETENCIES OF ENTREPRENEURS

Core Competencies (personal skills required to become a leader)		**Governance Competencies** (skills needed to drive the enterprise)	
Personal	**Leadership**	**Managerial**	**Business Development**
Attitude Autonomy Propensity to take Problem solving	Achievement motivation Identifying opportunities Goal setting Clarity of thinking Leadership abilities	Organizing Business competency Inter-personal skills Business management skills (investment efficiency, operational skills) Strategic	Developing strategic relations Innovation and creativity

Source: Author

Based on the literature the researcher developed the following competency framework for the study (Figure 1).

Figure 1
COMPETENCY FRAMEWORK FOR THE STUDY



Source: Author

The novelty of the model is it offers a comprehensive approach towards mapping the entrepreneurial competency of women entrepreneurs in the urban informal sector. Additionally, it applies to India and to the best of the knowledge of the researcher; there is not much study that has been done for competency mapping of women entrepreneurs in the urban informal sector in India. Hence the objective of the present study is to identify the entrepreneurial competencies of women entrepreneurs in the informal sector in India

METHODOLOGY

Competency for the study has been defined as the capacity that exists in a person that leads to behavior that meets the job demand and in turn brings about desired results. In this study a combination of tools has been used to map the competency of women entrepreneurs. Data was collected from entrepreneurs who had informal sector businesses in Mumbai city. The sample selection process was based on non-probability quota sampling technique to select 125 respondents. In order to study the competencies, the following data collection tools were used to identify and map competencies:

a. Interviews: An interview guide was designed to engage the respondents in a discussion to gather information to form a view and make a decision. Typically, 20-40 minutes were spent with each respondent to assess the respondent's view about how they dealt with various entrepreneurial tasks based on the skills identified in the competency framework. The respondents who participated in the interviews had active enterprises in the informal

sector.

b. Group discussions: In these twelve (12) respondents were brought together as a team and were asked to work on a number of items related to the four skills (Figure 1). The discussions were structured in such a way that all respondents in the groups had the same basic information. The researcher conducted 12 focus group discussions. The groups were selected from the 125 women entrepreneurs who were selected for the study. The members for each group were selected on the basis of (i) self-help group (SHG) membership; and (ii) amount of loan taken.

c. Questionnaire: A questionnaire was developed to gather information with regard to the socio-demographic profile of the entrepreneurs and to collect business facts.

FINDINGS AND DISCUSSIONS

Respondent profile

The demographics of the entrepreneurs in terms of age, education, marital profile, family type and occupation of the head of the family is discussed in the subsequent paragraphs. The comparison of the data from this study with other studies on the basis of the mentioned variables, the sample in the study can be regarded as representative of female entrepreneurs in the informal sector in India (Table 2).

Table 2
SOCIO-DEMOGRAPHIC PROFILE OF ENTREPRENEURS

Parameters of Assessment	Type of Business Ownership		
	Sole proprietors	Partnership	Owners with Employees
Average Income per month (in rupees)	8000	9000	12000
Age Group			
20-30 years	30 (24%)	1(0.8%)	12 (9.6%)
30- 40 years	32 (25.6%)	15 (12%)	25 (20%)
40-50 years	7 (5.6%)	1 (0.8%)	2 (1.6%)
Educational level			
No education or < 1 yr. in school	6 (4.8%)	-	-
Basic education not completed	10 (8%)	-	-
Basic education completed	41 (32.8%)	7 (5.6%)	8 (6.4%)
High school completed	12 (9.6%)	8 (6.4%)	19 (15.2%)
Graduate & Vocational Training	-	2 (1.6%)	12(9.6%)
Marital Profile			
Single	-	2 (1.6%)	7 (5.6%)
Married	54 (43.2%)	11(8.8%)	27 (21.6%)
Widow	8 (6.4%)	4 (3.2%)	5 (4.6%)
Divorced/Deserted	7 (5.6%)	-	-

With regard to age of the entrepreneurs, the highest responding age was between 30-40 years followed closely by those aged between 20-30years. Other studies such as the GEM report (Saraf and Banerjee, 2013) have noted that these are the most entrepreneurial active years. The educational background of the sample reveals that

majority of the entrepreneurs who had completed basic education, 24 percent were sole proprietors and around 18 percent were in partnership type of enterprises. Around 6 percent were owners with employees. This is consistent with the finding similar to the studies by Vander Wees and Romigjn (1995) and Ghosh, Gupta and Dhar (1998), which indicated that higher education, is more likely to attract women to formal employment in established organizations, than informal employment through entrepreneurship. The marital profile reveals that 74 percent of the entrepreneurs were married out of which 40 percent were sole proprietors.

Family is the primary group wherein every member is directly associated with its activities. The female entrepreneurs mostly came from nuclear families. Anna (1990) and Singh (1992) found that women entrepreneurs belonging to nuclear families found it easy to take independent and joint decisions with the spouse. Furthermore, the head of the household who was an adult male in the sample was a supplementary earner and the responsibility was on the female entrepreneur to take care of the family needs. The average monthly income per month for sole proprietors was Rs. 8000 for entrepreneurs with partnership type of enterprise is was Rs. 9000 and for owners with employees, the average monthly income was Rs. 12000. The average monthly income shows that entrepreneurs were able to manage their business.

Business Profile

The studies revealed that majority of the women-owned businesses (50.4%) are in the service sector followed by retail (38.4%) and manufacturing (11.2%) [Table 3].

Table 3
NATURE OF ENTREPRENEURIAL ENDEAVOUR

Parameters of Assessment	All Informal sector Entrepreneurs	Type of Business Ownership		
		Sole proprietors	Partnership	Owners with Employees
Length of time business established				
<2 years	44 (35.2%)	30 (68.1%)	11 (25%)	3 (6.8%)
2-5 years	53 (42.4%)	29 (54.7%)	4 (7.5%)	20 (37.7%)
5-10 years	19 (15.2%)	10 (52.6%)	3 (15.7%)	6 (31.5%)
> 10 years	10 (8%)	-	-	10 (100%)
Sector				
Service (beauty parlour, tailoring, internet café, photocopying	65(52%)	47 (72.3%)	6 (9.2%)	12 (18.4%)
Food services (tiffin services, roadside eatery)	10 (8 %)	-	-	10 (100%)
Retail (grocery, gift items,vegetable/flower/fish stall, garments, plastics)	38 (30.4%)	20 (52.6%)	8 (21.0%)	10 (26.3%)
Manufacturing (papad& pickle, shoes, toys, bags,spices)	12(9.6%)	2 (16.6%)	3 (25%)	7 (58.3%)
Customer base				
Varied customer base	48(38.4%)	33(68.7%)	10 (20.8%)	5 ((10.4%)
Fixed customer base				
-Only one customer	20(16%)	10(50%)	-	10 (50%)
-Several customers	27(21.6%)	15(55.5%)	-	12((44.4%)
-Small businesses	25(20%)	9(36%)	6 (24%)	10 (40%)
-Government and other agencies	5(4%)	2(40%)	1 (20%)	2 (40%)

Around 35 percent of the entrepreneurs (Table 3) have businesses, which are less than 2 years old, and 42 percent of the businesses in the sector have been established in the last five years. The data also reveals that majority of the ventures (60%) are in the service sector followed by retail (30.4%) and manufacturing (9.6%). The reasons for venturing into the service and retail sectors are (a) low capital investment (machinery & tools); (b) relatively faster return on investment (short gestation period); and (c) low investment in marketing and advertising. With regard to the customer base, majority (84%) of the entrepreneurs had a fixed clientele and around 27 percent of the entrepreneurs had a varied customer base.

Entrepreneurial Competency of Women Entrepreneurs

Being entrepreneurial involves combining personal characteristics, and financial means and resources within an environment to set up a business. Studies, Mitchelmore and Rowley (2013) and Williams and Gurtoo (2014) stress that socio-psychological

characteristics play an important role in the enhancement of entrepreneurial behaviour. Each entrepreneur has unique characteristics and it may be stressed that many of these traits are highly interrelated; that is, people who are self-confident will probably accept responsibility for their own decisions, be willing to take risks, and become leaders. Not all entrepreneurs are alike, either in these traits or in their personal qualities. Often, they differ markedly from one another: some are aloof and arrogant; some are warm and friendly; others are withdrawn and shy. Each competency was measured based on certain items as discussed in Table 5.

Table 4
ENTREPRENEURIAL COMPETENCY IN INFORMAL ENTERPRISES

Entrepreneurial Competencies	Type of Business Ownership		
	Sole proprietorship	Partnership	Owners with Employees
Core Competencies			
People skills			
Confidence /Optimism	67(97.1%)	12(70.5%)	30(76.9%)
Decision making capability	62(89.2%)	10(58.8%)	26(66.6%)
Independence orientation	59 (85.5%)	14(82.3%)	30(76.9%)
Risk taking ability	67 (97.1%)	17(100)	18(46.1%)
Leadership skills			
Support other women in business	52(75.3%)	15(88.2%)	32(82.0%)
Dealing with business issues	40(71%)	10(58.8%)	35(89.7%)
Tacking business competition and challenges	32 (46.3%)	8(47.0%)	24(61.5%)
Dealing with family and business problems	65(94.2%)	13(76.4%)	39 (100%)
Innovation	55(79.7%)	8 (47.0%)	37 (94.8%)
Governance Competencies			
Managerial skills			
Business risks	62(89.8%)	13(76.4%)	36(92.3%)
Customer care services	65(94.2%)	12(70.5%)	39(100%)
Loan repayment	40(57.9%)	0	29(74.3%)
Marketing and Advertising	47(68.1%)	11(64.7%)	38(97.4%)
Accounts management	66 (92.7%)	9 (52.9%)	25(64.1%)
Quality checks	69 (100)	16(94.1)	37(94.8%)
Business development skills			
Expansion /diversification	35(50.7%)	0	22 (56.4%)
Product development	30(43.4%)	15(88.2%)	25(64.1%)
Business plan	25(36.2%)	10(58.8%)	22(56.4%)

Being an entrepreneur is more than a job or a career, it is a life-style, and entrepreneurs have certain competencies which they use to control conditions or situations. The data in Table 5 reveals that the entrepreneurs possessed a wide variety of competencies, which have been broadly categorized as core competencies, and governance competencies. Core competencies are related to the personal skills required to become a leader and

governance competencies are skills needed to drive the enterprise. Every entrepreneur is a unique individual, and no two persons are alike. But, when measured on various competencies it is clear that as a group, entrepreneurs differ from non-entrepreneurs. The identified traits in the study provide a profile of the competencies present in women entrepreneurs owning micro businesses in the informal sector.

The core competencies have been measured on the basis of skills/characteristics to influence people (people skill) and the skills to grow the business (leadership skill). The people skills competency exhibits the entrepreneurs' willingness to accept responsibility. Even though the risk of failure is always present, they are willing to take risks by assuming responsibility for their actions and accepting failure as a learning experience. It also signifies their attitudes to take things positively by accepting their strengths and weaknesses. The data reveals irrespective of the type of business ownership a higher percentage of entrepreneurs have reported the existence of self-confidence, optimism, individuality and independence. The respondents reported that setting up and managing their business activity had also made a deep impact in changing their attitude towards themselves.

"I have gained confidence to deal with my activity on my own". Still another entrepreneur reported, "By setting a business my attitude towards myself and others have changed". Another entrepreneur added, "Looking at other women doing business I felt I could also do something like this". Yet another one shared, "It gives a good feeling to be doing something as a woman."

Thus, the respondents reported a change in their level of confidence after initiating and managing their businesses. The trend that emerged suggests a strong streak of independence among entrepreneurs. Meredith et. al (1982) revealed that to be entrepreneurial, one has to be creative, especially when it comes to decision-making. It is this decision-making ability that is the distinguishing mark of an entrepreneur. Simon (cited in Dhillon1996: 98) regarded making a decision and 'doing' or implementing a decision as integral parts of the business process, which he defined as 'the art of getting things done'. A clear trend was evident from the focus group data, which indicated that respondents were able to deal with business and family problems, and take decisions to creatively solve customer problems. Some of the respondents remarked, "Problems should not be avoided but tackled with innovative solutions, as problems are different in different situations".

The entrepreneurs' as managers are more creative than conventional managers partly because they make decisions without the assistance of quantitative data or experienced support staff. They may have to look at a problem from different angles and seek an innovative way in which to solve it. They speculate by relying on their own hunches and ideas for taking acre of customers, marketing and advertising or bringing in quality control measures. They take full responsibility of the actions and make decisions within reasonable time limits thereby enabling them to take advantage of business opportunities as they appear.

The independence orientation competency portrays the mental outlook of the entrepreneur towards business and life in general. This competency enables the entrepreneur to focus on desired activities and events. It conveys the extent to which the respondents assumed responsibility of their own life and chose to consult family and friends for support.

The entrepreneurs were confident in their ability to find and evaluate opportunities, gather the necessary resources and take action to achieve business success. The respondents reported that doing business had a profound influence on their lives. In this regard some of the entrepreneurs shared:

"I am now financially independent and this helps me to re-invest in my business". Still others shared that "As we stay in the same chawl I am able to help other women when they face problems" and "I help other women doing business to deal with the problems arising in business". Another respondent reported, "I am no longer afraid to go out and take orders for my products". Yet another added, "sitting in my shop gives me a lot of confidence to deal with my business activities". Another entrepreneur shared that "I discussed with my friends about where I could get a loan to start a business". Another entrepreneur remarked "If I have any problem (both business and personal) I go and discuss it with my friends who stay nearby".

According to Palmer (1971) risk-taking is, 'the entrepreneurial function primarily involving risk measurement and risk bearing'. While exploring the risk-taking behaviour, respondents shared their views regarding their ability to tackle risks.

One of the respondents said, "there are problems at home and in business as well, but I am able to deal with it". Similarly, another respondent "I get help and support from my spouse/friends and the NGO to deal with issues related to my products, customers, and other related personal matters".

Such risk- taking falls in the general risk- taking propensity of an entrepreneur, and is indispensable for the development of entrepreneurial skills, since it directly affects the future of the business and often of the family too. Taking responsibility and the necessary risk is an important competency to achieve entrepreneurial goals. For an entrepreneur, growth comes from taking advantage of existing opportunities in both personal and business scenario, and taking risks to achieve them.

Another very prominent entrepreneurial competency is leadership. The very nature of the work, entrepreneurs are leaders because they must seek opportunities, initiate the endeavour, and gather the physical, financial and human resources set goals for themselves and help /support others when the need arises. The entrepreneurs in the study have developed their own personal styles of leadership in their day-to-day activities. When comparing the sole proprietors' with owners with five or fewer employees we find a higher percentage of entrepreneurs in the latter category using their leadership skills in delegating responsibilities and accomplishing tasks by working with other people. Items like support to other women in business and dealing with family and business problems signifies a humanistic approach to leadership where a higher percentage signifies that entrepreneurs' are concerned with the feelings and attitudes of others, rather than being motivated for only personal reasons. Some of the entrepreneurs remarked,

"I am now earning and this helps me to re-invest in my business". Still others shared that "As we stay in the same tenements, I am able to help other women when they face family problems" and "I help other women doing business to deal with business problems". Another entrepreneur reported, "I am no longer afraid to go out and take business orders". Yet another added, "sitting in my shop gives me a lot of confidence to deal with my customers, suppliers, local government officials".

It is evident that entrepreneurs did not adopt any particular style of leadership but inclined towards a benevolent style where they set a personal example by hard work, and taking care and providing support (moral, and emotional, and in some cases financial) to other entrepreneurs, although it is likely that they exhibited different leadership styles at different stages of growth of their business activity. Thongpoon et al., (2012) reveals that opportunity, relationship and organizing competencies are significantly related to economic performance and that knowledge and morality are predominant in developing competencies of entrepreneurs.

The governance competencies are measured on the basis of managerial and business development skills. Managerial competency was assessed by: business risk skill, customer care services provided, loan repayment attitude of the entrepreneurs, marketing skill, account management and quality assurance parameters. Being an entrepreneur, one has to work under the pressure and conditions of business risk taking and understanding that the possibility of failure is always present. The data reveals that irrespective of the type of business ownership, entrepreneurs exhibited business risk competency (90 % of sole proprietors, 76 % of partnership firms and 92 % Owners with employees). The focus group discussion reveals a positive trend towards business risk taking. The respondents shared their views regarding their ability to tackle risks. A few such quotes of respondents further support the data.

"Though competition exists I sell my product initially at a lower rate vis-a-vis others in the area and once I have an assured group of customers, I slowly increase the price which is at par with the existing market price". Similarly, another respondent remarked "I sell a special type of paper(s) which are needed to prepare any kind of legal document and so there is always a need. This helps me to manage risk". Still another shared, "I get support from my spouse/friends/ NGO staff to deal with the competition thus helping me to take calculated risks".

The focus group data reveals that entrepreneurs exhibited customer care competency. The entrepreneurs provided a variety of services like home delivery, providing customized service, delivery on-demand, and added new products on a regular basis based on customer feedback. The entrepreneurs in a variety of ways exhibited the skill of marketing. A few of the marketing competency exhibited by the entrepreneurs are:

1. "We were able to procure from the local government fixed stalls in designated municipal market".
2. "I am a wholesale dealer of flowers, and since flowers are required for all kinds of functions, there is always a demand for it".
3. "I provide tiffin services to fixed customer group in my locality".
4. "I run skill development certified classes for young girls in and around my place of residence".

The data also reveals that the entrepreneurs also demonstrated the competency of managing their loan account and day-to-day accounts management and also ensuring quality. In this respect, the entrepreneurs shared:

1. "Quality maintenance is important to us in this competitive world. If we do not maintain quality, we will not be able to sell our products".
2. "Since most of our customers are repeat customers, it is important for us to ensure quality".
3. "The retailers who keep our products do not want to damage their brand and hence it becomes important to ensure quality".
4. "I pay my monthly instalment regularly".
5. I manage my daily accounts manually. I have appointed a part-time accountant, who on a regular basis updates my accounts".

The business development competency looks at the entrepreneurs' orientation towards growth and sustenance of their business activity. This particular competency cluster was gauged on the basis of expansion/diversification plan of the entrepreneur, product development efforts and business planning. Effective entrepreneurial planning assumes that no important decision will be made without knowledge and approval (Meredith et.al, 1982). Business planning enabled the entrepreneurs to have the right information at the right time in order to make the right decisions. According to the entrepreneurs, planning was a continuous process and helped them to have control over their expansion/diversification and product development tasks. It helped them

to establish priorities and identify those activities, which require attention and time thereby making it easier for them to control operating and financial costs. For instance, "I want to set up a juice counter along with my snacks counter, planning helped me to decide on my tasks and resources to set up this additional counter".

"I am able to use my skills and resources efficiently and effectively and so I am satisfied with my business".

"I am satisfied because my business is earning profit" and this was possible because I planned".

"I am earning well and am confident that I can increase my sale because I have already planned what I need to do to increase my sale".

In sum, the entrepreneurial competencies reveal that informal sector entrepreneurs possessed independent orientation and planned for the future growth of their business activities. They had the ability to find and evaluate opportunities, gather the necessary resources, and implement action to take advantage of opportunities. They exhibited leadership competencies in conducting most of their activities and took calculated risks. They believed in their ability to take decisions and deal with problems, planned for the growth of their business activities. Competency identification and development is important to improve the performance of the business and is in accordance with previous research findings. (Mitchelmore et al., 2014; Yazdanfar et al., 2014; Ahmad et al., 2010; Mulder et al., 2007).

CONTRIBUTIONTOENTREPRENEURSHIP EDUCATION AND FUTURE RESEARCH

The importance of entrepreneurship education has positive impacts on the creation of new ventures have been widely recognized. The main implication of this study for education and training of entrepreneurs is that importance should be put on competency development of the entrepreneur's learning patterns rather than skill gaining, transfer of knowledge and change in the attitude separately. In other words, the development of education and training programmes for entrepreneurship can be considered from the perspective of developing and enhancing competencies. The study also contributes to the questions associated with entrepreneurial competencies; it allows individuals thinking about beginning an entrepreneurial career to evaluate the entrepreneurial competencies and lay emphasis on those that need to be enhanced.

Promotion of the benefits of entrepreneurship specifically for women is a further area of focus for entrepreneurship education. In the study, the sample was chosen from the informal sector in India. Further, research may be conducted across different sectors and cultures in terms of entrepreneurial competencies, so that more focused research attention or training can be made.

CONCLUSION

Entrepreneurial activity is a complex and costly process characterized by an unfavorable success rate (Baum and Locke, 2002). This suggests that it is important to identify and develop the entrepreneurial competencies among entrepreneurs and help them to transform opportunities into a viable business. The study aimed at identifying the competencies of women entrepreneurs in the informal sector. The research proposes two

broad sets of competencies: core competency, which comprises of personal skill and, leadership, skill; governance competency, which includes managerial skill and business development skills, and is present in women entrepreneurs in the informal sector. The GEM study (2014) reports that if women believed that they had the perceived opportunities (capabilities or competencies) for being entrepreneurs, they are most likely to start an entrepreneurial venture. The theoretical model present in the present study can be used to profile competencies and to help women in the urban informal sector to understand the strength and weaknesses in micro entrepreneurial ventures. It can be further used as a framework for designing entrepreneurship development training programmes for women entrepreneurs for developing skills. Skills development contributes to profitability and growth of enterprises (Mitchelmore and Rowley, 2013). Micro-finance institutions and government to support entrepreneurship development among women in the informal sector can use the research findings. Finally, it is possible to develop an agenda for further research by replicating the study in different contexts. The development of models to establish the relationship between entrepreneurial competencies, performance and growth of micro-enterprises can be researched. Further research can be undertaken to understand how women entrepreneurs develop their competencies to do business.

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TAILORING FUTURE AGROPRENEURS: THE IMPACT OF ACADEMIC INSTITUTIONAL VARIABLES ON ENTREPRENEURIAL DRIVE AND INTENTIONS

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ABSTRACT

This study contributes to our understanding of the role academic institutional variables play in explaining agropreneurial intentions. In this study, we took a step forward to examine if the current Malaysian university offerings, both in terms of agropreneurship education and perceived university supports, has an impact on students' agropreneurial intentions the way general entrepreneurship education impacted entrepreneurial intention. The framework was developed based on our extensive literature review by drawing contributing factors at institutional level which are agropreneurship curriculum, agropreneurship experiential learning and perceived university support. Based on Entrepreneurial Event Model (EEM) we proposed two mediating variables which are perceived desirability and perceived feasibility. We used a cross-sectional design and employed PLS-SEM in analysing our data. Both the assessment of measurement and structural model were examined. Our findings among 318 agriculture students in Malaysian higher educational institutions (HEIs) suggest that agropreneurship curriculum, agropreneurship experiential learning, perceived desirability, and perceived feasibility significantly explained agropreneurial intentions significantly. However, agropreneurial intention was not impacted by perceived university support. We also found that perceived feasibility mediates the relationship between agropreneurship curriculum and intentions and between agropreneurship experiential learning and intentions. However, perceived desirability was found to mediate the relationship between agropreneurship experiential learning and intentions only. The findings contribute to the Theory of Planned Behaviour and the EEM as well as to the literature of entrepreneurial intentions itself by revealing the effects of institutional variables on the formation of tertiary students' intentions to become agropreneurs. Based on the limitations of the study, it is suggested that future research to look at other institutional variables, such as public and private institutional variables. Also, given the fact that research on agropreneurial intention is very scarce in agropreneurship literature, future research should also investigate students' agropreneurial intentions from another angle, such as employing a longitudinal approach to investigate the extent to which agropreneurial intentions can be realised in the actual creation of agropreneurship enterprises.

INTRODUCTION

Entrepreneurship has long been known by policy makers and economists as a significant contributor to a country's economic growth and innovation. Entrepreneurship was shown by research to strongly relate to a country's economic growth and performance (Rideout & Gray, 2013; Van Praag & Versloot, 2007). Agropreneurship, a dimension of entrepreneurship in the agriculture area, was not less significant in terms of its contributions. In Asian countries, such as

Malaysia for example, 76 percent of business activities in the agriculture sector is agropreneurship through the establishment of small and medium agricultural enterprises (SMAEs) (Malaysian Department of Statistics, 2014). A recent trend in entrepreneurship shows that small businesses emerged as important key drivers for economic growth, which if compared to larger companies, provide more employment opportunities for the community (Rideout & Gray, 2013). Globally, small and medium size enterprises (SMEs) contribute 80 percent of global economic growth (Jutla, Bodorik, & Dhaliwal, 2002). Furthermore, agropreneurship's importance captured the attention of the country's important parties with the rise of the concept, 'agriculture is business' (Rezai, Mohamed, & Shamsuddin, 2011). This issue has also been increasing due the issue of sustainable agriculture as well as food security and nutrition. With this concept, people are encouraged to become agropreneurs, not only to create wealth for themselves, but at the same time to contribute to the sustainability of society. This shows that communities also believe that agropreneurship indeed plays a significant role in contributing towards economic growth. Therefore, future agropreneurs should be groomed, especially among youth.

Relying on the assumption that "entrepreneurs can be made", academic institutions took initiatives to promote entrepreneurship among graduates by offering entrepreneurship courses and programs. From there, scholars extensively examined the impact of entrepreneurship courses and programs on promoting entrepreneurial intentions (Fayolle & Gailly, 2015; Sánchez, 2013; Souitaris, Zerbinati, & Al-Laham, 2007; Virick, Basu, & Rogers, 2015). Entrepreneurship education for agropreneurs also captured the eyes of many scholars (Mohamed, Rezai, Shamsudin, & Mahmud, 2012; Muhammad, Ismail, & Eh Rak, 2013; Parcell & Sykuta, 2003). For example, Parcell and Sykuta (2003) conducted a survey to understand students' perception on the needs for an agropreneurship curriculum and reported that samples had shown needs for diverse sets of curriculums, of which some of them were beyond what the institutions offered. The authors reported that despite various formal agropreneurship courses offered by the universities, students still found difficulties in exposing their hands-on learning, therefore suggesting that more experiential learning is needed when it comes to training future agropreneurs.

Furthermore, academic institutions emerged as a place where 'critical tools' for the development of future entrepreneurs are offered. The 'critical tools' here implies all efforts universities take in contributing to the development of future entrepreneurs. What was not clear is how far these critical tools contribute in producing agropreneurs? This highlights a need to examine not only the impact of entrepreneurship education in influencing students' career choices, but also to examine an integrated impact of education and positive entrepreneurial environment support conditions provided by universities. In considering examining the impact of support mechanisms provided by the universities, Kraaijenbrink, Bos, and Groen (2010) suggest that scholars should investigate this from the students' perspective by measuring students' perceived university support.

Based on this, we take a step forward to examine if the current university offerings (both in terms of agropreneurship education and perceived university supports) has an impact on students' agropreneurial intentions the way general entrepreneurship education impacted entrepreneurial intention. It is in the interest of the current study to examine the extent to which the academic institutional variables play in influencing entrepreneurial intentions. As proposed by Liñán and Fayolle (2015), future studies in entrepreneurship are encouraged to delve into specific entrepreneurships and also into the role of context and institutional variables in shaping

individuals' intentions to become entrepreneurs. Therefore, this paper was tailored to investigate the impact of the academic institutional variable on students' entrepreneurial intentions in the context of agropreneurship, an area in which limited studies were found to address.

This study attempts to provide answers to the following questions: Will academic institutional variables impact students' perception of becoming self-employed in the agriculture sector? Do students' positive perceptions regarding self-employment in the agriculture sector influence their intention to become future agropreneurs? To what extent do academic institutional variables influence students' perception on agropreneurship that will later stimulate their interest and intentions to perform agropreneurial activities? Therefore, in addressing those issues, we proposed to operationalise the concept of agropreneurial intentions and its antecedents in the agropreneurship context.

LITERATURE REVIEW

Agropreneurship and Agropreneurial Intentions

The concept of agropreneurship is gradually getting attention in both agriculture and entrepreneurship areas, especially in redefining new and modern agriculture. A recent study showed that agropreneurship is not only wishful thinking or a new hype, it also has a profound impact on business growth and survival (Verhees, Kuipers, & Klopcic, 2011). The concept of agropreneurship is being promoted to encourage setting up enterprises related to the farm sector in an effort to modernise the agriculture sector. The term agropreneurship actually originates from entrepreneurship, which refers to the venture creation process (Saeed, Yousafzai, Yani-De-Soriano, & Muffatto, 2013). Agropreneurship is also linked with efforts to innovate and search for new ways and means to venture in profitable agricultural enterprises. Therefore, agropreneurship can be defined as an act of creating a venture that incorporates elements of innovation in an agriculture sector.

Since the concept of agropreneurship originates from the concept of entrepreneurship, studying agropreneurship must therefore include agropreneurial intention because it serves as a crucial element in the venture creation process (Saeed et al., 2013). In recent years, scholars paid great attention to the concept of agropreneurship intention for its great contribution in recognising potential future agropreneurs, but also in understanding how intentions to become agropreneurs are formed. Previous literature on agropreneurial intentions among students greatly focused on the impact of individual variables on intention formation. The studies highlight the contribution of factors, such as attitude, self-efficacy, perceived behavioural control and also other personal attributes (Abdullah & Naem Sulaiman, 2013; Movahedi, Latifi, & Sayyar, 2013; Zakaria, Adam, & Abujaja, 2014). The results of these studies showed that individual variables are imperative in explaining students' agropreneurial intention. However, the fact that an individual is surrounded by an extended range of cultural, social, economic, political, demographical, and technological factors (Turker & Selcuk, 2009) together with the concept that 'entrepreneurs can be made' highlighted the importance of academic institutional variables in shaping one's entrepreneurial intention.

Most of the research on entrepreneurial intentions based their investigation on two primary intention models: Theory of Planned Behaviour (TPB) (Ajzen, 1991) and Entrepreneurial Event Model (EEM) (Shapero & Sokol, 1982). Although TPB has significantly contributed to a wide range of research regarding human behavioural intentions, the model does not consider institutional variables. Moreover, scholars argued that these existing intention

models are either less predictive (Sniehotta, Presseau, & Araújo-Soares, 2014) or underspecified and need to be improved (Hindle, Klyver, & Jennings, 2009). One way to improve the existing intention theories is by integrating them. Therefore, in the current study, we integrated both theories to govern our hypothesis. We theorised that human agropreneurship behaviour is explained by their intentions to perform agropreneurial activities in which their intentions will be stimulated if a person perceives agropreneurship as desirable and feasible to be performed. Positive perception however, can be developed when a person has a certain amount of agropreneurship education and also support from an institutional party. Since the focus of our study was to examine agropreneurship intentions among youth, the institutional variables to be studied would be the academic institutional variables.

The Factors Influencing Agropreneurial Intention

A considerable amount of literature was published on agropreneurial intentions among agricultural students (Hashemi, Hosseini, & Rezvanfar, 2012; Shiri, Mohammadi, & Hosseini, 2012; Zakaria et al., 2014) due the rise of a new hype in the agriculture sector. Most of these literature focused on the impact of the individual variable when investigating agropreneurial intentions (Abdullah & Naem Sulaiman, 2013; Movahedi et al., 2013; Zakaria et al., 2014). However, less attention was paid to the impact of institutional variables. Following the argument that scholars should also consider contextual factors when investigating human behavioural intention (Turker & Selcuk, 2009) and also considering the impact institutional context has on entrepreneurship (Welter & Smallbone, 2011), we proposed that academic institutional factors will also impact students' intentions through the formation of entrepreneurial drive.

Previous studies that investigate the influence of educational context on entrepreneurial intentions categorised three basic university offerings (Kraaijenbrink et al., 2010; Küttim, Kallaste, Venesaar, & Kiis, 2014; Saeed et al., 2013). While Küttim et al. (2014) categorised the offerings as lectures and seminars, networking and coaching opportunity and resources for founders and entrepreneurs, Kraaijenbrink et al. (2010) and Saeed et al. (2013) conceptualised them as educational support, concept development support, and business development support. What we can conclude is that the first actually points towards the entrepreneurship curriculum, the second to the experiential learning approach, and the third to university support. These factors are discussed in more detail in the following sections.

The Impact of Agropreneurship Curriculum

Entrepreneurship is a discipline of traits that can both be learned and taught (Vanevenhoven, 2013). Studies postulate that entrepreneurial programs have a potential in teaching and stimulating entrepreneurial intention (Ho, Low, & Wong, 2014), which would supply students with adequate entrepreneurship education that would be expected to result in an increase in their entrepreneurial intention (Sánchez, 2013; Turker & Selcuk, 2009). Literature on agropreneurship education had also shown the same findings. A positive association between agropreneurship education and agropreneurial intention was recognised in a few studies (Mohamed et al., 2012; Muhammad et al., 2013). Agropreneurship education was found to develop students' interest in agropreneurship and change the traditional thinking of being employed in existing companies, but to become an agropreneur (Mohamed et al., 2012).

Realising the importance of academic institutions in shaping future Malaysian agropreneurs, various efforts were made to nourish agropreneurship at an institutional level, such

as offering formal agribusiness programs, short courses, training, conferences and seminars. In Malaysia, the local public universities also provided various agropreneurship courses to the students, such as Basic Agriculture, Basic Entrepreneurship, Agribusiness Entrepreneurship, Agribusiness Industrial Training, Farm Management, and Agribusiness Marketing. The aim of these courses is to furnish students with knowledge and skills so that future agropreneurs can be tailored. The agropreneurship curriculum that aims to equip skills necessary to become agropreneurs was predicted to be able to stimulate the intention to become agropreneurs among students.

However, what we still do not know is the extent to which agropreneurship education in terms of curriculum offered impacted students' agropreneurial intention. Even looking at the general entrepreneurship education, literature shows inconclusive findings that the impact of entrepreneurship education is still not well understood (Karlsson, 2013; Saeed et al., 2013). While some studies reported positive impact of entrepreneurship education on entrepreneurship (Fayolle, Gailly, & Lassas-Clerc, 2006; Küttim et al., 2014; Matlay, 2008; Saeed et al., 2013; Sánchez, 2013), others reported no impact (Fayolle & Gailly, 2015; Franco, Haase, & Lautenschläger, 2010). Even more surprisingly, some studies reported negative effects (Oosterbeek, Van Praag, & Ijsselstein, 2010). Moreover, recent reviews on entrepreneurship education agreed that studies examining the relationship between entrepreneurship education and intentions and new venture creation is still a limited and under-researched area (Goduscheit, 2011).

Zooming into agropreneurship education to be specific, the effectiveness of agropreneurship education in influencing students' career choice remains debatable and underexplored despite various efforts made by local academic institutions to nurture agropreneurship. Instead, scholars paid more attention on evaluating the effectiveness of a particular entrepreneurship course rather than the whole agropreneurship program and its curriculum and content (see for example Mohamed et al., 2012). Scholars agreed that the impact of entrepreneurship education in terms of how it changes a person's attitudes, perceptions, and intentions were scarce and deserve more attention (Peterman & Kennedy, 2003; Souitaris et al., 2007). In line with the principle role of an entrepreneurship program (Donckels, 1991), an agropreneurship curriculum at tertiary level should be able to stimulate students' intentions through the creation of entrepreneurship awareness and feasibility of executing an agropreneurship business.

The Impact of Agropreneurship Experiential Learning

At another point, studies on the impact of entrepreneurship education program (EEP) also showed negative results. A study by Fayolle and Gailly (2015) showed no significant impact on entrepreneurship intention both immediately after students finish the EEP and also six-months after. Similarly, in another study, it was found that students who engage in entrepreneurship education showed somewhat of a decline in their intention to become entrepreneurs despite the significant positive effect on their self-assessed entrepreneurial skills (von Graevenitz, Harhoff, & Weber, 2010). One possible explanation for this lies in the learning dissimilarities among students. It should be noted that students learn at different rates, have different motivations, start with different bases of knowledge and experience, and have access to different resource networks (Vanevenhoven, 2013).

One way to tackle this issue is to provide entrepreneurship education at the individual level with emphasis on the interaction between entrepreneurs and the opportunity. Moreover,

there were claims that universities that supply students with courses on theories emphasising entrepreneurship alone is still insufficient (Md Rasli, Khan, Malekifar, & Jabeen, 2013). Similarly, in educating future agropreneurs, universities could look at another angle of pedagogical approach that individual interaction with agropreneurship environment is emphasised. This approach is known as experiential learning. Under this approach, it is assumed that learning takes place in the occurrence of experiences (Dhliwayo, 2008). Experiential learning, which is defined as a knowledge creation process through the transformation of experience (Kolb & Kolb, 2005), was acknowledged to be capable in producing entrepreneurs just the way it produces other people, such as professionals (Dhliwayo, 2008). Furthermore, experiential learning in agricultural economics was revealed to be superior than traditional classroom learning (Parcell & Sykuta, 2003).

An implementation of entrepreneurship education with an absence of experiential learning in a supportive environment was argued to not affect students' perception of entrepreneurial feasibility (Peterman & Kennedy, 2003). Among the most common types of experiential learning identified in business and management schools are: field trip, internship, guest speaker, simulation and team-building exercises (Baden & Parkes, 2013; Clark & White, 2010). Rather than just learning theory, experiential learning is about action and therefore it unlocks one's capabilities (Jennings & Wargnier, 2010) and give opportunities to students to see themselves to be real entrepreneurs rather than pretending to be one (Vincett & Farlow, 2008).

In short, experiential learning seems to have power in influencing entrepreneurial intentions (Ho et al., 2014; Nenzhelele, 2014). While the literature substantially explored the effect of entrepreneurship experiential learning in general, empirical investigations particularly linking agropreneurship experiential learning with students' intention to become agropreneurs were very limited. Along with another researcher, we believe studies on the impact experiential learning on entrepreneurial intentions are still lacking (Nenzhelele, 2014). Previous studies on the effect of experiential learning tends to focus on sets of skills gained by students instead of on its influence on entrepreneurial intention (Ho et al., 2014). Therefore, the present study holds to believe that agropreneurship experiential learning is integral in developing students' intention for agropreneurship.

Impact of Perceived University Support

Universities were acknowledged to be the right and best place in providing students with training and experiences to embark in an entrepreneurial career (Ghazali, Ibrahim, & Zainol, 2012). They offer opportunities for students to view entrepreneurship more feasibly and desirably. Basically, individuals become successful entrepreneurs because of two things: their willingness and entrepreneurial abilities as well as supportive environment conditions (i.e. institutional variables) (Othman, Hashim, & Ab Wahid, 2012) of which both can be gained from an environment within which an individual or institution was prepared for a future task (Othman et al., 2012). Since a university is the place where students formally acquire necessary entrepreneurial abilities and skills and systematically learn how to become successful agropreneurs, it should also be the place where students turn for supports needed for initial venture creation.

It was postulated that many students' entrepreneurial aspirations were hindered due to inadequate preparation (Wang & Wong, 2004), such as insufficient business knowledge and lack of risk taking preparation. Because of this, agropreneurship may not been as feasible or even desirable to students. One way to supply adequate preparation to students is by fostering a

supportive university environment, such as supplying resources like networks, inclusion of role models, and giving a one-to-one support basis (Saeed et al., 2013).

University support components can be both intangible (e.g. faculty consultants, technology transfer offices) and also tangible (e.g. university venture funds, university incubators, physical resources). There was a recent argument that university support should be assessed from students' points of view in order to understand how these support impact students, especially in terms of career choice (Saeed et al., 2013). These supports, especially concept development and business development supports (Saeed et al., 2013), if perceived by students to be effective, may increase their perception on agropreneurial desirability and feasibility that later may enhance their agropreneurial intentions.

University support was found to significantly associate with entrepreneurship development, particularly in intensifying students' entrepreneurial intention. For instance, Hashemi et al. (2012) in their study on the influence of self-efficacy and college entrepreneurial orientation on intention to become entrepreneurs, found that university supportive conditions increases students' perceived self-efficacy and their involvement in entrepreneurial activities. A year later, Saeed et al. (2013) found similar results that perceived university support has significantly influenced students' entrepreneurial self-efficacy. In line with the previous researcher who used students as their context, we postulate that perceived university support seems to contribute to the formation of entrepreneurial intentions among students. However, it remains debateable whether and how those results can be generalised in regards to the agropreneurship context.

Mediating Role of Perceived Desirability and Perceived Feasibility

Performing agropreneurship depends greatly on individuals' capability of performing the behaviour in question because peoples' behaviour and actions are contingent on the level of confidence in their own ability to carry out specific tasks (Hopp & Sonderegger, 2014; Townsend, Busenitz, & Arthurs, 2010). People will only engage or perform a certain behaviour if they believe in their capability to succeed in their performance. This belief is associated with individuals being expected answer to the 'can I do it?' question (Dodd, Komselis, & Hassid, 2009). The answer to this question depends on how an individual perceives an entrepreneurship to be feasible or not to perform (Dodd et al., 2009).

Linking this to the context of the present study, if an individual perceives that agropreneurship is feasible, the answer to that question would be a 'yes', and vice versa. Following that question is the question, 'Do I want to do it?' The answer 'yes' to the second question depicts the desirability of the behaviour to an individual. Most importantly, the answer 'yes' to both questions reflects individuals' positive perception towards a certain behaviour. Higher entrepreneurial intention may develop if an entrepreneurship is perceived as a place where success can be achieved. When entrepreneurship is perceived to be feasible and desirable, which was also termed to be entrepreneurial drive by Florin, Karri, and Rossiter (2007), together with entrepreneurship as one's overall goal in life and opportunities to perform entrepreneurial acts exist in front of them, the likelihood of entrepreneurial intention formation is therefore great. (Elfving, Brännback, & Carsrud, 2009). Therefore, these two perceptions are very important in the development of agropreneurship because people only create a firm when a precipitating event lets them perceive the agropreneurship activities to be more desirable or more feasible than other alternatives (Liñán & Santos, 2007).

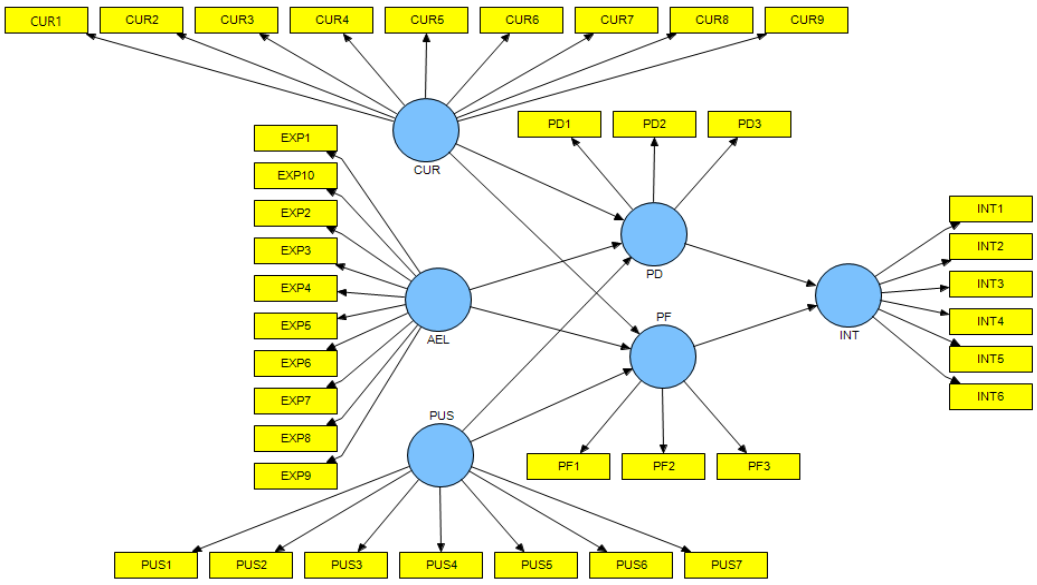
While numerous studies treated perceived feasibility and perceived desirability as direct influences on individuals' intention to become entrepreneurs (Dissanayake, 2014; Fitzsimmons & Douglas, 2011; Giagtzi, 2013; Krueger, 1993; Solesvik, Westhead, Kolvereid, & Matlay, 2012), scholars also suggested that entrepreneurial perceptions could also mediate the relationship between intentions and its antecedents (Ali, Lu, & Wang, 2012; Sajjad, Shafi, & Dad, 2012; Shook & Bratianu, 2010).

Unfortunately, despite the rich findings on the impact of entrepreneurial drive on individuals' intentions to become entrepreneurs and its mediating role in predicting relationships between intentions and its antecedents, the findings are still inconclusive. Studies examining the mediating impact of perceived feasibility and perceived desirability on students' entrepreneurial intentions are still inadequately available. Most of the existing studies that examine the mediating impact of entrepreneurial drive focused their research merely on general entrepreneurship (Byabashaija & Katono, 2011; Saeed, Muffatto, & Yousafzai, 2014; Sajjad et al., 2012; Shiri et al., 2012; Shook & Bratianu, 2010). What is not yet clear is the mediating impact of entrepreneurial drive on specific entrepreneurship areas, such as agropreneurship. Furthermore, while numerous studies regarding entrepreneurial drive were conducted abroad, scholars proposed such a study that include elements of entrepreneurial drive should also be included in investigating entrepreneurial intention in local contexts (Min, Ling, & Hooi, 2012).

Theoretical Framework and Research Hypotheses

Based on the literature, the following research framework was developed for further empirical investigation (see Figure 1).

Figure 1
RESEARCH MODEL OF AGROPRENEURIAL INTENTION



Note: CUR, agropreneurship curriculum and content; AEL, agropreneurship experiential learning; PUS, perceived university support; PD, perceived desirability; PF, perceived feasibility; INT, agropreneurial intentions.

Fitzsimmons and Douglas (2011), mentioned that expectancy theory, 'suggests that an individual will act in a certain way based on the expectation that the act will be followed by a given outcome (expectancy) and on the attractiveness of the outcome to that individual (value or valence)'. Besides perception of attractiveness (perceived desirability) of the outcome, people will also execute a certain behaviour if they perceive that the behaviour is feasible to execute. Studies showed that one of the impacts of entrepreneurship education is an increase in perceived desirability and feasibility (Peterman & Kennedy, 2003; Saeed et al., 2013). Perceived feasibility is created by education by increasing students' level of knowledge, enhancing their level of confidence, and self-efficacy, while perceived desirability is impacted in such a way that education helps students to see that entrepreneurship is socially acceptable and personally rewarding (DeTienne & Chandler, 2004). Entrepreneurship education was also found to exert positive influence on students' perceived feasibility. Based on the foregoing argument, it was hypothesised that:

H1a: Agropreneurship curriculum is positively related to perceived desirability.
H1b: Agropreneurship curriculum is positively related to perceived feasibility.

Entrepreneurship perceived desirability can be stimulated by social influences, such as social interaction with successful real-world entrepreneurs (Shapero & Sokol, 1982). In regards to university students, this interaction can be experienced when undergoing experiential learning, such as an industry attachment. As Saeed et al. (2013) in his study represent perceived desirability as individual motivation, experiential learning approach provide opportunities for students to work with positive role models, such as real world successful entrepreneurs and professionals, and therefore get motivated by them and thus enhance perceived desirability of starting an entrepreneurship. Zampetakis (2008), argued that the feasibility of starting a business might not be students' concern at this stage because their career decision is still remote. However, an experiential learning approach also develops perceived feasibility of an entrepreneurship whereby by undergoing experiential learning, students are able to develop integrated sets of skills, such as cognitive, emotional and physical which are fundamentals in developing students' capabilities to solve real-word problems (Baden & Parkes, 2013). Based on Shapero and Sokol (1982) and Peterman and Kennedy (2003)'s arguments that experiential learning through enterprise education experiences and social experiences could influence entrepreneurship perceived feasibility and perceived desirability, we expected that students who undergo agropreneurship experiential learning during their study at university will have positive perceptions regarding starting agropreneurship enterprises. Therefore, the following hypotheses are formulated:

H2a: Agropreneurship experiential learning is positively related to perceived desirability.
H2b: Agropreneurship experiential learning is positively related to perceived feasibility.

Universities and colleges can significantly play a part in promoting agropreneurship either indirectly, such as providing and delivering entrepreneurship education to its students, or directly, such as by research commercialisation as well as becoming the seedbed for new ventures (Rasmussen & Sørheim, 2006). Therefore, a university is the most appropriate place for students to seek supports for initial venture creation. Moreover, a university's supportive environment and infrastructure is also important in changing students' perception on entrepreneurship feasibility (Peterman & Kennedy, 2003). This view was also supported by a

more recent finding that university support increases students' perceived self-efficacy and their involvement in entrepreneurial activities (Hashemi et al., 2012; Saeed et al., 2013). Literature also suggested that certain types of university support policies and practices, such as university venture funds (Lerner, 2005), venture creation approach (Ollila & Williams-Middleton, 2011), university incubators and physical resources (Mian, 1996) can encourage the development of entrepreneurial activities among students. Therefore, this study predicts that students' perceived university support contributes significantly to the development of positive perception to become agropreneurs. It is hypothesised that:

H3a: Perceived university support is positively related to perceived desirability.
H3b: Perceived university support is positively related to perceived feasibility.

People only create a firm when a precipitating event lets them perceive the entrepreneurship activities as more desirable or more feasible than other alternatives (Liñán & Santos, 2007). Based on this, many studies were conducted to investigate the association between perceptions and entrepreneurial intentions where a positive correlation between perceived feasibility and perceived desirability and entrepreneurial intentions were showed (Byabashaija & Katono, 2011; Elfving et al., 2009; Fitzsimmons & Douglas, 2011; Giagtzi, 2013; Nimalathasan & Achchuthan, 2012; Saeed et al., 2014; Vazquez, Naghiu, Gutierrez, & Lanero, 2010). In fact, scholars found that both perceived feasibility and perceived desirability were significant predictors of entrepreneurial intention (Shook & Bratianu, 2010). Perceived desirability and perceived feasibility were also statistically proven to directly impact students' entrepreneurial intentions (Ali et al., 2012; Wang, Lu, & Millington, 2011; Weerakoon & Gunatissa, 2014). The data analysis in Weerakoon and Gunatissa (2014)'s study yielded a regression line that explains that when holding other things constant, a one unit increase in perceived feasibility and perceived desirability will increase students' entrepreneurial intention by the odds of 0.06 and 1.046 respectively. Furthermore, entrepreneurial intentions were found to be stronger when individuals have higher perceptions of the feasibility of an entrepreneurial behaviour (Wang et al., 2011). Based on this, it is hypothesised that:

H4a: Perceived desirability is positively related to agropreneurial intentions.
H4b: Perceived feasibility is positively related to agropreneurial intentions.

While numerous studies treated perceived feasibility and perceived desirability as direct influences on individuals' intention to become entrepreneurs, scholars also suggested that entrepreneurial perceptions could also mediate the relationship between intentions and its antecedents. It was proposed that perceived desirability and entrepreneurial self-efficacy, which according to the authors measures one's perception of feasibility, and perceived social norms mediate the impact of entrepreneurial knowledge on individuals' entrepreneurial intentions (Roxas, Cayoca-Panizales, & de Jesus, 2008). The TPB also suggests when there are changes in individuals' attitudes and social norms as a result of an external environment, the entrepreneurial intensity is also expected to be changed due to the variation in its immediate antecedents (Roxas et al., 2008). Besides that, Zampetakis (2008) concluded in his article that 'factors influencing perceptions of the desirability and feasibility of starting a business will influence the strength of entrepreneurial intent'. This statement suggests the presence of mediation among these relationships.

The impact of entrepreneurial drive in mediating the relationship between intentions and its predictors was found in a few studies (Ali et al., 2012; Drennan, Kennedy, & Renfrow, 2005; Saeed et al., 2014; Sajjad et al., 2012; Shiri et al., 2012; Shook & Bratianu, 2010). In these studies, perceived desirability and perceived feasibility was found to mediate the relationship between intentions and its predictors. Therefore, this study hypotheses:

H5a: Perceived desirability mediates the relationship between agropreneurship curriculum, content and agropreneurial intentions.

H5b: Perceived feasibility mediates the relationship between agropreneurship curriculum, content and agropreneurial intentions.

H5c: Perceived desirability mediates the relationship between agropreneurship experiential learning and agropreneurial intentions.

H5d: Perceived feasibility mediates the relationship between agropreneurship experiential learning and agropreneurial intentions.

H5e: Perceived desirability mediates the relationship between perceived university support and agropreneurial intentions.

H5f: Perceived feasibility mediates the relationship between perceived university support and agropreneurial intentions.

METHOD

Context

Data were collected from agricultural and agribusiness related students pursuing diplomas and bachelor degrees in Malaysian public higher educational institutions (HEIs). This context was chosen in order to investigate the impact of academic institutional variables on the formation of agropreneurial intentions, particularly the impact of agropreneurship curriculum and agropreneurship experiential learning. This context is different from other contexts in the HEIs as they had undergone their industrial training in the agriculture field.

Sample and Procedures

This study focused on final semester students in order to ensure adequate information and knowledge, especially regarding the industrial training obtained by the students. Therefore, the following specifications for inclusion resulted: 1) students who were actively enrolling in diploma and bachelor degree in agricultural and agribusiness programs in Malaysian public HEIs, 2) students who were in the final semester of their study, 3) students who had undergone or were undergoing their industrial training.

Respondents were selected based on judgemental sampling technique. Due to the confidentiality issue that students' E-Mail and contact number cannot be disclosed to the third party, the program coordinators agreed to contact the students via E-Mail and provided a link to an online web survey. Six HEIs were approached to allow their students to participate in this study.

The overall population of final semester agriculture and agribusiness students in the six HEIs approached were 715. The data collection took approximately 3 months. The final sample of respondents in this study included 318 students that translated to a 44.5% response rate, which is higher than the previous reported online web survey response rate (see for e.g. Virick, Basu and Rogers, 2015). In order to run structural equation modelling (SEM) analysis with $\alpha = 0.05$,

anticipated effect size of 0.15 and desired statistical power of 0.95, the minimum required sample size is 119. Therefore, the sample size in this study is considered sufficient.

The 318 students in the sample consisted of 41.5 percent male and 58.5 percent female. Most of the students were pursuing a bachelor's degree in agriculture (67.9 percent) and the rest were studying at the diploma level. In regards of the age of respondents, the following distribution was reported: 21-22 years, 28.6 percent; 23-24 years, 63.5 percent; 25-26 years, 6.6 percent; 27-28 years, 0.3 percent (0.9 percent of the respondent did not specify their age category)

Measures

In order to measure the variables in the framework, the measurement items were adapted from previous researchers. There were 38 items in the questionnaire. Responses to each item were provided on a five-point to seven-point Likert scale based on the originally developed scales.

Agropreneurship curriculum and content was measured by adapting items developed by Keat, Selvarajah, and Meyer (2011). There are nine items measuring agropreneurship curriculum. However, one item was deleted due to a multicollinearity issue. Sample items were: 'The instructors are experienced and competent course presenters' and 'As a result of taking this course, I have better understanding about agropreneurship businesses.

Agropreneurship experiential learning was measured by 10 items. The original items were also developed by Keat et al. (2011). Sample items are: 'I feel confident about tackling unfamiliar work-based problems after attending the agropreneurship experiential learning' and 'The agropreneurship experiential learning I enrolled helps me to develop the ability to plan and organise my day-to-day work'.

Perceived university support was measured by 7 items, which included: 'My university/college creates awareness of agropreneurship as a possible career choice' and 'My university/college motivates students to start new agropreneurship businesses. Items used to capture perceived university support were based on Saeed et al. (2013) and Kraaijenbrink et al. (2010). All items measuring agropreneurship curriculum, agropreneurship experiential learning and perceived university support were assessed based on a five-point Likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree.

Perceived desirability was measured by assessing how desirable agropreneurship is to the respondents. Items used to measure perceived desirability were based on Solesvik et al. (2012). Three items on a seven-point Likert scale ranged from 1 = Strongly disagree to 7 = Strongly agree included the following: 'It is desirable for me to become an agropreneur' and 'It is interesting for me to become an agropreneur'.

Perceived feasibility is defined as the belief one holds regarding his/her personal capability in performing agropreneurship activities. There are three items used to measure perceived feasibility on a seven-point Likert scale. The items that were adopted from Solesvik et al. (2012) include the following: 'It is feasible for me to become an agropreneur' and 'Becoming an agropreneur is a realistic option for me'.

Agropreneurial intentions was measured by asking the respondents to state their agreement to the statement whether they were intending to create their own agropreneurship business at some point of time in their future. There are six items measuring agropreneurial intentions that were adapted from the original items developed by Thompson (2009). The items were assessed based on a 6-point Likert scale ranging from 1 = strongly disagree to 6 = strongly

agree. Sample items are: 'I intend to start my own agropreneurship business in the future' and 'I am constantly looking for agropreneurship opportunities'.

FINDINGS

Assessment of the Measurement Model

The data was analysed using SmartPLS 2.0. The purpose of using partial least squares (PLS) is to test the pattern of relationship between the variables in the research model by estimating the parameters in the outer and inner model. Before we run the PLS analysis, common method variance (CMV) first needs to be analysed. According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), analysing the CMV is necessary when the responses are gathered from a single source as it may have a serious effect on the findings. One way to tackle the CMV issue is to apply Harman's single factor analysis. This can be done by entering all the constructs in the model into an exploratory factor analysis (EFA). CMV is detected if a single factor emerges from the analysis or one factor accounts for the majority of the variance explained (Podsakoff et al., 2003).

Unrotated EFA analysis using SPSS version 22 was used to test if CMV is present in our data. The analysis returned six factors, explaining 70.49 percent of the variance with the first factor contributing 42.98 percent to the variance explained. Since the first factor did not account for the majority of the variance explained, the CMV was therefore not detected. We also run the multiple regression analysis to detect if there are any multicollinearity issue exist in our model. In order to determine the presence of multicollinearity among independent variables in this study, we run a multiple regression analysis and analysed two criteria namely Tolerance test and Variance Inflation Factor (VIF) The results showed that none of the Tolerance levels is less than or equal to .10; and all VIF values are well below 10. Thus, the measures selected for assessing independent variables in this study do not reach levels indicate of multicollinearity. Also, the Durbin-Watson value of 1.664 does not violate its 1.5 and 2.5 threshold (Ahsan, Abdullah, Fie, & Alam, 2009) and indicate that there were no auto correlation problems in the data used in this research. Thus, these results allowed the researchers to further analyse the data with the measurement model analysis.

Table 1
CROSS LOADINGS OF KEY VARIABLES

Items	CUR	AEL	PUS	PD	PF	INT
CUR1	**0.675**	0.480	0.428	0.308	0.251	0.238
CUR2	**0.740**	0.546	0.414	0.342	0.328	0.345
CUR3	**0.764**	0.529	0.465	0.353	0.315	0.329
CUR4	**0.834**	0.597	0.461	0.430	0.354	0.360
CUR5	**0.810**	0.615	0.434	0.512	0.431	0.462
CUR7	**0.825**	0.622	0.420	0.459	0.424	0.356
CUR8	**0.831**	0.573	0.397	0.400	0.426	0.403
CUR9	**0.749**	0.604	0.409	0.455	0.423	0.362
EXP1	0.541	**0.813**	0.387	0.475	0.459	0.490
EXP2	0.627	**0.814**	0.419	0.495	0.496	0.452

EXP3	0.597	**0.816**	0.424	0.560	0.512	0.454
EXP4	0.617	**0.809**	0.456	0.537	0.502	0.460
EXP5	0.582	**0.766**	0.426	0.492	0.498	0.418
EXP6	0.593	**0.746**	0.389	0.403	0.421	0.408
EXP7	0.570	**0.642**	0.428	0.466	0.411	0.381
EXP8	0.410	**0.758**	0.335	0.361	0.346	0.277
EXP9	0.565	**0.757**	0.401	0.393	0.387	0.393
EXP10	0.540	**0.770**	0.406	0.376	0.394	0.420
PUS1	0.405	0.393	**0.791**	0.253	0.197	0.157
PUS2	0.432	0.410	**0.815**	0.245	0.199	0.168
PUS3	0.489	0.461	**0.839**	0.306	0.301	0.234
PUS4	0.518	0.502	**0.826**	0.354	0.270	0.283
PUS5	0.313	0.328	**0.656**	0.198	0.199	0.243
PUS6	0.381	0.386	**0.773**	0.253	0.254	0.170
PUS7	0.412	0.394	**0.753**	0.262	0.228	0.179
PUS7	0.408	0.394	**0.791**	0.262	0.228	0.179
PD1	0.505	0.565	0.352	**0.935**	0.788	0.617
PD2	0.509	0.579	0.318	**0.956**	0.819	0.653
PD3	0.504	0.568	0.323	**0.951**	0.832	0.662
PF1	0.472	0.565	0.294	0.811	**0.949**	0.704
PF2	0.485	0.549	0.300	0.827	**0.945**	0.719
PF3	0.398	0.519	0.263	0.765	**0.916**	0.664
INT1	0.375	0.441	0.185	0.670	0.709	**0.812**
INT2	0.420	0.487	0.224	0.631	0.659	**0.869**
INT3	0.405	0.443	0.238	0.466	0.532	**0.803**
INT4	0.369	0.424	0.205	0.497	0.577	**0.847**
INT5	0.406	0.492	0.244	0.585	0.663	**0.898**
INT6	0.419	0.504	0.269	0.596	0.646	**0.892**

Note: AEL, agropreneurship experiential learning; CUR, agropreneurship curriculum and content; INT, intentions; PD, perceived desirability; PF, perceived feasibility; PUS, perceived university support.

Table 2
MEASUREMENT MODEL

Construct	Items	Loadings	AVE[a]	CR[b]	α
Agropreneurship curriculum	CUR1	0.675	0.607	0.933	0.919
and content	CUR2	0.740			
	CUR3	0.764			
	CUR4	0.834			
	CUR5	0.810			
	CUR6	0.825			
	CUR7	0.831			

	CUR8	0.749			
	CUR9	0.768			
Agropreneurship	EXP1	0.757	0.594	0.936	0.924
experiential learning	EXP2	0.813			
	EXP3	0.814			
	EXP4	0.816			
	EXP5	0.809			
	EXP6	0.766			
	EXP7	0.746			
	EXP8	0.642			
	EXP9	0.758			
	EXP10	0.770			
Perceived university support	PUS1	0.791	0.610	0.916	0.893
	PUS2	0.815			
	PUS3	0.839			
	PUS4	0.826			
	PUS5	0.656			
	PUS6	0.773			
	PUS7	0.753			
Perceived desirability	PD1	0.935	0.898	0.963	0.943
	PD2	0.956			
	PD3	0.951			
Perceived feasibility	PF1	0.949	0.877	0.955	0.930
	PF2	0.945			
	PF3	0.916			
Agropreneurial intention	INT1	0.812	0.730	0.942	0.926
	INT2	0.869			
	INT3	0.803			
	INT4	0.847			
	INT5	0.898			
	INT6	0.892			

[a]Average variance extracted (AVE) = (summation of the square of the factor loadings)/{(summation of the square of the factor loadings) ? (summation of the error variances)}

[b]Composite reliability (CR) = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) ? (square of the summation of the error variances)}

Firstly, construct validity was performed to assess the extent to which the result obtained from the instrument used in the study fit the theories of which the test is designed (Sekaran & Bougie, 2010). In order to assess construct validity, tests to assess convergent and discriminant validity were performed. Items loadings and cross loadings were examined to detect if there are any problems with any items in the instrument. As suggested by Hair, Hult, Ringle, and Sarstedt

(2014), the cut-off significant value of 0.5 for loadings was used. As such, any items with loadings lower than 0.5 were removed from the analysis. Table 1 shows that all of the items measuring a particular construct have a higher loading on that particular construct and loaded lower on the other constructs. As such, construct validity for this study was confirmed.

Next, a test to assess convergent validity was performed. This test was run to test if all of the items measuring a certain construct are all in agreement. Convergent validity can be tested by referring to factor loadings, composite reliability and average variance extracted (Hair, Ringle, & Sarstedt, 2011). The loadings for all items ranged from 0.642 to 0.956, which is higher than the minimum loading recommended by Hair et al. (2014) (Refer Table 2). In terms of composite reliability (CR), Hair et al. (2014) suggest that the CR value should meet the minimum value of 0.7 to depict that construct indicators indicate the latent construct. In this study, the CR value ranged from 0.916 to 0.963, which is considered sufficient and meets the minimum requirement. The next rule of thumb for assessing a measurement model is that the value of average variance extracted (AVE) should be higher than 0.5 (Hair et al., 2014; Hair et al., 2011) was also met. The results show that all six constructs are all valid measures of their respective constructs based on their parameter estimates and statistical significance.

Following convergent validity test was the discriminant validity test. This test was performed to assess if a particular measure is a reflection of some other measures. This can be detected by analysing the correlation between measures where a low correlation between measures depicts that a construct is unique that is not represented by other constructs in the model (Cheung & Lee, 2010). Based on Fornell-Larcker criterion, discriminant validity is established when the square root of each construct's AVE is higher than its correlation with other constructs (Hair et al., 2014). As shown in Table 3, the results illustrate adequate discriminant validity exists for the measures used in this study. As for construct reliability, the table shows that the Cronbach alpha for all constructs ranged from 0.893 to 0.943, which is very highly acceptable (Nunnally, 1978). In conclusion, the measurement model in the current study was satisfactory in terms of construct validity, reliability coefficient, convergent validity and discriminant validity.

Table 3
DISCRIMINANT VALIDITY

Constructs	AEL	CUR	INT	PD	PF	PUS
AEL	**0.771**					
CUR	0.757	**0.779**				
INT	0.544	0.488	**0.854**			
PD	0.603	0.560	0.676	**0.947**		
PF	0.588	0.512	0.746	0.852	**0.937**	
PUS	0.539	0.555	0.276	0.356	0.323	**0.781**

Note: Values in the diagonal are AVEs while the off-diagonals are squared correlations AEL, agropreneurship experiential learning; CUR, agropreneurship curriculum and content; INT, intentions; PD, perceived desirability; PF, perceived feasibility; PUS, perceived university support.

Assessment of Structural Model

The results of the structural model presented in Table 4 are within the recommended values, therefore providing support to proceed with hypotheses testing. Table 4 represents the results for hypothesis testing. H1 was examining the relationship between agropreneurship curriculum and perceived desirability and perceived feasibility. It was found that agropreneurship curriculum has significantly contributed to students' agropreneurship perceived desirability ($\beta = 0.246$, $p < 0.01$) and perceived feasibility $\beta = 0.166$, $p < 0.05$). The result also shows a significant influence of agropreneurship experiential learning on agropreneurship perceived desirability ($\beta = 0.421$, $p < 0.01$) and perceived feasibility ($\beta = 0.476$, $p < 0.01$). Moreover, H3, which examined the relationship between perceived university support and perceived desirability and perceived feasibility was found not to be significant. This finding contradicts the findings of Saeed et al. (2013)'s study where in their study, perceived feasibility was found to be significantly impacted by perceived university support. These results also explain a substantial proportion of the variance in perceived desirability (39 percent) and perceived feasibility (36 percent).

Table 4
SUMMARY FOR THE STRUCTURAL MODEL

Hypothesis	Relationship	Std. Beta	Std. Error	t-Value	Decision
H1a	CUR -> PD	0.246	0.076	3.226**	Supported
H1b	CUR -> PF	0.166	0.078	2.133*	Supported
H2a	AEL -> PD	0.421	0.080	5.292**	Supported
H2b	AEL -> PF	0.476	0.078	6.135**	Supported
H3a	PUS -> PD	-0.007	0.062	0.120	Not supported
H3b	PUS -> PF	-0.026	0.062	0.412	Not supported
H4a	PD -> INT	0.147	0.069	2.126*	Supported
H4b	PF -> INT	0.620	0.071	8.729**	Supported
H5a	CUR->PD->INT	0.036	0.021	1.703	Not supported
H5b	CUR->PF->INT	0.103	0.050	2.069*	Supported
H5c	AEL->PD->INT	0.062	0.032	1.996*	Supported
H5d	AEL->PF->INT	0.295	0.061	4.808**	Supported
H5e	PUS->PD->INT	-0.001	0.010	-0.113	Not supported
H5f	PUS->PF->INT	-0.016	0.038	-0.411	Not supported

*Note: **p < 0.01, *p < 0.05*
AEL, agropreneurship experiential learning; CUR, agropreneurship curriculum and content; INT, intentions; PD, perceived desirability; PF, perceived feasibility; PUS, perceived university support.

In H4, we investigated the relationship between entrepreneurial drive and agropreneurial intentions. Our results revealed that both perceived desirability – intentions ($\beta = 0.147$, $p < 0.05$) and perceived feasibility - intention ($\beta = 0.620$, $p < 0.05$) are significant. Our findings were

therefore consistent with the findings in a few previous studies (Dissanayake, 2014; Fitzsimmons & Douglas, 2011; Giagtzi, 2013; Krueger, 1993; Solesvik et al., 2012; Wang et al., 2011). In our study, perceived desirability and perceived feasibility were found to explain 56 percent of the variance in agropreneurial intentions.

To test the mediating effect, we used Preacher and Hayes (2004; 2008)'s method as suggested by Hair et al. (2014). Under this method, we bootstrapped the sampling distribution of the indirect effect. The bootstrapping analysis shows that the indirect effect $\beta = 0.103$, $t = 2.069$, 95% Boot CI: [LL = 0.005, UL = 0.201] for H5b, $\beta = 0.062$, $t = 1.996$, 95% Boot CI: [LL = 0.001, UL = 0.123] for H5c and $\beta = 0.295$, $t = 4.808$, 95% Boot CI: [LL = 0.175, UL = 0.416] for H5d were significant. All of these indirect effects do not straddle a 0 in between indicates exists a mediation in the relationships between agropreneurship curriculum and agropreneurship experiential learning with agropreneurial intentions. Based on this, it was proven that the mediation effect was statistically significant and therefore provides support to accept H5b, H5c and H5d. However, the bootstrapping analysis failed to prove the same for the rest of the mediation hypotheses. For H5a, despite the direct effects of the relationship between agropreneurship curriculum and perceived desirability and also of the relationship between perceived desirability and intentions were both significant, the mediating effect of curriculum – perceived desirability- intention relationship turned out not significant. This could be explained by the very small value of the indirect effect formed. As we can see from Table 4, the indirect effect for this relationship is very small $\beta = 0.036$, $t = 1.722$, 95% Boot CI: [LL = -0.005, UL = 0.077] that it straddles a 0 in between and therefore fails to indicate the existence of a mediating effect. Furthermore, the current findings did not prove that perceived desirability and perceived feasibility mediate the relationship between perceived university support and agropreneurial intentions.

This concludes that, for direct relationship, H1, H2 and H4 were supported, but H3 was rejected. However, for mediation relationship, H5b, H5c and H5d were accepted; but we failed to accept H5a, H5e and H5f.

DISCUSSION

Considering the results of our study, it seems that the academic institutional variables affected students' perception with regards to performing agropreneurship activities at some point of time after their graduation. For the whole sample in the current study, agropreneurship curriculum and also its pedagogical approach of experiential learning contributed to the positive perception about venturing in agropreneurship among the samples. In other words, the agropreneurship education provided by local HEIs is sufficient in providing theoretical knowledge and also hands-on experience to the students in that it succeeded in tailoring the students to see that agropreneurship is not only an interesting future career choice, but also an area that they are capable of venturing and earning for their living.

Despite the negative findings that entrepreneurship education in Malaysia failed to influence students to take up entrepreneurial challenges (Cheng, Chan, & Mahmood, 2009), the current findings found otherwise, at least in another sub-area of agropreneurship. Therefore, our findings are in line with a few previous researches that also revealed that entrepreneurship education significantly impacts students' entrepreneurial intentions (Fayolle et al., 2006; Matlay, 2008; Saeed et al., 2013; Sánchez, 2013).

Agropreneurship education in this country was found to be capable to open the students' eyes to see how agropreneurship can positively create wealth and how venturing in

agroreneurship is not an impossible career choice for anyone to succeed that may later create employment opportunity for others too. This could lead to future research on identifying which educational content and which pedagogical approach of experiential learning that affect students' perception the most to better understand their role and impact.

The pedagogical approach of experiential learning practised in the local HEIs in educating agropreneurship was also found to positively influence the students to develop a positive agropreneurial perception and intention. In detail, the six-month industrial attachment that is compulsory for students to attend during the final semester of their diploma or bachelor's degree provided students with substantial knowledge and hands-on experience in agriculture and agropreneurship. Logically, by engaging in experiential learning, students would feel more confident about tackling unfamiliar work-based problems and have more chances to develop their ability to plan and organise their day-to-day work. They also could develop their problem solving skills based on real problems they face during attachment in the industry. More importantly, the desire to start an agropreneurship among these students as well as their perception of agropreneurship feasibility was developed, perhaps, as a result of an increase in students' practical agribusiness knowledge and also due to the development of their agropreneurship-related skills that were produced during experiential learning. Just as mentioned by Peterman and Kennedy (2003), formal education in general does not have enough power to promote entrepreneurship. We do not say that formal classroom agropreneurship education does not encourage agropreneurship. Yes, it does to some extent. However, providing students with opportunities to engage in real world experience in handling agropreneurship will add more power to their level of desirability to embark in agropreneurship as a career choice. The findings of the current study therefore support the expectation of a previous study that practical experience is expected to influence perceived desirability and perceived feasibility of starting a business (Peterman & Kennedy, 2003).

Other than that, we found that perceived university support does not seem to affect students' agropreneurship perceived desirability and perceived feasibility. The results suggest that students experience with university support conditions has not stimulated a desire to embark in agropreneurship. Neither has it affected their perception of feasibility. Our result therefore contradicted the previous findings with regards to the impact of perceived university support (Saeed et al., 2013). In our view, the lack of a significant effect of perceived university support on students' agropreneurship perceived desirability and perceived feasibility could be due to students' long absence from their university. As mentioned earlier, our data was collected during the students' final semester where during this time, students were attached with the industry for at least six months. After completing their industrial training, students were required to prepare a report on their training, but were not required to have presence in the campus. Their long absence from the campus perhaps has not created awareness regarding the support programs and tools provided by the university.

Another possible explanation for this situation is that perhaps because students view that agropreneurship creation is still remote for them. If we look at the respondents' profile, one-third of the respondents are diploma level students from Malaysian polytechnics. Rather than thinking about becoming self-employed, they may pay more attention on their study in terms of pursuing a bachelor's degree. Therefore, students may tend to ignore the supportive environment provided by their university and agropreneurship desirability and feasibility may not be their concern at this stage.

Next, our results show agropreneurship perceived desirability and perceived feasibility explained more than half of the variance in agropreneurial intention. In this case, agricultural students who report both high agropreneurship perceived desirability and high perceived feasibility also tend to report high formation of intention to become agropreneurs. Therefore, our findings are aligned with previous findings where perceived desirability and perceived feasibility are significant predictors of entrepreneurial intentions (Ali et al., 2012; Shook & Bratianu, 2010; Solesvik et al., 2012; Wang et al., 2011; Weerakoon & Gunatissa, 2014). In particular, by looking at the beta coefficient (Refer Table 4) agropreneurship perceived feasibility explains agropreneurial intentions more than does perceived desirability. In other words, students' decision to become agropreneurs was affected more by a perception of their capability to execute agropreneurship activities rather than by their opinion that agropreneurship is an interesting avenue to venture on. This opened a new avenue to research on. Further investigation should be carried out to identify what stimulate agropreneurship feasibility among agricultural students, especially in the context of developing countries to better understand how agropreneurship feasibility is developed among this subject.

Our study also found that agropreneurship feasibility mediates the relationship between agropreneurship curriculum and agropreneurial intention and also between agropreneurship experiential learning and agropreneurial intention. Agropreneurship education plays a significant role in stimulating agropreneurial intentions among students where intentions could be increased if the education received could nurture a higher level of desirability and feasibility with regards to performing agropreneurship activities. Our results point to a direction of the work that agropreneurship lecturers and policy makers can help in developing and increasing intentions to become agropreneurs among students by nurturing a positive image on agropreneurship as well as providing guidance, especially in terms of hands-on experience in order to help students to view that agropreneurship activities are feasible to be performed. It is very reasonable that agropreneurship education (both in terms of curriculum and also the pedagogical approach of experiential learning) has an impact on perceived feasibility that later impact the formation of agropreneurial intentions. This is because students who receive adequate agropreneurship education are supplied and groomed with related agropreneurial skills that later can help them to see the feasibility in carrying out the agropreneurship activities.

Moreover, our results failed to prove that perceived desirability can act as a mediator in the relationship between agropreneurial intentions and two of its predictors at an academic institutional level (agropreneurship curriculum and perceived university support). Our results did not provide support of mediating effects in the relationships between these variables. The results suggest that perceived desirability does not act as a bridge that link agropreneurial intention and agropreneurship curriculum and also perceived university support. In the case of our respondents, agropreneurship curriculum and also perceived university support impacted the formation of intentions directly, but not indirectly through the formation of perceived desirability. One possible explanation for this is perhaps the local agropreneurship curriculum and also university environment does not create creativity and proactivity among students. Literature shown that perceived desirability is significantly impacted by creativity and proactivity (Zampetakis, 2008). Adequate education received should be able to nourish creativity and innovation, especially in developing a novel agropreneurship product and useful ideas. Students who are able to come up with novel products may view agropreneurship as desirable and may report higher intentions to become an agropreneur. However, to say that an agropreneurship curriculum and university support fail to promote creativity and proactivity that

could stimulate desirability and intentions requires empirical data. Therefore, it would be useful to test our results in another setting in order to ascertain whether they can be generalised or result from a certain population only.

CONCLUSION

The main objective of this study was to examine the effect of academic institutional variables on students' agropreneurship perceived desirability and perceived feasibility that in turn, would influence their intentions to become agropreneurs. We examined this proposition within the context of academic institutional support and individual entrepreneurial drive. Overall, our results support our hypotheses. Our results were in line with a previous study that highlighted the important role of positive perception regarding employment on entrepreneurial intentions (Fitzsimmons & Douglas, 2011; Saeed et al., 2013; Solesvik et al., 2012). The results also reflected the importance of institutional variables, particularly the academic institutions in influencing students' perception and intentions. In particular, our results revealed that agropreneurship curriculum and agropreneurship of experiential learning exerted a significant positive influence on perceived desirability and perceived feasibility that characterise the formation of agropreneurship's positive perception among students. This has implication for other targeted institutional and also social efforts.

In conclusion, our findings provided answers to our research questions:

1) Agropreneurship education, both in terms of curriculum and also its pedagogical approach, has a significant impact on the formation of agropreneurship positive perception.
2) Agropreneurship perceived desirability and perceived feasibility impact agropreneurship intention at a similar strength.
3) Overall academic institutional variables impact agropreneurial intentions through the formation of perceived feasibility, but not through perceived desirability. Universities should then come up with more extensive entrepreneurial programs and efforts in order to develop students' perceived desirability with regards to self-employment in the agriculture area.

Based on the findings of this study, we suggest that, besides maintaining the current implementation of agropreneurship education in this country, the university administrator and policy makers should also focus on how to increase its effectiveness such as focusing more on developing entrepreneurial inspiration. According to Souitaris et al. (2007) entrepreneurship programmes are a source of trigger events, which inspire students in such a way that is arouses emotions and changes mind-sets. In other words, inspiration is the programme derived benefit that raises entrepreneurial attitudes and intentions (Souitaris et al., 2007). Therefore, during the development of curriculum and content of agropreneurship education, policy makers, and educators should focus on developing entrepreneurial inspiration by offering students with opportunity to develop relevant skills, knowledge and experience, and offers relevant support and resources to enable them to start their own business.

The findings showed the current practise of sending students to undergo six-month industrial attachment should be continued and enriched with more hands-on agropreneurship experience to develop inspiration for agropreneurship. Given the fact that mentoring and coaching is the most important method for youth development (Lim, 2014) the university administrator and policy makers should include more programs that are able to develop agropreneurial inspiration such as conducting talk and agropreneurship forum with real

agropreneurs and motivators. Since, providing students with opportunities to engage in real world experience in handling agropreneurship will add more power to their level of desirability to embark in agropreneurship as a career choice, and based on Rasmussen and Sørheim (2006) proposal that entrepreneurship education that allow students active involvement contributes to actual venture creation, the university should therefore design an education program with teaching methodology that require students to be experientially involved in their agropreneurship learning process. It also should be noted that not all students who profess high agropreneurial intention end up in displaying the agropreneurship behaviours. Therefore, university administrators should take responsibility in promoting agropreneurship via experiential learning whereby those students with high inclination for agropreneurship should be exposed more with meaningful hands-on agropreneurship experience in order to increase their entrepreneurial drive and intention.

Limitation and Directions for Future Research

This study was not without any limitations. Firstly, our study investigated agropreneurial intentions rather than agropreneurial actual behaviour. Given the fact that research on agropreneurial intention is very scarce in agropreneurship literature, future research should investigate students' agropreneurial intentions from another angle, such as employing a longitudinal approach to investigate the extent to which agropreneurial intentions can be realised in the actual creation of agropreneurship enterprises. This could shed light to understand the rate of students who materialise their intentions and also to confirm whether intentions really eventuate actual behaviour. In addition, future research should focus on variable that strengthens the effect of intentions on behaviour. For example, the availability of resources and institutional forces may affect the relationship between people's intentions and subsequent entrepreneurship behaviour (Rauch & Hulsink, 2015).

Next, future research carried out using non student sample could offer a different insights into to the agropreneurial intention area. It would be very fascinating to find out how the tested variables in the current research framework affects age distribution and, if so, to what extent. Furthermore, future study should also choose samples from non-student population especially the young agropreneurs (those who just started their agropreneurship business) to more understand if entrepreneurial competencies significantly affected their agropreneurship venture creation process. Future study can also replicate this study by comparing those graduates who start early with those who start their businesses later in life (Rauch & Hulsink, 2015). To conduct this kind of study, the researcher will be required to follow the graduates over time and engaged in modelling time to event data.

Through our extensive literature review, our study focused on academic institutional variables that we found to be most influential in explaining agropreneurial intentions. We do not deny that the influence of other institutional variables, such as public and private institutional variables, could also be important. Future research should look into these variables too in order to better understand the impact of institutional variables.

Furthermore, we focused our investigation on the impact of institutional variables only where individual and social variables could also be influential in explaining agropreneurial intention. Integrated factors at these levels may better explain agropreneurship intentions and behaviour. Next, the results of our study were derived from the data we collected from universities in Malaysia only. Therefore our findings can only be generalised only to other

developing countries. Hence, we suggest that future research should apply our framework in a different context in order to extend its generalisability.

Our results revealed that perceived university support has no impact on agropreneurial intention. We proposed for future research to examine the effectiveness of the methods undertaken by universities in spreading news regarding support programs and tools they provide and also to research further in terms of which avenue of support mechanism that students perceive as helping them the most in building their career as entrepreneurs. Last but not least, in predicting agropreneurial intention, future study also should include other contextual factors including the support model (Trucker & Selcuk, 2009), cultural factors (Solesvik, Westhead, & Matlay, 2014), motivational factors (Ang & Hong, 2000) and/or regional factors (Kibler, 2013).

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