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Entrepreneurial capacity-building in HEIs for embedding entrepreneurship and enterprise creation – a tripartite approach

Entrepreneurship and enterprise creation

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Abstract

Purpose – The aim of this paper is to conceptualise entrepreneurial capacity-building as an integrated approach within the international higher education sector. Whilst university-enterprise collaboration is recognised as being essential to promoting graduate employability and entrepreneurship, the lack of an integrated approach towards embedding entrepreneurship education and entrepreneurial capacity-building with an entrepreneurial skill and mind-set prevails in the higher education sector. With reference to the retail sector, increasingly competitive job markets and the need for entrepreneurial capacity-building place growing pressures on universities to nurture career-ready graduates with entrepreneurial acumen.

Design/methodology/approach – The theoretical paper presents a rationale for embedding entrepreneurship education into university curricula and for promoting university-business collaboration. Secondly, it reviews the extent to which entrepreneurial capacity-building is institutionally embedded to foster graduate entrepreneurship, university-business collaboration and business incubation within one strategic framework. Finally, the paper proposes five propositions within a tripartite approach that can foster graduate entrepreneurs with entrepreneurial skills and mind-set, useful for existing enterprises and start-ups. The implications for these propositions are discussed.

Findings – The authors propose five propositions with a tripartite approach that can foster graduate entrepreneurs with entrepreneurial skill and mind-set, skills for creating enterprises and university-enterprise collaboration within one strategic framework.

Practical implications – Increasingly competitive job markets and the need for entrepreneurial capacity-building place growing pressures on universities to nurture career-ready graduates with entrepreneurial acumen in social science (e.g. retail, business management and accountancy) and science (e.g. pharmacy, architecture and engineering) programmes centred within the tripartite approach.

Originality/value – Whilst university-enterprise collaboration is recognised as being essential to promoting graduate employability and entrepreneurship, the tripartite integrated approach embeds entrepreneurship education and entrepreneurial capacity-building with an entrepreneurial skillset and mind-set in the international higher education sector.

Keywords Entrepreneurial capacity-building, University-business collaboration, Entrepreneurship education, Entrepreneurial learning outcomes, Retail education

Paper type Research paper



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1. Introduction

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University autonomy enables the higher education (HE) sector to respond effectively to a rapidly changing set of demands from a broad range of stakeholders whilst ensuring that

they fulfil their mission as key components of national innovation systems. Societal expectations, as reflected in the three main roles of universities, include multiple objectives with the delivery of highly skilled career-ready graduates. They also need to be prepared to serve the demands of the knowledge economy with research and development (R&D) outputs leading to technological innovation and commercial utility and an attractive learning environment that meets the needs of increasing numbers of students (Simpson and Marinov, 2015).

The development of enterprising graduates from an education system is key to economic and social capacity-building that underpins a knowledge economy (Zamfir *et al.*, 2013). Embedding an entrepreneurial mind-set and skillset throughout undergraduate and postgraduate education is key to the success of developing career-ready graduates (Bjornali and Støren, 2012). In many sectors, innovative new approaches have enabled educators to adopt different approaches, such as in retail education, for example (Grewal *et al.*, 2018). The retailing industry, for instance is characterised by a fast pace of innovation dictated both by advances in technology, supply chain management and consumer behaviour (Roggeveen and Beitelspacher, 2018), which requires a different mind-set.

More rigorous strategic planning needs to take place at an institutional, national and policy level to ensure that universities adequately prioritise, resource and develop core dimensions of entrepreneurial capacity-building (Towers *et al.*, 2019). These include embedding entrepreneurial learning in curricula design and personal development frameworks, the development of university-enterprise collaboration for gaining applied knowledge and developing enterprise incubation capacity. The pedagogy concentrates on enterprise formation and opportunity exploitation processes with students developing an entrepreneurial mentality, together with an agility in responding to challenges, and to cope with and enjoy uncertainty, as well as enhancing their tolerance to risk (Lourenço *et al.*, 2013).

Developing enterprising behaviours, attributes, skills and competences such as creative thinking, communication, problem-solving, decision-making, opportunity-seeking, autonomy and self-confidence are essential HEI objectives in supporting entrepreneurial career paths and opportunity recognition processes.

The aim of this paper is to conceptualise entrepreneurial capacity-building as an integrated approach within the international HE sector. The paper firstly presents a rationale for embedding entrepreneurship education into the HEI curricula and assesses the challenges in the implementation of institutional strategies. Reference to the retail sector is used to show the relevance and need for the tripartite approach. The paper then argues the merits of a tripartite approach as an integrated solution and introduces a novel methodology for its implementation. The integrated approach is built on developing entrepreneurial learning outcomes across programme curricula, physical growth hubs as a space to facilitate university-enterprise collaboration and linked with start-up enterprise incubator activity.

2. Literature review

The need for a tripartite approach to enterprise education is borne out of the need to address the rapidly changing demands from a broad range of stakeholders (such as academics, students, funding bodies, governments and the expectation in society). These demands include key components of national innovation systems. At the core of an HE institution's (HEI's) missions is the delivery of highly skilled career-ready graduates who will be prepared for the demands of the knowledge economy, the development of R&D outputs leading to technological innovation and commercial utility and an attractive learning environment, which meets the needs of increasing numbers of students (Simpson and Marinov, 2015).

The development of enterprising graduates from an education system is key to the economic and social capacity-building that underpins a knowledge economy. The study of how new enterprises are created and the mind-set and skillset necessary to understand how to start and sustain a new business proposition is the basis for entrepreneurship (Ahsan *et al.*, 2018). Embedding entrepreneurial, knowledge, skills and competencies throughout undergraduate and postgraduate education in a tripartite approach is key to the success of developing career-ready graduates.

There is a need to move away from generic to contextualised approaches towards entrepreneurship teaching and learning education (Mehlhorn *et al.*, 2015; Lourenço *et al.*, 2013). Business schools, the traditional providers of entrepreneurial education, have tended to provide standardised approaches that are not relevant to all students across different disciplines (Gunn *et al.*, 2017), which can create barriers to the effective embedding of entrepreneurial education in non-business fields, including for example humanities, arts and agriculture, that show considerably higher propensities towards graduate entrepreneurship (Zamfir *et al.*, 2013). Best practice models towards delivering entrepreneurship education in non-business fields remain a subject of debate. Whilst Mehlhorn *et al.* (2015) advocated highly contextualised approaches towards entrepreneurship education that address specific competitive and risk factors, Lourenço *et al.* (2013) recommended an 80/20 approach with business schools delivering the majority of input focusing on transferable knowledge and skills.

The proposed tripartite approach outlined within the paper provides a mechanism to promote an entrepreneurial education within a disciplinary or cross-disciplinary context more reflective of reality. The approach reconceptualises the entrepreneurial learning context as well as the role and contribution of staff, students and external industry partners into what has been referred to as “a pattern of activities that is dynamic, recursive, and immersed in entrepreneurial practice” (Shepherd, 2015, p. 489). The tripartite approach seeks value in the combination of integrated experiences typified by an empirical approach, rather than a theoretical reductionist approach.

Many existing approaches are underperforming. Shim *et al.* (2002) suggested that leadership styles are influenced by various factors such as personal values, job characteristics, job satisfaction, organisational commitment, career progression and personal demographic characteristics. But, these factors alone fail to recognise the need for interactive approaches to education. Fischbach and Guerrero (2018) proposed the introduction of digital tools, such as mobile devices, to enhance education citing the retail sector as a case in point. Further, Sternquist *et al.* (2018) highlighted the need for stimulation of creativity in problem-solving to address the challenges posed by innovation in industry. Graduates have shown a lack of business and entrepreneurship knowledge and skills, limited entrepreneurial mind-set and limited interest in accessing financing and business support (Piperopoulos, 2012). To address these shortcomings, there is a need for a novel entrepreneurial framework. Entrepreneurial curricula development, enterprise skills and incubation creation and university–enterprise cooperation are already well understood (Zamfir *et al.*, 2013), and combining them into a tripartite approach will provide a holistic and integrated approach. The tripartite approach in Figure 1 below is built on combining entrepreneurial learning outcomes embedded within disciplinary curricula, physical growth hubs as spaces to facilitate university–enterprise collaboration with external stakeholders and skills for enterprise creation. Facilitative components, which are not new but are integrated innovatively within the tripartite approach, focus on the entrepreneurial process that is influenced by the active participants within the facilitated learning environment. Cross-disciplinary entrepreneurial learning outcomes within an experiential learning environment involving active and meaningful collaboration between industry and the university is at the core of the tripartite approach.

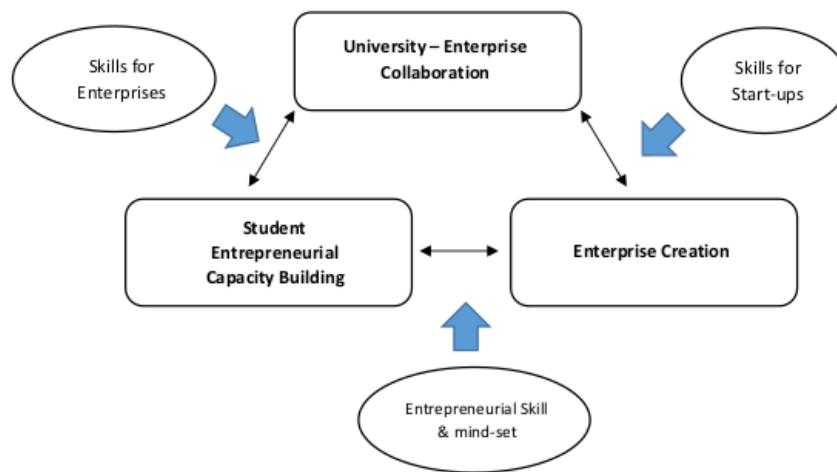


Figure 1.
The conceptual
framework for the
tripartite approach to
entrepreneurship
education

2.1 Emerging entrepreneurs

Entrepreneurship is “a distinctive example of the application of enterprise skills and attributes in a specific context” (Rae *et al.*, 2012, p. 382). An entrepreneur is a person who identifies or creates and acts on an opportunity, e.g. by starting a new business venture or social enterprise. There is a growing call for universities to engage in entrepreneurial capacity-building across all science and social science academic communities through embedding pedagogic changes across HEIs in all their programmes (Gibb, 2002; Piperopoulos, 2012).

Promoting entrepreneurial education has become a growing interest for both developed and emerging economies. Previous studies into graduate entrepreneurship across Europe (Zamfir *et al.*, 2013; Bjornali and Støren, 2012) discussed the development of entrepreneurial capacity-building amongst graduates not only as a means to build human capital and thus economic growth, but also to reduce unemployment and increase social inclusion. Moreover, previous research has shown entrepreneurial self-efficacy and capabilities make communities less vulnerable to crises and more resilient in recovery (Mehlhorn *et al.*, 2015).

There are at least two types of entrepreneurs, which can be identified based on the purpose of the enterprise, each of which deserves consideration in respect of HEI support. Firstly, opportunity-based entrepreneurs are those who create an enterprise based on the discovered or created opportunities. Schumpeter believes that creativity or innovation is the key factor in any entrepreneur’s field of specialisation. He argued that knowledge can only go a long way in helping an entrepreneur to become successful. This type of entrepreneur believes creativity and innovation are the backbone of the firm’s growth, extending knowledge and resource utilisation, particularly in difficult economic periods (Kumar and Sundarraj, 2016). The Tesco loyalty Clubcard and the Next catalogue Directory are examples borne out of innovative solutions to address new business opportunities, where contemporary business wisdom was unable to create new knowledge. Secondly, necessity-based entrepreneurs are those who run micro, small or medium sized businesses because they do not have any better option to work for a living (Reynolds *et al.*, 2002) such as a fashion retail business owner using their desire for organic-based products to develop a business opportunity. Even though opportunity-based entrepreneurship seems to have a more prominent role in entrepreneurial capacity-building agendas, necessity-based entrepreneurship also plays an important role in a nation’s economic development. In terms of social impact, the enablement of wide-scale necessity-based entrepreneurship education support is an important contribution that

HEIs can make to the wider society. The role of HEIs is to develop the capacity for both types of entrepreneurs in the context of the economies they serve.

2.2 Current approaches for embedding entrepreneurship education into higher education provision

A survey of 116 HEIs in England examined the extent to which entrepreneurial activity is currently embedded in university provision (Rae *et al.*, 2012). Over 90% of the participating institutions supported entrepreneurial capacity-building in some form, but the study highlighted several challenges in attempting to embed entrepreneurial activity. Even though an increase of entrepreneurial education in non-business subjects and the formation of student enterprise clubs could be reported, the predominantly voluntarist approaches taken by HEIs were found to limit student engagement. Moreover, entrepreneurial curricula lacked a clearly defined set of entrepreneurial learning outcomes that provided little structure and directionality to students' learning and development. At the institutional level, the study observed varying levels of supporting infrastructure and found that the absence of resources and dedicated senior management posts left overall entrepreneurial activities fragile.

Obtaining funding for entrepreneurial activity remains a challenge together with the ongoing sustainability of such initiatives (Zamfir *et al.*, 2013). As explained by Rae *et al.* (2012), designated public funding is constrained, and there is little incentive for institutions to invest in activities that do not attract research or commercial income. Most HEIs connect their activities to teaching and learning and knowledge transfer but not to business incubation, which leaves their initiatives deficient in one of the core aspects of entrepreneurial capacity-building. Although instructors have adopted a wealth of teaching techniques – including lectures, case analyses, group projects, in-class exercises, student journals, instructor-led discussions, student-led discussions, computer simulations and live marketing projects – there are few insights into the use of laboratory settings to promote active learning about marketing and retailing, through experiential learning (Valdez and Cervantes, 2018). The inclusion of an experiential-based incubation learning opportunity embedded within the curriculum, supported by industry partnerships, tries to address a common deficiency in entrepreneurial education by providing real-world experiences.

Previous research identified that knowledge on graduate venture creation, its barriers and incentives is limited owing to a lack of comprehensive evaluation frameworks (Fretschner and Weber, 2013; Zamfir *et al.*, 2013). As most graduates do not realise their entrepreneurial ambitions until more than five years after graduating, the frameworks are difficult to implement. Hence, there is a need for novel ways to engage with students and graduates to track their entrepreneurial endeavours and to understand their impact. Indeed, the results of the survey suggest that there is a need to re-evaluate the way entrepreneurship education in HEIs is conducted more generally.

2.3 Changing paradigm – effectual vs causation logic in entrepreneurship education

Contributions to the debate surrounding the need for a paradigm change in entrepreneurial education have raised two key issues. Firstly, whilst entrepreneurial careers were not historically viewed as career paths for graduates, changing economic conditions increasingly demand entrepreneurship education and graduate venture creation (Lourenço *et al.*, 2013). For example, Gunn *et al.* (2020) investigated patterns in the social construction of occupational jurisdiction and related professional career identity within the retail sector where collaborations with industry should be oriented to developing current, realistic learning experiences. This marks a need for a reform of university-level education towards entrepreneurial university education, appropriate within and across disciplines, which is flexible and responsive to learning opportunities. This has been described as a revolutionary

paradigm that does not typically follow scientific but rather effectual logic (Mehlhorn *et al.*, 2015). Effectual logic performs the opposite decision-making approach based on causal logic commonly taught in MBA programmes. As a result, it enables the entrepreneurs to develop nascent, responsive and adaptable business models through leveraging the resources available to them, work through contingent circumstances and determine flexible goals (Fisher, 2012; Read *et al.*, 2009). This requires an adjustment of graduate attributes and pedagogic techniques in line with this changing paradigm. Table 1 below compares and contrasts between effectual and causation logic in a decision-making approach.

The typical approach of university-level business and management education produces high levels of managerial capability based in causation logic. However, in the pre-venture stage, entrepreneurs use effectual logic more often than causation logic for experimenting with the various combination of resources to achieve potential goals. Effectual logic focuses on the entrepreneurs' estimation of affordable loss and their ability to create alliances with external stakeholders to handle uncertainty, the leverage of contingencies that can appear over time and control unpredictability based on the resources they have accumulated (Haugh, 2007; Sarasvathy, 2004). The processes associated with effectual logic are also needed in established firms when they face situations where organisational ambidexterity is needed. Examples of those situations are where there is high environmental uncertainty (Yu *et al.*, 2018) and where cooperation strategies are required (Galkina and Lundgren-Henriksson, 2017). Therefore, entrepreneurial education needs to complement causation process learning with effectuation process learning. Efforts to incorporate both effectuation and causation logic into entrepreneurial education are apparent in the literature. As an example, Yamakawa *et al.* (2016) suggested that the new entrepreneurial education pedagogy includes the practice of play, empathy, creation and reflection that enable the students to experience the nature of business as an integrated enterprise, practice entrepreneurial thought and action (the entrepreneurial method). This pedagogy identifies, develops and assesses entrepreneurial opportunities that create social and economic value and analyse both the local and global context because it relates to entrepreneurial opportunities. Finally, it explores the self, the team and the organisation in relation to entrepreneurial leadership. Despite these efforts, there is still very limited evidence of these approaches being adopted in HEIs and innovations in pedagogy are needed.

2.4 Pedagogic approaches in entrepreneurship education

Recent contributions have highlighted the relative immaturity of knowledge about the attitudes and entrepreneurial intentions of students and graduates. Fretschner and Weber

Principle	Causation logic	Effectual logic
Orientation approach	<i>Goal orientation</i> -> find resources that enable to achieve pre-defined goals	<i>Means orientation</i> -> set the potential goals based on who am I, whom I know and what I know
Risk management	<i>Based on expected return</i>	<i>Based on affordable loss</i>
Attitude towards external parties	<i>Potential competitors</i>	<i>Potential partners</i>
Attitude towards contingency	<i>Contingencies avoidance</i>	<i>Leverage contingencies</i>
View about future environment	<i>Forecast</i> -> future environment is perceived as externally given situation. Forecast help to adapt with the future	<i>Create/design</i> -> future environment is created/ designed from the entrepreneurs' action

Source(s): (Adapted from Dew *et al.*, 2009; Sarasvathy, 2008)

Table 1.
Effectual vs causation
logic comparison

(2013) explained that most studies build on the Shapero and Sokol (1982) model of the entrepreneurial event and Ajzen (1985) theory of planned behaviour when understanding entrepreneurial intentions. Subsequent attempts to refine, re-examine and combine these two models are built on disparate methodologies, with a recent iteration of the entrepreneurial intention questionnaire (Liñán and Chen, 2009), but their frameworks fail to create a pedagogy based on an integrated approach.

Fretschner and Weber (2013) proposed that the attitudes of students to entrepreneurship can be divided into predispositions that make graduates either more or less likely to become entrepreneurs and initiators of change. Examples of the latter include increased appreciation of self-reliance, which positively influences entrepreneurial endeavours, and increased appreciation of financial aspects, which was found to negatively impact students' aspirations to become entrepreneurs. These findings are significant to the pedagogy adopted for entrepreneurship education, as they suggest that the key to developing entrepreneurial propensity in students rests in the effective cultivation of particular attitudes to change and risk, a process that Fretschner and Weber (2013) referred to as belief updating.

Entrepreneurial education is instrumental in developing students' confidence, but can only be effective if built on a progressive set of entrepreneurial learning outcomes as well as innovative pedagogic techniques (Saad and Ariffin, 2016; Lourenço *et al.*, 2013; Bjornali and Storen, 2012). Mehlhorn *et al.* (2015) highlighted a bias in university curricula towards the development of certain skills, most prominently opportunity recognition and assessment, rather than in attitudes for entrepreneurship. The common problem is that students are taught entrepreneurship with limited understanding or exposure to practice (Gibb, 2002). This bias addresses only one part of the educational objective, failing to operationalise entrepreneurial knowledge into entrepreneurial behaviour. This suggests that overall universities do not appear to embrace the paradigm of entrepreneurial education. To do so would require HEIs to reconceptualise education within and across disciplines and to include entrepreneurial learning opportunities within all programmes.

2.5 An integrated approach to entrepreneurship capacity-building

The initial literature review has highlighted that, whilst a conceptual understanding of integrated approaches towards entrepreneurial capacity-building in HEIs appear to be emerging, their holistic and effective implementation remains a challenge. Reflecting on retail as an example, more rigorous and coordinated strategic planning needs to take place at the institutional and policy levels to ensure that universities adequately prioritise, resource and develop core dimensions of entrepreneurial capacity-building. These include the nurturing of graduate entrepreneurship through appropriately designed curricula and personal development frameworks, the development of university–business collaboration for knowledge transfer purposes and business incubation activities. The European Commission through its HEInnovate (2012) tool provides a useful strategic assessment and development methodology to assist HEIs evaluate and develop their organisational capacity to deliver entrepreneurial education.

The proposed tripartite approach aims to embed entrepreneurial activity as a holistic process that allows opportunity creation and development to emerge from the interaction between students, staff and external partners through the catalytic effect of an incubation facility. The tripartite approach will also address the problem of identification and ongoing sustainability of funding streams that are an integral part of institutional strategies, as well as the development of evaluation frameworks to assess the long-term effectiveness of institutional strategies. From a pedagogic perspective, HEIs must engage with the entrepreneurial paradigm to develop a relevant set of entrepreneurial learning outcomes and adequate teaching, learning and assessment pedagogies that are adapted to the needs of specific disciplines of study. This leads us to the conceptual tripartite framework presented in

Figure 2 below that captures the three axes of an integrated approach to entrepreneurial education.

In conceptualising the challenge of entrepreneurial capacity-building within HEIs, a number of propositions are proposed to assist in exploring a number of constructs, which underpin the tripartite approach to enhancing an HEI's ability to co-create and deliver an entrepreneurial learning environment for its students, graduates, staff and external engagement partners.

2.5.1 The role of tripartite approach in integrated entrepreneurship education curricula. To meet the objectives of increasing the entrepreneurial behaviour of graduates, HEIs need to concentrate effort into preparing their graduates. HEIs need to promote entrepreneurial attitudes and skills in their students by implementing student entrepreneurial capacity-building activities in the curriculum. Bacigalupo *et al.* (2016) provided the entrepreneurship competence framework as a guideline to use when auditing learning outcomes in three areas of competence (taking initiatives, resources and ideas and opportunities). Entrepreneurial education curricula that integrates causation and effectuation logic as well as understanding of both opportunity- and necessity-based entrepreneurship is also needed to strengthen the impact of entrepreneurial capacity-building (Mäkimurto-Koivumaa and Puhakka, 2013). Education based on causation logic education is an appropriate method to teach general management that prepares the student as a skilled manager. However, graduates also need to develop entrepreneurial skills and an entrepreneurial mind-set to become leading professionals or entrepreneurs. In most cases, undergraduate students are more likely to be novice entrepreneurs, rather than expert entrepreneurs, and therefore, in entrepreneurship education, educators can help them to become expert entrepreneurs by applying effectuation principles in their education (Günzel-Jensen and Robinson, 2017).

However, there are some barriers in implementing education based in effectuation logic in the undergraduate classroom. The context in which the entrepreneurial learning takes place is important. Even if an HEI includes experiential learning projects that include learning self-awareness, developing dynamic and flexible goal-setting, responding to uncertainty, forming social networks and implementing lean start-ups, novice student entrepreneurs do not see them as a real-life project (Günzel-Jensen and Robinson, 2017). As a result, it hinders the students engaging in effectual decision-making logic and has a negative impact on student commitment. Student entrepreneurial capacity-building needs to be combined with real-world enterprise creation activities through university incubators and business creation units that supports real-life projects and real-life engagement with external industry partners.

The common definition of business incubation is “a unique and highly flexible combination of business development processes, infrastructure and people designed to nurture new and small businesses by supporting them through the early stages of development and change” (UKBI United Kingdom Business Incubation Ltd, 2009, p. 2). An example of a real-life project that involves enterprise creation activities is the “Start-up Garage” concept, which supports students in designing and testing new business concepts addressing real-world needs in an entrepreneurial setting with business practitioners helping as mentors (Wright *et al.*, 2017). Students can learn to apply concepts, including design thinking, entrepreneurial finance, business organisation and entrepreneurial marketing, by experiencing them in the real business context. Furthermore, in the real-world setting, students are prompted to understand the extent to which they are opportunity-based entrepreneurs or necessity-based micro-entrepreneurs. This real-life approach presents greater opportunity for embedding effectual logic in students' practice and leads to the following proposition:

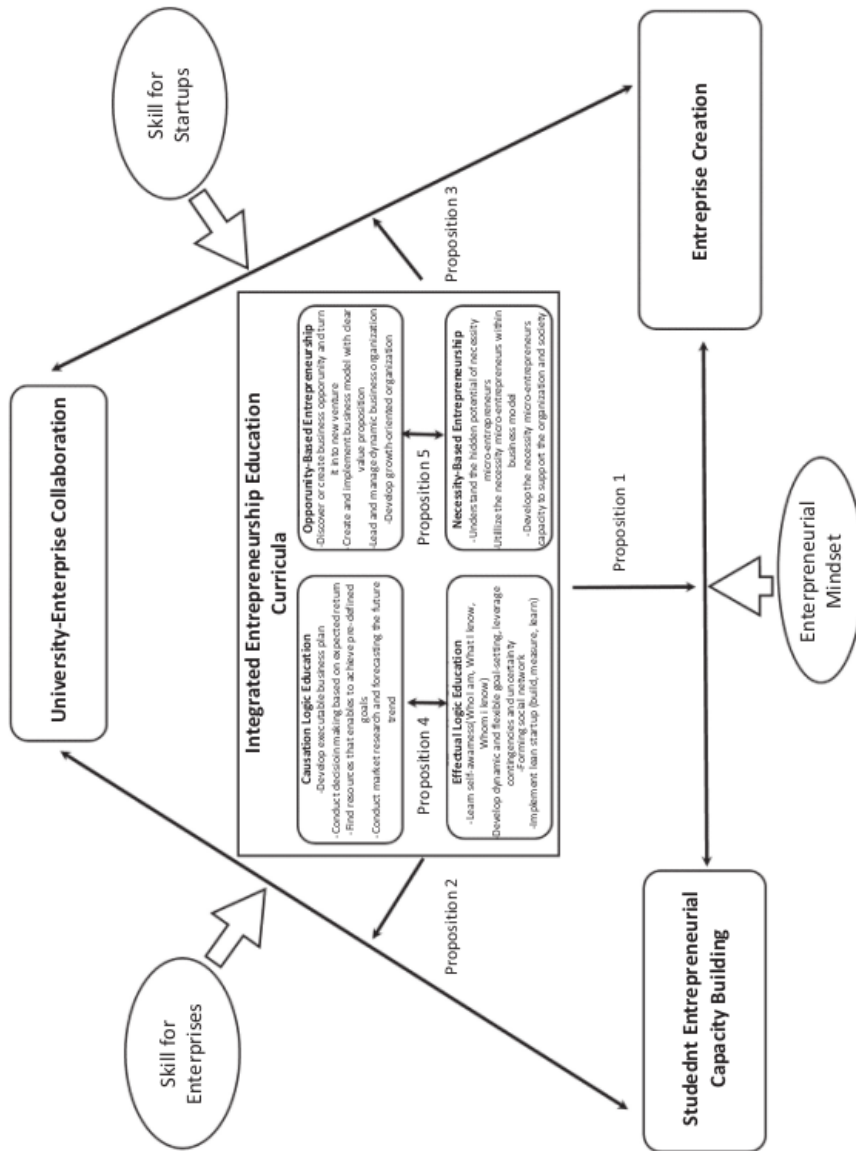


Figure 2. The conceptual framework for the tripartite approach to entrepreneurship education

Proposition 1. Entrepreneurship curricula with causation and effectuation logic, which incorporates opportunity- and necessity-based entrepreneurship attributes, is more likely to change the learning paradigm from general management to entrepreneurship education.

There are often gaps between the HEI education practices and the business needs (Tran, 2015). Irrelevant or out-of-date curricula, traditional teaching methods and limited career guidance often become the cause of low graduate employability that fails to satisfy the needs of employers. Furthermore, there is a misalignment between the graduates' and employers' requirements, particularly in fast-moving sectors such as online retailing, local sourcing or new product development. Graduates tend to overestimate themselves and employers feel that graduates lack relevant skills for employment (Matsouka and Mihail, 2016). Hence, student entrepreneurial capacity-building activities need to incorporate activities that enable students to match the expectations of employers. External enterprises can help the entrepreneurial learning experience of students through their relevant inputs and contribution such as through providing guest speakers, professional bodies engaging with HEIs or business support providers' involvement in the student experience. Moreover, the enterprises can help with the development of career planning toolkits that fit with the employers' needs.

Thriving competition in the marketplace drives enterprises to innovate, and their response often depends on the enterprise's context. It would be very valuable for the students to engage with real businesses during their studies. Preedy and Jones (2015) show that there are a variety of enterprise support provisions that can help students to learn from high-growth opportunity-based entrepreneurship activities, ranging from networking events, enterprise boot-camps and workshops, business advice sessions, to entrepreneur guest lectures. The students can use these support structures to discover or create business opportunities, clarify their value and create their business model. Mentors who have experience as entrepreneurs and innovative approaches will be key to this process.

Preedy and Jones (2015) also show that there are various ranges of enterprise support mechanisms that can help the students to learn necessity-based entrepreneurship, including funding for social entrepreneurship and student-led enterprise societies. These activities help students to understand the hidden potential of necessity micro-entrepreneurs and create new ventures in their own community. The growth of new swap and sharing social retail enterprise communities is an example. Another enterprise support mechanism are business idea competitions that can help the student to learn both causation and effectuation logic decision-making as they require the student to innovate and implement activities using an enterprise perspective, such as developing sustainable clothing enterprises (Su et al., 2019). Thus, these collaborations within integrated entrepreneurial education curricula lead us to develop the following proposition:

Proposition 2. Entrepreneurship curricula that combines student entrepreneurial capacity-building and university-enterprise collaboration is more likely to be successful in delivering entrepreneurship education that is sufficiently contextualised to meet the needs of specific sectors.

An entrepreneurship ecosystem that consists of business incubation and business networks, including cooperating enterprises and venture capitalists, has a prominent role in delivering high-quality entrepreneurship education (Jørgensen, 2011; McAdam and Marlow, 2008). Entrepreneurship literature finds that graduate entrepreneurs from university incubators have more chance of success in developing new enterprises than other entrepreneurs (Lasrado et al., 2016; Culkin, 2013). However, this can only happen when the incubation services help the graduate entrepreneurs to connect and align with key resources, such as

17 industry and community stakeholders (Lasrado *et al.*, 2016). Without active business networks, the university incubators have difficulties in producing product and technological process innovation from the graduate entrepreneurs (Barbero *et al.*, 2014). Furthermore, Culkin's (2013) survey suggests that 68% of their sample of graduate entrepreneurs consider that business networking was the most valuable service from a university incubator for their careers. The business networks help the graduate entrepreneurs to access new ideas and information that support the growth and survival of the new enterprises afterwards (McAdam and Marlow, 2008). The collaboration between university incubators and its business networks can be implemented through various activities ranging from accelerator programme packages (mentoring services, curriculum/training programmes, counselling services, demo days/investor days, location services, investment opportunities), strategic focus accelerator initiatives and selection process (e.g. for funding) to alumni relations (Pauwels *et al.*, 2016).

The incubator activities through university–enterprise collaboration can be an excellent mechanism in delivering sophisticated entrepreneurial education, especially for the students or graduates who want to become entrepreneurs. However, novice student entrepreneurs commonly have difficulties in applying several effectuation principles. They often have difficulties in understanding their own resources, competences and networks. They also have difficulties in measuring lost resource such as time and finance and also difficulties in expanding their networks. Finally, they tend not to learn from failures in developing new ideas (Günzel-Jensen and Robinson, 2017). The support from external enterprise partners in university incubators can help to alleviate these difficulties because the entrepreneurial ecosystem provides the networks, finance structure and the entrepreneurial working culture to maximise their learning. Moreover, mentors from retail, industry, commerce and social enterprise help to create clear business and organisation goals using market research that can guide the student or graduate entrepreneurs to develop the causation logic. There are many interactions of graduate entrepreneurs with society at large that enable them to combine opportunity- and necessity-based entrepreneurship into their business model. These entrepreneurial learning processes are intended to develop the graduates' skills to create and grow start-ups. Thus, we develop the following proposition:

Proposition 3. Entrepreneurship curricula with causation and effectuation logic, which incorporates opportunity- and necessity-based entrepreneurship attributes connected to external stakeholders, is more likely to develop an entrepreneurship learning ecosystem.

2.5.2 Graduate entrepreneurship outcomes from integrated entrepreneurship education curricula. In an innovation-led culture, enterprises such as start-ups and high-growth established companies often have to accommodate paradoxical strategies that consist of two or more simultaneous strategic objectives, being able to manage the tensions that result in ambidexterity (Han and Celly, 2008). On one side, the firm needs to exploit the innovation they have created, and on the other side, the firm also needs to continue to explore opportunities for innovation to ensure that they remain competitive in the future (Markides, 2013). Therefore, the firms need personnel who can perform the strategic ambidexterity where an exploitation strategy is relevant with causation logic that performs managerial routine. However, an exploration strategy is relevant with effectuation logic that performs entrepreneurial action (Guo *et al.*, 2016). Graduates who have been educated with both causation and effectuation logic have become used to performing strategic ambidexterity during their time in the entrepreneurial education process. This situation gives them an employability advantage in the current marketplace. Thus, we develop the following proposition:

Proposition 4. Entrepreneurial curricula that integrates the use of causation and effectuation logic enables graduates to develop strategic ambidexterity skills and develop both managerial and entrepreneurial capability.

Technology and digitalisation are a major influence on many aspects of business and society. Organisationally, they have driven major changes in sourcing, production, distribution and consumption. They have disrupted traditional patterns of enterprise, creating opportunities and challenges. In response, entrepreneurs need to learn to be agile, flexible and responsive; they need to be innovative and entrepreneurial in identifying and exploiting opportunities as the need arises.

In the current industry landscape, enterprises have developed from predominantly a products/services/provider business model into one with an internet or digital platform (Van Alstyne *et al.*, 2016). A typical company has enormous growth derived from the platform developer's resources. Unlike developed countries, those with emerging economies have more necessity-based entrepreneurs compared to opportunity-based entrepreneurs (Culkin, 2013). An example of necessity-based entrepreneurs are digital platform developers who help to grow their business whilst following the principles of opportunity-based entrepreneurship. This phenomenon has occurred with high-growth internet-based retail companies like Alibaba, Freelancer, Go-Jek, Tokopedia and Bukalapak. The existing approach of general management education often neglects the interaction between these types of entrepreneurships where HEIs do not create students as necessity-based entrepreneurs, but instead HEIs guide the students to involve the necessity-based entrepreneurs in the society within their business models. Graduates who are used to implementing the combination of opportunity- and necessity-based entrepreneurship such as with retail (Commins and Preston, 1997) have an advantage when seeking employment because they are educated to create the relevant solution for society, as well as producing a sustainable business model. Hence, we develop the following proposition:

Proposition 5. Entrepreneurship curricula that combines an understanding of opportunity- and necessity-based entrepreneurship enables graduates to deliver solutions leading to sustainable business models.

The proposed tripartite framework draws together three critical dimensions of entrepreneurial education that are available to HEIs, but seldom configured in a coherent way. The framework seeks to create a synergy between "university-enterprise collaboration", "student entrepreneurial capacity-building" and through an "enterprise creation" facility. The collaborative nature of the framework creates a supportive environment in which students, staff and external engagement partners can explore and develop entrepreneurial education across all subject communities and study programmes. The proposed tripartite framework can have significant impact in underpinning entrepreneurial education across disciplines, social science (e.g. digital and store-based retail, business management and accountancy) as well as science and engineering (e.g. pharmacy, architecture and engineering) programmes, centred on nurturing career-ready graduates.

3. Discussion

HEIs worldwide are facing challenges of relevance. As societies and economies develop, HEIs are being asked to equip their students and graduates with the knowledge, skills and competencies required for the modern work environment and to create knowledge and solutions to many emerging societal problems. Learning must be informed and relevant to the modern work environment creating entrepreneurial and innovative students and graduates with the tools to contribute to society at large. The following discussion will address each proposition.

3.1 Entrepreneurship education to develop entrepreneurial skill and mind-set (P1)

Most HEIs have included entrepreneurship in some part within their curricula, regardless of the programme subject. However, not all differentiate their entrepreneurship education approach from a general management approach. Some HEIs only adopt and convert the general management education approaches that commonly discuss corporate-scale cases and apply them to small business issues in the belief that the learning can be implemented into practice by the students. In other cases, HEIs adjust the learning outcomes that develop the entrepreneurial competences such as taking the initiatives, orchestrate the resource and developing ideas and opportunities both in the classroom and also in the physical business incubators activities.

The work of Solesvik *et al.* (2013) found that entrepreneurship-specific education tends to generate a higher intensity of entrepreneurial mind-set. The integration between entrepreneurship-specific education and student entrepreneurial alertness as well as student risk perception can lead to an improved entrepreneurial mind-set. In general, every student has entrepreneurial talent to some degree that can be maximised through effective entrepreneurship education involving the integration of entrepreneurial learning outcomes in the curriculum and business incubation activities. The efficacy of an HEI's entrepreneurial education activity should be addressed with research, suggesting that ineffective programmes may not increase entrepreneurial skill, but may and even reduce the students' entrepreneurial intention (Oosterbeek *et al.*, 2010).

3.2 Entrepreneurship education to develop skills for enterprises (P2)

HEIs are often aware that there are gaps between the learning outcomes from the university and specific industry needs. Therefore, they often involve external enterprise partners, including their alumni, in their curricula in an attempt to bridge the gap. HEIs involve industry guest lecturers in programme delivery, use short-term industry internships to expose their students to enterprise practices and a variety of activities, including mentoring, thematic internship with real enterprise project for relevant modules. Retail is a good example of co-developed curricula using advisory boards with sector-specific input and where the students experience activities across the whole supply chain. Such experiential activities are believed to facilitate improved student learning and adaptation to the real industry environment upon graduation.

The effort to integrate entrepreneurial learning outcomes into the HEI curriculum, and external enterprise collaboration can be a prominent solution for work readiness problems that appear because of either technical skill gaps that are related to current or future industrial best practice (e.g. Wang *et al.*, 2010), or non-technical skill gaps such as problem-solving, decision management, working with others and even political skills (Jackson and Chapman, 2012). This integration complements the previous effort to prepare graduates' work readiness such as providing project-based learning (Jollands *et al.*, 2012), international experience (Boden and Nedeva, 2010), pre-professional identity (Jackson, 2016) and workplace immersion through educator, graduate and employer collaboration (Jackson, 2013).

3.3 Entrepreneurship education to develop skills for start-ups (P3)

Developing graduate skills for high-growth start-ups requires a different approach, especially the skills required for their creation and development. Start-ups produce innovative products/services or business models that have only a few or even no benchmark. Often, unique knowledge from the internal organisations is not enough to nurture the creation and development of a new venture. Mentorship and advice from entrepreneurs or industry experts are particularly useful to deliver and support effectuation logic education methods

such as lean start-up and finance bootstrapping. These methods are commonly used in the entrepreneurial organisation and provide a useful and tangible contribution from industry partner participation.

The integration between business incubator activities and external enterprise collaboration provides benefit for both graduates, start-ups and mature commercial and social enterprises. For graduates' start-ups, it solves problems regarding validating ideas, especially those related to innovation in the current and future market landscape (Ahsan *et al.*, 2018). Often, entrepreneurs have difficulty in understanding the market landscape due to a lack of industrial experience (Dimov, 2010). For commercial and social enterprises, the fresh and emerging innovation from the start-ups can enable their future growth when they are successfully integrated within their enterprise portfolio (Utoyo *et al.*, 2019). To build up entrepreneurship skills and knowledge, both theoretical and experiential learning are desirable (Dooley and Kirk, 2007).

3.4 Entrepreneurship education to develop capability for strategic ambidexterity (P4)

The rapid change of the external business environment triggers HEIs have highlighted the importance of entrepreneurship in large enterprises. Therefore, in complementing the effectual logic education approach, which emphasises the systematic prediction by using well-developed tools, HEIs also emphasise student experimentation based on certain existing resources to produce nascent solutions. The graduates' understanding and appreciation for strategic ambidexterity will benefit the job market. There is a growing recognition for the need of spatial separation regarding the appropriate business models for enterprise spin-offs or start-up incubation spin-offs, seeking to enter an emerging market and an organisation with an existing business model (Markides, 2013). Enterprises commonly face huge challenges in implementing both of their exploration and exploitation strategies at once due to their legacy (Stettner and Lavie, 2014).

To handle such challenges, the enterprises often assign talented graduates for the exploration effort through a spin-off company or start-up incubation programmes, while exploitation effort is handled by experienced employees. The knowledge, skills and competence gained by graduates from an effective entrepreneurial education, which emphasise both causation and effectuation logic, have the potential to act as an enterprise growth engine. This results from a graduate's understanding of both established and pre-venturing enterprise stages (Mäkimurto-Koivumaa and Puhakka, 2013). Entrepreneurship education plays an important role for preparing graduates for employment in all aspects of enterprise creation and ongoing development in start-up enterprise and corporate intrapreneurship.

3.5 Entrepreneurship education to develop capability for creating sustainable business model (P5)

HEIs can use community development activities as learning opportunities for students where they interact with society and provide a societal contribution. These activities help students to learn about and understand necessity-based entrepreneurship in a practical way. Furthermore, some of HEIs upgrade the learning activities through a social entrepreneurship module. In these modules, students learn to create a business model that not only provides social impact but also contributes through society involvement. In such cases, opportunity-based entrepreneurship is integrated with the idea of necessity-based entrepreneurship as an engine of social and economic growth. Recent findings suggest that enterprises, such as the digital ecosystem strategy of online retailer Alibaba, that engages in value-enhancing programmes such as sustainability and/or micro-business development initiatives enhance their growth significantly (Lins *et al.*, 2017; Tan *et al.*, 2015).

The opportunity for entrepreneurial learning provided by opportunity- and necessity-based entrepreneurship through start-ups or enterprise involvement can underpin sustainable business models and create significant benefit for graduates, commercial and social enterprise and society in general.

4. Conclusion and implications for further research and practice

An initial review of literature of entrepreneurship education and case studies of HE approaches has highlighted five main challenges with regard to the successful implementation of such programmes. Firstly, attempts by HEIs to embed entrepreneurship education show varying levels of sophistication and often fail to achieve their objectives due to a lack of funding or commitment of key individuals (Saad and Ariffin, 2016; Rae *et al.*, 2012). Secondly, to develop entrepreneurial skills in graduates and nurture an entrepreneurial mind-set, a paradigm shift is required to move away from general management education to entrepreneurship education (Mehlhorn *et al.*, 2015). Thirdly, this presents the challenge of delivering entrepreneurship education that is sufficiently contextualised to meet the needs of specific sectors (Lourenço *et al.*, 2013). The fourth challenge rests in the level of sophistication of pedagogic models and the current understanding of their effectiveness (Fretschner and Weber, 2013). Finally, existing contributions or case examples address the different dimensions of entrepreneurship education in part, by separately focusing on either university–business collaboration, business incubation initiatives or pedagogical issues in the promotion of graduate entrepreneurship. The fifth challenge relates to an integrated approach that combines all three dimensions and thus delivers a holistic approach towards entrepreneurial capacity-building, which does not currently appear to exist (see also Nayyar *et al.*, 2013; Varblane and Mets, 2010).

The five challenges have identified a research gap that underpins an integrated approach throughout the whole learning journey in entrepreneurial education. The tripartite framework for entrepreneurial capacity-building can foster graduate entrepreneurship, university–business collaboration and business incubation within one strategic framework. We have made reference to the retail sector to show relevance and support for the need of the tripartite approach. By combining the expertise across an HEI, the development and implementation of the tripartite approach is capable of overcoming fundamental challenges associated with embedding entrepreneurial activity and will have significant impact at the national and international level.

Future research should seek to gain a greater understanding of implementing the tripartite framework and investigate the design of multi-level (i.e. network, institutional and programme) learning outcome programme plans, embedded sustainable state-of-the-art and targeted entrepreneurial learning pedagogies for the training and development of university staff and the development of physical growth hub spaces.

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