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Table of Content

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A qualitative study of factors that influences entrepreneurial intentions among business students and small business owners

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Abstract

The aim of this paper is to qualitatively investigate the entrepreneurial intention and antecedents to start-up business and self-employment by using the theoretical framework provided by Theory of Planned Behaviour (TPB). The study uses two phases of face-to-face semi-structured interview. In the first phase, a purposive sampling of non-probability sampling technique was used to select 20 business students. The second phase was a post-hoc, qualitative investigation of the motivations to start up business of young Vietnamese entrepreneurs. The results confirm validity of TPB in the term of explaining entrepreneurial intention among

business students and in term of the actual experiences of small business owners, as they perceive and the situations of their start-ups. TPB contributes mainly as the role of agency with the decision to become an entrepreneur. The study also finds other factors emerged such as contextual factors, push factors and transformational desire factors may have influence on entrepreneurial intention. This study contributes to entrepreneurial literature in many ways. First, the credibility of the Theory of Planned Behaviour is assessed by qualitative method on pre and post entrepreneurial behaviour. Second, other emerging factors have been found. Third, recommendations for qualitative study that include underpinning with TPB are proposed.

Introduction

Entrepreneurship has been widely considered as a critically important factor for the economic prosperity of the nations (Katz, 2007; Bowen and De Clerk, 2008). Goetz (2012) points out that self-employment has significant positive economic impacts not only on wage and salary employment but also on per capita income growth and poverty reduction. Many governments and higher education institutions have recognised the importance of entrepreneurship. As a result, it has triggered a significant increase in entrepreneurship research, entrepreneurial

education and entrepreneurial promotion programs worldwide. In Vietnam, the Vietnam Chamber of Commerce and Industry (VCCI) proposed the country would exert every resource for business development. VCCI (2016) defined that business start-up program not only arouses the entrepreneurship of young people, but more importantly builds an overall business start-up support programmed, including many creative and effective activities and programs. Currently, Vietnamese young people are facing with the difficulties in finding jobs, especially among university graduates. According to the Ministry of Labor-Invalids and Social Affairs (MOLISA) (2017), it reported that among the one million Vietnamese unemployed in 2016, the group with the highest unemployment rates was university graduates or those holding higher degrees. An estimated 190,900 graduates and degree holders, an increase of more than 35,000 people over the same period last year, cannot find work. In order to ease the unemployment problem, MOLISA is trying to create jobs for hundreds of thousands of unemployed university graduates in a project to export laborers. However, Beeka and Rimmington (2011) state that entrepreneurship is one of the career options students may consider shortly before or immediately after graduation. Hence, entrepreneurship should be seriously considered as a solution for the unemployment problem among young graduates. This fact calls for an investigation of the motives that drive graduating students to entrepreneurship is highly significant given the importance of entrepreneurship to

job creation and economic growth (Zellweger et al. 2011). The most commonly used framework to study determinants and antecedents of entrepreneurship is the Theory of Planned Behavior (TPB) (Ajzen, 1991; Linan and Chen, 2009). According to Kapasi and Galloway (2014), TPB is useful to obtain information about individual, but in the ways in which it has been used in the entrepreneurship field, it cannot provide information about other factors, particularly external factor, that contribute to propensity to become an entrepreneur. In addition, one of the most pertinent issues is that research underpinned by the TPB has rarely used qualitative approach. Hindle (2004) states that this trend creates a significant limitation of research in this field since methodological paucity weakens the testing and development on theory beyond counting number of instances of an event, which is business start-up or self-employment. Hence, the aim of this paper is to qualitative investigate the entrepreneurial intention and antecedents to start-up business and self-employment by using the theoretical framework provided by the TPB. The study uses two phases of face-to-face structured interview.

Literature Review

2.1 Entrepreneurial intention

There are many definitions of entrepreneurial intention worldwide. Tkachev and Kolvereid (1999) define that entrepreneurial intention is one's willingness in undertaking entrepreneurial activity, or in other words become self-employed. Shane and Venkataraman (2000) state that entrepreneurial behavior is a process that unfolds over time for the individual. Choo and Wong (2006) define entrepreneurial intention as the search for information that can be used to help fulfill the goal of venture creation. Entrepreneurial intentions can generally be defined as a conscious awareness and conviction by an individual that they intend to set up a new business venture and plan to do so in the future (Bird, 1988; Thompson, 2009). Pihie (2009) states intention as a state of mind or attitude, which influences entrepreneurial behavior. Entrepreneurial intention has been proven to be the best antecedent for one's entrepreneurial behavior (Krueger, 1993). Lee and Wong (2004) confirm that entrepreneurial intention is the first step of the process of establishment of a business that is generally long term. In addition, Van Gelderen (2010) states that entrepreneurial intentions are central to understanding the entrepreneurship process because they form the underpinnings of new organizations.

2.2 The Theory of Planned Behavior Model

The Theory of Planned Behavior model is the most widely used to research on entrepreneurial intention (Linan and Chen, 2009). There are three conceptually independent determinants of intention towards entrepreneurship, which are attitudes towards entrepreneurship, subjective norms, and perceived behavior control (Ajzen, 1991). Attitude towards performing behavior refers to perceptions of personal desirability to perform the behavior (Ajzen, 1991). It depends on the expectations and beliefs about personal impacts of outcomes resulting from the behavior. A person's attitude towards behavior represents evaluation of the behavior and its outcome. Attitude towards entrepreneurship refers to the personal desirability in becoming an entrepreneur (Kolvereid, 1996). Hence, the more expectations and beliefs towards self-employment reflect a favorable attitude towards entrepreneurship. Financial security was the most outstanding variable that made up for the attitude towards entrepreneurial intention (Gelderen, 2008). A positive relationship between attitude and behavioral intention has been reported (Kolvereid, 1996; Krueger et al., 2000; Autio et al., 2001; Gelderen et al., 2008; Bodewes, 2010; Tegtmeier, 2012; Yang, 2013; Nguyen, 2017). However, Zhang (2015) confirms that attitude fails to generate a significant impact on entrepreneurial intention in a study conducted in the United States.

Subjective norms refer to the person's perception of the social pressures for or against performing the behavior in question (Ajzen, 1991). Subjective norm reflects an individual's perception that most people of importance think that he or she should not perform the behavior (Ajzen, 1991). The Theory of Planned Behavior assumes that subjective norm is a function of beliefs. In this sense, when a person believes that his or her referents think that behavior should be performed, and then the subjective norm will influence his or her intention to perform that particular behavior. A positive relationship between subjective norm and entrepreneurial intention has been confirmed by many studies (Ajzen & Driver, 1992; Krueger et al., 2000; Autio et al., 2001; Wu, 2008; Tegtmeier, 2012; Yang, 2013; Zhang, 2015). However, Nguyen (2017) reports that subjective norm fails to generate a significant impact on entrepreneurial intention in a study conducted in Viet Nam.

Perceived behavior control reflects the perceived ability to execute target behavior (Ajzen, 1991). It relates to a person's perception on the degree of easiness and difficulties in performing such behavior, and it is assumed to reflect past experience as well as anticipated obstacles (Ajzen & Driver, 1992). This factor is influenced by perceptions of access to necessary skills, resources and opportunities to perform the behavior. If a person feels that he or she has control over the

situational factors, he or she may promote the intention to perform the particular behavior. Reversely, if that person does not have control over the circumstances, he or she may not have any or less intention to perform the particular behavior. Perceived behavior controls and influences intention to perform behavior. Many studies confirm a positive relationship between perceived behavior control and entrepreneurial intention (Krueger et al., 2000; Autio et al., 2001; Gelderen et al., 2008; Tegtmeier, 2012; Yang, 2013; Zhang, 2015).

2.3 Shapero's Entrepreneurial Event Model

Shapero's Entrepreneurial Event Model views firm creation as the result of the interaction among contextual factors, which would act through their influences on the individual's perceptions. Shapero (1975) lists three dimensions that determine entrepreneurial intention and they are "Perceived desirability", "Perceived feasibility" and "Propensity to act". Shapero (1975) emphasizes the importance of perception in predicting the intention to act in some specific ways. The perception requires that the behavior must be desirable and feasible and a clear propensity to act the behavior. Perceived desirability refers to the degree to which he/she feels attraction for a given behavior (to become an entrepreneur). Perceived feasibility is defined as the degree to which people consider themselves personally able to carry out certain behavior. The presence of role models, mentors or partners would be a

decisive element in establishing the individual's entrepreneurial feasibility level. Propensity to act refers to an individual's willingness to act on decision. The three perceptions are determined by cultural and social factors, through their influence on the individual's values system (Shapero, 1975). In a later study, Krueger (2000) modifies the model with two more components, which are specific desirability and perceived self-efficacy. Krueger studies the significance to understand the self-efficacy in relation to entrepreneurial intention and he also concluded that entrepreneurial usually ignore the concept of Self-efficacy in entrepreneurial researches. Self-efficacy theory explains what peoples' beliefs about their capabilities to produce effects are. The usefulness of Sapero model in prediction of entrepreneurial intention is reported by many empirical results. Krueger (1994) confirms that three components of this model explained approximately 50 per cent the variance in entrepreneurial intentions. The best predictor in that research was perceived feasibility. Daim (2016) provides insight into the entrepreneurial intensions of students in terms of genders and country of residence differences. The paper explores perceived feasibility and desirability for students in 10 countries. The entrepreneurship role is gender tested against desirability and feasibility. The results indicate that gender impacts entrepreneurship intention and the way it impacts is influenced by which country the students are from (Daim,2016). In addition, Krueger (2000) modifies the model with two more

components, which are specific desirability and perceived self-efficacy. Krueger (2010) studies the significance to understand the self-efficacy in relation to entrepreneurial intention and he also concluded that entrepreneurial usually ignore the concept of Self-efficacy in entrepreneurial researches. Self-efficacy theory explains what peoples' beliefs about their capabilities to produce effects are. A strong sense of self-efficacy strengthens human accomplishments and personal well-being in many ways (Bandura, 1977).

2.4 Qualitative Research Methods and Entrepreneurial Intention

Qualitative approach has drawn researchers' attention to apply it in entrepreneurial intention. Kapasi and Galloway (2014) confirm the validity of Theory of Planned Behavior in the context of the actual experiences of entrepreneurs as they perceive, in their own words, the influences and circumstances of their entrepreneurship (or lack of it). The results also suggest that the environment and economic structures within with individuals operate has, potentially, a great effect. Kumar and Ramalu (2014) applied Delphi method in order to categorize and fix variables on entrepreneurial intention through qualitative research in Indonesia. Kumar and Ramalu (2014) identify four factors that eventually suit the student desire to deal with entrepreneurship. They are Perceived Desirability, Perceived Feasibility, Self Realization-Participation and Propensity to act. John (2014) states that the

qualitative research result in their mixed method study found new factors affecting entrepreneurial intention such as transformational, affective, push and personal fulfillment motives. In addition, Lucky and Minai (2014) confirm that positive attitude, good attitude, attitude to risk and seek business opportunities and positive actions are significant for the student's entrepreneurial intention upon graduation from their entrepreneurship studies.

Research Methodology

Cavana (2001) and Salkind (2009) suggest the use of qualitative research to understand some research concepts such as attitude, behavior. They argue that the use of qualitative approach would provide better insight in understanding people's attitude, behavior or intention towards what they want to do. In addition, Ahmad and Seet (2009) propose the use of the qualitative survey approach for a study of thus nature drives dissonant responses. The first phase consists of 20 business students who are member of Start-up Business Club of Industrial University of Ho Chi Minh city. These students are in final year and show a high interest to start-up business after graduation. The study was conducted via face-to-face or calling interviews. The second phase includes 15 business owners who are business graduates in Ho Chi Minh city. The second phase involved qualitative post-hoc

rationalisation of these business owners on their recollected motivations to start up their own business. According to Salkind (2009), a face-to-face interview can provide researchers with a firsthand knowledge of the students' feelings, perceptions and opinions about their attitude in relation to their entrepreneurial intention upon their graduation from their entrepreneurial studies. Hence, this study also uses structured questions to interview students. The essence of questionnaire guide was to have a clear and apparent focus and call for an explicit answer.

In the first phase of this study, a purposive sampling of non-probability sampling technique was used to select 20 business students who are member of Start-up Business Club of Industrial University of Ho Chi Minh city and are highly motived to start-up business after graduating. Sample includes 12 male students and 8 female students with age range from 21 to 26. All students have finished Entrepreneurship and Small Business Management courses. The interviews were conducted around 15 to 20 minutes face-to-face or via phone calling. These interviews were then transcribed, coded and drive the key themes on factors that are associated with entrepreneurial intention of business students. The second phase of this study was a post-hoc, qualitative investigation of the motivations to start up business of young Vietnamese entrepreneurs in Ho Chi Minh city. This

research attempt to understand the antecedents of entrepreneurial behavior in business graduates already expressing the behaviour of highly interest and especially in light of the TPB framework and its antecedents. The sample included 15 business Vietnamese business owners, which are 10 male and 5 female with age range from 28-45 years old. Business owners are interviewed with semi-structured, in-depth interview. Interviews were transcribed and subject to thematic analysis in line with themes presented in literature and those that emerged from data collection. Most of business owners just started their business within 5 years and predominantly in service sector in Ho Chi Minh city and its sub-urban areas. Only a half of these businesses are reported to have profit declares at the time of this research and all of business has less than 10 employees. Remarkably, 6 business owners are self-employed and have no employee under their management.

Results

In the first phase of this study, the results suggest that three variables of TPB emerged as the key antecedents to predict entrepreneurial behaviour. The first theme was Attitude Toward Entrepreneurship. The second theme was Subjective Norms. The third theme was Perceived Behaviour Control. Each of three themes is briefly discussed as following:

Attitude Toward Entrepreneurship: Attitude toward entrepreneurship refers to perceptions of personal desirability to perform the entrepreneurial behaviour. This theme is demonstrated by business students participated in the semi-structured interviews:

It is very interesting to become an entrepreneur (Ngân).
I like to start up a business because I will help me have more opportunities, financial resource and relationship (Điền).
I have a strong desire to become an entrepreneur (Anh).
To me, Becoming entrepreneurs brings me a sense of personal satisfaction (Châu).
To me, it is true that becoming an entrepreneur brings more advantages than disadvantages (Thảo).

Subjective Norms: Subjective norm reflects an individual's perception that most people of importance think that he or she should not perform the entrepreneurial behaviour. During the interview, many students demonstrate their perception on entrepreneurial behavior:
Society encourages the pursuit of ideas from universities (Anh).
Many opportunities to meet people with good business ideas at university (Việt).

At my univerisity, entrepreneurship training and coaching are easy to access (Trâm Anh).

At my university, there are many successful people in establishing a new venture (Huyền).

The university has supporting facilities for student to start up (Kim).

Perceived Behaviour Control: Perceived behavior control reflects the perceived ability to execute the entrepreneurial behavior. A number of participants expressed their confidence to start up business in the following quotes:

I have enough investment for ensure the viability and growth of my start-up (Ming).

If I decide to start up, I believe I have a high feasibility of the new venture (Hiếu).

I have enough qualities to become entrepreneurs (Nhân).

Knowledge and experience gained from part time job motivate me to start up my own business one day (Trình).

I have relationship network for the creation of a new venture (Chiến).

From my professional network, I have an easy access to information to support business startups (Khoa).

In the second phase of this study, the results also suggest that TPB variables which are attitude to entrepreneurship, subjective norms and perceived behaviour control

did emerge as key antecedents to business creation of small business owners and self-employed interviewees. However, during data collection it became evident that other factors emerged as significant motivators for Vietnamese business owner to start up their own business. These factors are contextual factors, push factors and transformational desire factors. Each of three themes is briefly discussed as following:

Contextual Factors: During the interview, many small business owners expressed their satisfaction on contextual factors that encouraged them to start up their own business. Many business owners seized the opportunities from favourable business environment to start up their business. For example:

Legal reform made the process to start up a new business to become easier now (Dũng).

Spending in consumption and service sector is very attractive to start up business (Thùy).

Internet and social networks help young entrepreneurs easier to start up (Hải).

Other business owners included that the availability of supporting programs from government and sources of capital were the main motivators for their business creation. For example:

Government have many programs to support your entrepreneurs (Phúc).
Bank loans and investment funds are easier to access for young entrepreneurs (Giang).

Push Factor: Some participants express the notion of driven to entrepreneurship just because they were pushed or simply had no choice. In many cases, there were push/pull events which triggered subsequent forming of intentions and business creation behaviour. For example:
I could not find a stable job at the time I graduated so I decided to start up my business (Tân).
The last company I worked for was bankrupted so I have to start up to make a living (Thái).
The salary paid as a government officer could not help me to maintain my family's living standard so I decided to become self-employed (Phát).
My parent forced me to quit my office job to run my traditional family business in my hometown (Linh).
I could not balance my life when I have 2 babies so I decided to become self-employed as online store owner on facebook (Thái).

Transformational Desire Factors: During the interview, many participants expressed strong desire to transform society into better conditions not only in term of economic development but also in social well-being. Young Vietnamese entrepreneurs indicated strong desires to contribute for national improvement in the economy, crate positive influences, and create impact through job creation for other people. For example:

I feel bored with office job. I want to change my lifestyle so I decided to quit my office job and become self-employed (Yến).
I believed I can contribute more for Vietnam's economic development as an entrepreneur rather than spend the rest of my life as office worker (Tuấn).
I decided to become an entrerpreneur because I want to create more jobs for local people in my hometown (Dũng).
I had a dream to promote my traditional family business not only nationwide but also worldwide (Hiếu).
I became entrepreneur because I want to prove that women can do business successfully and inspire other young women in Vietnamese society (Hưng).

With the results from the second phase, it is evident to confirm that three variables of the TPB model can be defined as precursors to actual behaviour of business

owners. However, they are not the only elements that contribute to actual behaviour of entrepreneurs in the interview. In fact, three other factors have emerged as important contributors. The first factor is the contextual and environmental factors in which as entrepreneurs figured out business opportunities and the influence of these factors on their decision to start up business or become self-employed. The second factor is push factors in which entrepreneurs are passively take decision to start up their business or decide to become self-employed. The third factor is transformational desire factors which indicate strong desires of young entrepreneurs to improve economic and social condition and create a positive impact on society via their contribution as entrepreneurs.

Discussion and Conclusion

The results from two phases of this study confirm the validity of the Theory of Planned Behaviour model in prediction of actual entrepreneurial behaviour via qualitative research lens of pre and post entrepreneurial behaviour. It is evident that the Theory of Planned Behaviour has provide reliable antecedents for explaining entrepreneurship and the role of agency within the decision to start up business or decision to become self-employed. This result is in line with many confirmations from other researchers that the most commonly used framework to study

determinants and antecedents of entrepreneurship is the Theory of Planned Behavior (TPB) (Ajzen, 1991; Linan and Chen, 2009). However, TPB may not fill the gaps in the theory which did not full indicate the complexity of entrepreneurial intentions because it did not take into account the contributions of other factors such as contextual of environmental factors into the actual events of entrepreneurship. Kapasi and Galloway (2014) state that TPB is useful to obtain information about individual, but in the ways in which it has been used in the entrepreneurship field, it cannot provide information about other factors, particularly external factor, that contribute to propensity to become an entrepreneur. This fact calls for a systematic review on methodological approach in order to fully appreciate the complexity of entrepreneurial intention and subsequent behavior process.

The result from the second phase of this study have revealed three additional factors that contributed to actual entrepreneurial experiences of small business owners and self-employed participants. These factors are push factors, transformational desire factors and contextual factors. These additional factors revealed important insights of each interviewee throughout their own experiences of entrepreneurial process. Lee et al. (2011) discuss that in order to understand business creation intentions, it is the story of the individual in context and their life

experiences which facilitates such understanding. Therefore, for research which seeks to understand the experiences of individuals and the meaning-making involved, especially with complex phenomena, there is significant value in pursuing a qualitative line of enquiry (Marshall and Rossman, 1999). Furthermore, many previous studies confirm that cognitions which create intions for behavior are important but it is experiences that individuals have which indicate the existences of causal relationships (Ackroyd, 2004). The findings from second phase of this study reconfirm that qualitative approaches for entrepreneurial intention are beneficial because it allow small business owners and self-employed participants to tell their journey of entrepreneurship and the meanings attributed to further understanding many other elements with comprise complex phenomena. Although, TPB have proved its validity of predicting entrepreneurial intention in pre-entrepreneurial behaviour with business student sample and also in post-entrepreneurial behaviour with small business owners and self-employed participants sample. It is now evident to confirm that quantitative approach via TPB model is not the only choice to investigate the antecedents of entrepreneurial intention. Ultimately, qualitative approaches have greater potential to fully explore the complexity of a phenomenon such as entrepreneurial intentions and subsequent business creation.

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An investigation into the motivators and drivers of technological Innovation in accountancy firms based in the USA

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Abstract

Accountancy firms form an important element of a countries' economic value, however, whilst there is considerable research into the service sector as a whole, there is little research which focuses specifically on accountancy firms themselves and how they innovate. This study used semi structured interviews with five senior members of different accounting firms in the U.S. from which it was determined that the drivers of technological innovations were principally motivated by efficiency. Efficiency was important for a number of reasons. Firstly, aiding staff retention in terms of both providing feedback and allowing staff to perform less of

the mundane tasks and focus on more analytical and strategic work and it was suggested younger staff members enjoyed using the new technology encouraging staff retention and job satisfaction. Secondly, staying competitive with pricing for customers was also a driver for using innovations to become more efficient, although increasing the profit margin was also suggested as savings made by innovations are not always passed on to customer (I.e. value pricing), reducing the time and manual activity to do tasks was a key driver to improving the profitability of work. Thirdly, security was mentioned as an important area for innovation – both to keep confidentiality of clients' data and to allow employees to work securely off site allowing staff flexibility in terms of working from home or at a clients' site. The results also suggest that accounting firms engage in direct communication and collaboration with their employees, clients, alliances, and suppliers as a source of technological innovations.

Introduction

Accounting plays an important economic role in the economy assisting and shaping the economy due to its economic value, with an increase in revenue and profitability within the industry reported recently (AICPA 2016). However, it seems to be a common mindset amongst accounting professionals that they do not

need to innovate or change (Glaveski, 2015) and are simply followers of compliance without risking new innovations (Russell 2014). Client expectations are now however evolving based on availability of new technology such as improved software and clients are able to do some of this work for themselves. This is being recognised within the industry with awards for innovation (Russell 2014). Accountancy firms now need to adapt to provide a unique service that clients cannot do for themselves more cheaply.

The importance of the service sector has long been known as a key factor to the growth and competitiveness of developed countries (Javalgi et al., 2011). A professional service firm as defined by von Nordenflycht (2010) has the characteristics of knowledge intensity, low capital intensity and a professionalised workforce. Innovation and the service sector are believed to be important to economic growth. Zieba and Zieba (2014) argued that the concept of knowledge management definitely correlates with innovation, and demonstrated that the issue is well covered in literature. As knowledge management in particular is a main concern amongst Knowledge-Intensive Businesses (KIBs), it is beneficial to study the technology innovations in KIBs – as this industry significantly affects the growth of the economy. KIBs are divided into t-KIBs and p-KIBs (Miles, 2012) with t-KIBs representing technology-based KIBs, such as computer service firms

and engineering service firms, and p-KIBs representing traditional professional KIBs, such as accountancy firms and legal service firms. T-KIBs can be services which rely heavily on the use of scientific and technological knowledge such as computer services, architectural and engineering services, data processing services, and R&D and testing services. T-KIBs are directly related to information and communication technologies, focusing on synthetic knowledge. On the contrary, P-KIBs are more conventional professional services, including legal services, accounting, bookkeeping and auditing services, tax consultancy, and business and management consultancy. It should be noted that p-KIBs are considered to be users of technological innovations rather than developers – while t-KIBs take a more active role in creating and framing them (Miles, 1995). The majority of the existing literature focuses primarily on developing theories and the exploration of t-KIBs, as they are believed to be more influential in developing and influencing technological innovations than p-KIBs, however, when discussing technological innovations in the knowledge-intensive businesses researchers often overlook the existence of the professional service (p-KIBs) and focus more on technical-based services (t-KIBs).

In 1995, Miles et al., defined KIBs as “services that involved economic activities which are intended to result in the creation, accumulation or dissemination of

knowledge". A more general definition of KIBs was given in 2006 by Tovoinen as specialist companies who cater to other companies or organizations. Furthermore, den Hertog (2000) proposed that KIBs are 'private' entities providing professional knowledge based services; professional knowledge can be specific or technical discipline proficiencies intended to deliver intermediate services which are knowledge based. KIBs offer services that combine their own knowledge with that of their customer. This shows that the service provided is part of the innovation system which helps to spread valuable knowledge to other sectors in the economy (Wong and He, 2005). Hauknes (1998) explained the different roles of KIBs (towards their clients) in the innovation process:

1. KIBs facilitate innovation by supporting their customers' innovation processes, but they do not develop innovation nor transfer innovation to the customer.
2. KIBs transmit innovation by transferring innovation between companies even though the innovation transferred was not developed by them.
3. KIBs act as a source of innovation by taking a lead role in establishing and evolving innovation for the benefits of the customer.

As a firm operates, it builds and expands its business network with other entities throughout its life cycle. Firms expand and strengthen their inter-organisational relationships, and as a result, they are more exposed to other surroundings and are able to lessen the figurative distance between themselves and other entities. This helps them gain access to information about new technologies, which can be a technological spill over from either their business rivals or firms outside of their industry (Pennings and Harianto, 1992).

In 2004, Greenhalgh et al., defined service innovation as "a novel set of behaviours, routines, and work methods that improve outcomes, administrative efficiency, cost effectiveness, or user experience implemented by planned and coordinated actions". A number of authors have discussed service innovation in more detail Toivonen and Tuominen (2009) gave a meaning to service innovation building on the Schumpeterian approach in a similar viewpoint; however, such as suggesting there is a separation between service outcome and the development process of service, innovations must be new to actors; however, they have to be new in a broader context not exclusively to their inventor and innovations must be beneficial to actors (Witell et al., 2016). Another view suggested by Menor and Roth (2007) is that service innovation can be an extension to existing services or a delivery process modification. It requires changes in the service provider and

customer application. This view of service innovation being involved in a dimension shift in an existing service adheres to the Lancasterian view that the service provider's characteristics, client proficiencies, technical characteristics, and end users' service characteristics form a service (Gallouj and Weinstein, 1997; Saviotti and Metcalfe, 1984). Gallouj and Savona (2008) argued that the service industry is focusing more on technology and capital. From the assimilation perspective, services are supplier-dominated, meaning that they adopt innovations from other industries instead of inventing them. This is in line with Pavitt's innovation taxonomy (1984).

OECD (2005) described the characteristics of service innovation in the Oslo manual as:

1. Unlike manufacturing innovation, service innovation relies less on conventional R&D investments. Gaining knowledge, either through acquiring equipment, intellectual property or collaboration, are important to service innovation.
2. As human resources are vital in providing services, it is crucial for services to secure a workforce with relevant expertise to facilitate service innovation.

3. Sizes of the firms affect innovativeness. Larger companies are likely to be more innovative. Noted also that entrepreneurship enhances innovation process.
4. Intellectual property is of great importance especially in the areas of business methods and software.

In this paper, the classification of innovations will be based on the Oslo manual for measuring innovation (OECD, 2005), which separates innovations into four types: product innovation, process innovation, marketing innovation and organisational innovation.

Although there is an increase in the awareness of innovation in the service industry, less is known of the economic impact of innovation in the service industry. Cainelli et al., (2006) conducted an empirical research aiming to examine if and to what extent does innovation affect service firm's economic performances. One issue arose during the research in that at the time, proper indicators to measure innovation activities in service firms were not sufficiently accessible. This caused data constraints and methodological complications (Coombs and Miles, 2000). Nonetheless, it is confirmed by several sources that innovation activities exist in services with a variation of magnitude and configuration across industries

(Eurostat, 2001; Evangelista, 2000). It is also reported that, by analysing ICTs data, technologies are utilized heavily in the service industry and that it is relatively more apparent that technologies do impact services economically (OECD, 2000a,b; 2002a). The results of the research suggested that innovation is indeed a crucial element of firms' behaviours and it also influences firms' business performance. Innovating firms and non-innovating firms have diverse levels of productivity and growth. Firms with higher innovation activities show superior performance in comparison with firms with lower innovation activities. A more extensive analysis performed by the researchers also found out that there are more conditions contributing to innovation affecting the economic performances of the firms. A straightforward existence of innovation positively affects firms' performance; however, it is found that companies' spending of monetary capital assigning to the development or acquiring of innovation and the character of innovation activity taken place also influence firm's effectiveness and efficiency. The diverse degree of firms' devotion towards innovation results in different amount of productivity amongst the industry. This is especially true for firms' efforts to internally develop as well as externally acquiring ICTs which include both software and hardware. The descriptive data analysis in this research confirmed that the degree of productivity has a positive and critical relationship to firms' preceding expenditures in innovation; this includes not only the accumulated innovation

spending but also the diverse types of the investments. Cainelli et al., (2006) noted that ICTs investments impacts productivity the most compared to other innovative investments.

Technological innovations, according to OECD (1991), are innovations that integrate developments from various fields of science such as engineering, applied and pure science, and industrial arts. Some examples of technological innovations are innovations from the electronics, information system, and pharmaceuticals industries (OECD, 1991). While technological innovations are commonly linked with product and process innovation, non-technological innovations are connected to marketing and organizational innovations. The fundamental factor contributing to the difference between the two types of innovation is naturally the role of technology. In this sense, technological innovations mostly involve the process of developing or adopting technologies with innovative novelty while non-technological innovations are not obliged to be related to the technological shift nor new technology adoption; they can exclusively rely on the development and implementation of a new business scheme, new organisational conceptualisation, or new business activities. It has been shown that there is a link between technological and non-technological innovations, as marketing innovation usually accompanies product or service innovations. Companies introducing a new

production or delivery process are also frequently found to be exhibiting marketing innovation as well. This coincides with the research result that companies have incentives to carry on non-technological innovation if they develop technological innovations. It has been noted that companies combining technological and non-technological innovations show superior sales growth in contrast with those who introduce only technological or only non-technological innovations. (Schmidt and Rammer, 2007). It is expected that when combining innovations, improved sales growth is caused by an increase in sales from new market penetration (market innovation) and a decrease in operating cost from a more efficient new process (process innovation). This effect only occurs if the company implement both market and organisational innovations at the same time. Combining technological and non-technological innovations can also improve companies' profit margin; however, this is only restricted to the combination of organisational and product innovations. Interestingly, it has been found by the research that companies that introduce exclusively technological innovations without developing non-technological innovations enjoy better profit margin than companies implementing both types, suggesting that extensively investing in both types will sometimes result in an increase in costs more than benefits.

Amongst the many facilitators of service innovation, information technology is considered to be one of the most significant variables according to Liu (2013). Schmidt and Rammer (2007) suggested that service firms commonly show a higher share of non-technological innovation activities than technological innovation activities, with the exception of telecommunication and computer services firms. This agrees with Pavitt's innovation taxonomy (1984) characterising service firms as supplier dominated meaning that services tend to be the adopters of new technologies developed by firms in the manufacturing industry.

There have been different views on what measure should be used to evaluate the benefit of a certain technological innovation. Return on Investment (ROI) has been the key metric to determine the benefit gained in comparison with what was invested to adopt and prepare that technology to be ready for use (Delgado, 2017). A contrasting view on using ROI to measure innovation performance argued that the most innovative technology does not have ROI as the ROI calculation does not reflect the other values in a new technology (Krueger, 2013). Similarly, Botchkarev and Andru (2011) proposed that ROI can only measure financial benefits but not efficiency or effectiveness of that technology. It was suggested that it is not beneficial to make decisions based solely on ROI as a measurement (Botchkarev and Andru, 2011). On the other hand, Graham (2015) suggested that

efficiency alone is not sufficient to measure technologies and an increase in output or a decrease in cost can be more beneficial in determining the performance of a technology.

Method

The literature review found there was comparatively little research into accountancy firms specifically despite their importance to the economy and as a result, the research questions formulated were quite broad in their scope in order not to restrict the knowledge that could be gathered from this study.

1. What factors motivate accountancy firms to adopt technological innovations?
2. Are accountancy firms motivated to adopt or develop technical innovations?
3. How do these technological innovations affect the firms' business performance?

A qualitative exploratory methodology was applied in order to investigate emerging themes with in depth interviews being chosen to conduct the research to allow for flexibility and to be able to understand different perspectives and influences (Healy and Perry 2000), especially if the information might be varied in nature and where clarity might be required (Ticehurst and Veal 2000). Thematic analysis was used to analyse and present the data. Five interviews were performed (see Table 1), all face to face apart from one video conference lasting

approximately 1 hour. All were accounting firms based in the US offering accounting, tax and consulting services to a variety of clients in a variety of industries. All participants had been working in the industry for at least 10 years and all were in positions to strongly influence their own company in terms of strategic and operational direction.

Table 1: Summary of Accounting Firms Interviewed

Firm	Size	Scope	Participant
A	Small	Regional	Senior manger
B	Medium	International	CIO
C	Small	Domestic	Partner
D	Medium	Domestic	Partner
E	Large	International	Partner

The questions comprised of the following to guide the semi structured interviews; Basic details about the companies location, number of employees, locations and the services it offers.

Do you consider it to be an innovative company, give examples?

Does your company have a policy regarding innovation in the workplace? Is there a forum where employees can share views?

What technological innovations are currently adopted by the firm, what was the latest one adopted?

What was the reasoning behind adopting these?

How does the company determine the benefits of these innovations? how can you tell if its worth It?

What past innovations were tried which didn't work?

What other innovations would the company consider adopting in the future and why?

What companies in the field do you consider innovative and why?

The data was then converted into themes using NVivo software to aid coding and presenting data and the data was split into themes which are discussed in detail in the following sections

Results and Discussion

As part of the semi structured interviews, participants were initially asked what they felt were the main drivers of technological innovations were in their organisation and the results are summarised in Table 2.

Table 2: Drivers of technological innovations as ranked by participants

Firm	Driver 1	Driver 2	Driver 3
A	Efficiency	Employee Retention	Realisation rate
B	Efficiency	Profit	Survival
C	Data Protection	Employee Retention	Client Retention
D	Efficiency	Profit	Client Retention
E	Efficiency	Profit	Employee Retention

Participants were asked to discuss and rank the drivers of technological innovation in their firms, the results are summarised in Table 2. They additionally commented as follows:

Firm A suggested "*To increase efficiency is absolutely the biggest reason to innovate. They mostly target document flows, which is one of the biggest pains, but if you don't do it an audit can get out of hand really quick.*" Also A mentioned "*The younger generation like the technology and want to use the new software*

products because it is interesting versus doing things manually which is boring. Innovative is fun. Things can get really stale accounting or auditing, it's a generation thing with millennials, they like seeing how much quicker things can be done."

Firm B commented "*Number one is always efficiency, as we are a service company we use time and material, if someone can save us 10 minutes of doing something redundant and go and work for a customer then we earn money*." And also "*Right now, its all moving to a digital world, businesses that do not adapt to this transformation cannot keep up with demand. So the old ways of working will not get you that, its also survival, we just have to keep up with that*."

Firm C commented "*I have a client that really cares about privacy, innovations have to allow us to be efficient and effective and keep our prices competitive*." And "*Employee retention for sure, and it is part of the flexibility of workplace and work hours. We have a secure portal to load documents rather than unsecured mail which allows employees to work flexibly, work at home, wherever they are which helps with retention.*"

Firm D said "*20-30 years ago we would price everything on time and materials, but with technology this doesn't make sense, there is no reason to pass all the savings along to clients especially when they are happy with the results.*" And "*We want to see what is accelerating across our projects and its effectively related to what our clients demand. Everything comes down to the clients.*"

Firm E responded "*It improves efficiency which is really important for a service firm*" and "*It enhances communications and connectivity with employees, it helps with the staff retention of millennials, in the next 5 years 47% of the workforce will be millennials.*"

The data from the remainder of the semi structured interviews was split into themes as follows:

Specific Business Tasks

(1) Communication

This is important for all firms to connect and transfer information both internally and externally. More advanced technologies used included instant messaging across the network which also allows the display of presentations, sharing screens, and can give remote control of the computer to other users.

Recently firms A and D introduced a collaborative project management system cloud-based file sharing and document flow software. The client is able to see document requests and status and see progress of project. Prior to this, things were manually tracked by Excel Spreadsheet which was more labour intensive.

Firm A said *"It allows us to upload all our requests into the cloud and the client to see the request, when the client uploads they can mark it as fulfilled. In terms of document flow managing, it saves so much time as there is absolute clarity on where the document request stands, senior managers don't have to manually track progress anymore as its managed for them"*

(2) Performance Monitoring

Firms use different types of technologies to evaluate the companies performance overall. Firm D invested a significant amount in business intelligence tools. They had a system which can monitor employees' billable hours, and compare expected to actual hours worked. It also analyses the companies' backlog of work which assists in planning, budgeting and forecasting.

Firm D *"We have more work than we have staff, so the big thing that comes out of it is we need to start hiring, an early warning to get our recruitment function built*

up. The strategic thing is that…it allows up to identify market trends better…you can find warm currents in the market and start investing in those from a marketing perspective. The whole system allows us to look at what is accelerating across our projects and what effectively the client demand is"

Firm E had a system to allow rescheduling of work to a non-busy season which also aided the work life balance of staff.

For employee performance, Firm C, a smaller firm adopted a more manual approach which can be time consuming and prone to human error.

Firm E has automated this and claims to have helped in the following way *"Our turnover rate is lower, or workforce has stayed stable, which in a booming economy you would not expect, but we think it is our culture and performance management"*

C explained why they used a manual system *"The system we have is not better than off the shelf products, it just gets the job done. The off the shelf products would be nice but not for the price. It would track employees progress better, it would be more contemporaneous rather than every six months we could get the feedback loop to be faster"*

(3) Data Analysis

Most of the firms interviewed adopted data analytical tools from suppliers (off the shelf or collaborations with bigger companies) due to it being expensive and time consuming. The software helps firms extract, sort and find trends and anomalies in data sets. Firm C suggest it saves 10-12 hours on each job. Firm E also used tools in an unconventional way to identify errors or frauds *"Not only are we looking at data analytics we are evaluating the use of data in our audits to look for errors or fraud. I think this is very innovative as I haven't seen it done by many other firms"*

(4) Security

Due to the sensitive and confidential nature of the clients data, every firm interviewed had security systems such as firewall, antivirus and VPN. Firm C also had a self destruct feature for those working off site and described an incident where an unauthorised person tried to access data *"As soon as somebody tried to get into the computer more than 3 times the hard drive ate itself"*

Russell (2014) mentioned how cloud technology has reformed the accounting industry. It was said that the innovation would help clients seamlessly integrate all technology providers. Scalability is one significant benefit of this innovation but from interviewing a partner in Firm C, the main reason why the company has not incorporated this cloud technology in their practice, though was offered cloud-based services from suppliers more than once, is because of security issues. As they mainly work with highly confidential client data which is subject to information theft, they are still wary about adopting cloud-based software which would require data to be stored in a server not on-premise.

(5) Infrastructure

This was categorised as mostly software solutions used in executing work assigned to different departments of the firm. Firm E adopted an in house audit software

developed with its international branch. Firm A revealed they were linking their own system with the clients accounting software via the cloud allowing more analytical work to be done saving time on both ends. Firm A also mentioned there were compatibility issues when they merged with another practice that used different software. Firm D tried to centralise the technology platform used by their clients *"We used to do book keeping and accounting for a client using their systems, now we would standardise it across one technology platform, we now have a central payroll processing team that manages payroll for all our clients instead of having an accountant working with our client doing each task, now we can centralise into operation teams or centres"*

Firm E mentioned they have outsourced routine procedures to a centre in India where employees are hired at a lower rate and where the centre uses the same technology platform, due to the 12 hour time difference it effectively allows the company to be active 24 hours a day. The extra staff augment the auditing team allowing for faster turnaround and efficiency.

However, Firm A described how a new workflow tool was eventually discarded despite it potentially easing the workload as there was resistance for users who were more familiar with their existing way of working.

Firm A said *"We built a new system six years ago which took a lot of time but didn't work. At the end of the day they felt more comfortable using Excel spreadsheets and switched back, even though this is more prone to errors and requires more manual input"*

Wider Activities

(1) Culturing Innovation

Most firms are trying to foster an innovative culture, Firm B explained *"We are trying to create a culture of innovation, it is one of our goals right now. I have heard in smaller groups they are trying to innovate, it is one of our management goals for this year"*

Firm D Says that it holds annual company meetings for innovation which discusses implementations over the last year and future plans, also by holding meetings and doing exercises with employees. Employees are encouraged to speak out, share ideas including incremental improvements. Firm B says whilst it doesn't have an explicit forum for employees, the culture allow them to speak their mind.

Small and medium accounting firms are often joined in a network creating an alliance. Through this network firms learn about new technologies or methodologies Firm A said *"We talk about new innovations and technologies with*

our management group and that is where we beta test and we decide on whether the cost-benefit is there for implementation"

Firms used external news and market data as a source of information. Firm E has its own platform to keep up to date with changes in client industries which they use in conjunction with external sites. In addition, competitors communicate indirectly through technology suppliers e.g. if a competitor collaborates with a supplier to create a new technology, the supplier might also sell this technology to other firms.

(2) Collaboration

Firm D holds an annual competition where employees can pitch their ideas to a panel and the winning idea is implemented and Firm A also tries to engage with younger staff members *"We include members of the younger generation in the decisions we make, if decisions are made solely by people at the top you can fall victim to groupthink"*

Firm D also mentioned that the clients' exact requirements also influence the technology that might be used *"Our clients will come up with certain things depending what industry they are in…and we will figure out viable solutions for them and give them options.*

Accounting firms often lack the ability to develop a new technology autonomously if they are not large enough or do not possess enough resources or time. In order to stay competitive they often set up requirements for a software or process as goals for a third party to develop which is more cost effective than trying to create new technology from scratch themselves.

(3) Reaction

How a firm reacts to changes and expectations can determine the adoption or rejection of innovations. When facing with changes in the market trend, the firm may maintain the ability to compete in the market by adapting to the change. This may lead to the firm to adopting a change, which can be technological or non-technological. In order to compete, or at least survive in the market, it is important that the firm takes action and innovates or it risks being pushed out of business by more advanced competitors. A change can be introduced in hopes of reducing cost to offer a more competitive fee, improve quality of service, improve efficiency and productivity, or to help develop a new service or deeper expertise in the same industry in order to add value. As mentioned by Firm B;

"It is really a survival thing. ...More and more people are connected this way and businesses that do not adapt themselves for this transformation cannot keep up

with that demand. The old ways of working will not get you that; it's also survival. Firms are forced to be in sync with the market."(B)

Reacting to expectations is different in that it involves less about firm's monetary value, but more about fulfilling a certain notion from others. Clients expect the firm to not only carry out a professional service, but also to introduce them to new technologies, as mentioned by Firm D":

"Another example is we do a lot of outsourced accounting. For smaller businesses, they don't have accounting departments nor bookkeepers and controllers. ...In addition to us doing and maintaining book records for the company, we bring all the software…The client is no longer just paying us for our resources and our time, part of our services is related to using technology as well." (D)

Clients also expect the firm to have a professional quality, resulting from being a protector of their sensitive information, keeping themselves updated with information security technologies in order to safeguard client data. If data were to be leaked, firms would be subject to lost business, poor reputation, and expensive lawsuits. Firm C explained,

"We have also adopted, because we have so much private information, an extra layer of security," and, "The most important driver for innovation could be professional expectations because we are the record keeper of these things and be in an organised fashion; that is the expectation of the profession."

Being a professional services firm also means that the firms have to keep updated with industry data and regulation updates to maintain a high quality level of services. Firms bring in a lot of data technologies to help them be more knowledgeable and build trust and good relationships with clients. Firms are now looking into experimenting with an additional new service to offer to existing clients as opposed to attracting new clients.

(4) Employee expectations

Firms have to adapt to employee needs as deemed reasonable and, if possible, maintain a stable workforce as it is, after all, a labour-intensive business involving many professionals. Every firm has mentioned employee retention as one of the most important drivers for adopting or developing innovations. Firm C mentioned that they let people work remotely to reduce their employee turnover:

"…The San Francisco Bay Area is nuts right now with their employments, particularly accountants. It is really hard to find them. There is a lot of competition and the traffic to here is bad. We need to take a serious look at it. It is hard to invest and train new people to replace old ones." (C)

A change in the workforce demographic also plays a role in the firm's course of action towards innovation adoption. Firm E claimed, "*In the next 5 years, 47% of the workforce will be millennial's."* Firms show a similar trend in reacting to the emergence of millennial workforce. Firm D and E claimed that they had developed a new, timely individual performance system to accommodate millennial's, as they believed that millennial's want more feedback:

"… Because we know in our firm's studies that the younger millennial's generation wants feedback more frequently." (E)

"I think what's going on in the employee base is they want more feedback on their performance, ideally with more feedback, you will get to a better level of performance." (D)

Firm A believes that it should adopt new technologies as their millennial employees would be excited to use them, increasing job satisfaction:

"The younger generations like being a part of the technology and they want to use all the new software products out there because it is interesting versus doing things manually – which is boring. People want to stay on the leading edge of technology because it is interesting and fun. Innovation is fun. Things can get stale really fast in auditing or accounting." (A)

Measuring the effect of innovation using Business Performance

During the interview, a separate interview question was asked to find how the firms measure the success of each innovation. Firm A and E use profitability measures (realisation rate and ROI respectively). Firm A, B and D mentioned that they use qualitative measures (feedback from users – A and B; meet client requirements – D). Firm E also used employee retention to determine the success of technological innovations in combination with ROI. Firm C, however, revealed that there is no metrics used to measure innovation success. This is because the firm decides to adopt technological innovations that are deemed necessary, while other firms choose to adopt innovations to enhance performance. Deriving from the interviews with the participating management of accounting firms, we categorised

through coding the summary of the aspects of business performance that is affected by the use of technological innovations.

(1) Quality

One aspect of measuring business performance is looking at the quality of its output. In advisory, quality work would be reflected in the ability to find the best solution for clients, while accountants would focus more on lowering the risks of intentional and unintentional errors in financial statements, in order to ensure trustworthiness of information users. Every firm interviewed expressed the importance in using technologies to help improve the quality of work. Firm E mentioned technology use in providing knowledge to professionals and tailoring service to client industries:

"*Our knowledge base has worked through many of the industry specific things so that professionals have tailored standard for each industry*." (E)

While Firm C suggests that it uses technologies to ensure compliance with accounting and auditing standards:

"Several years ago our standards changed after the Enron and Arthur Andersen thing. We had to be able to show that the workpapers were completed within 60 days, and then they're locked and you can't change them. There's no other way to do that other than an electronic timestamp." (C)

Firm D revealed that innovations also help improve the accuracy of data which is an important aspect in professional firms:

"This will improve client communication and information flow, accuracy of information and most importantly the consolidation of all the information that our clients need in one location." (D)

(2) Productivity

Technological innovations are also introduced in accounting firms to improve productivity. This can be interpreted as a decrease in time required to provide services. Participants mentioned several ways that technological innovation helped them achieve higher productivity rate and efficiency rate. Every firm mentioned the use of technologies to improve document, information, or work flow. Firm A claimed that innovations improve its document flow process which helps eliminate the risk of time used for non-relevant tasks:

"To increase efficiency is absolutely the biggest reason to innovations. They mostly target document flows, which are one of the biggest pains, but if you don't do it an audit can get out of hand really quick." (A)

Firm C discussed how innovations help them save time used for each job because they provide higher data processing capacity and automation:

"It saves us 10 – 12 hours on every job. Before this we used excel and you have to spend a lot of time making sure that data has been imported to excel properly and then you can sort through it but the data is massive in quantity. It would take a lot of time." (C)

Similarly, Firm E has a similar view related to time cost. Off-shoring to another country is a strategy that they use in order to increase productivity:

"We use them as an augmentation to audit staff. It allows us not to gain efficiency, but fast turnaround time to client because you are operating 24/7. I think it is pretty innovative." (E)

(3) Profitability

Accounting firms adopt technological innovations to help improve their profitability. It can be done by reducing cost, attracting and retaining clients, and offering more lines of services to either existing or potential clients. All participants admit to using technological innovation for profitability purposes in different ways. Firm E uses technologies to automate and mitigate redundant and irrelevant tasks which helps reduce cost:

"The main purpose would be automation of areas that don't require human judgment or the decision making can be programmed in an algorithm. For example, risk assessment process in Horizon. This is to reduce cost, improve efficiency, turnover time, scheduling, and synergy." (E)

Firm B revealed that it is now experimenting with new services through the use of new technologies:

"I feel like this is something we will get out of this innovation and then increase of revenue through an innovative service." (B)

While Firm A mentioned the increase of realisation rate (percentage billed vs percentage collected) through an innovative technology:

"We also went through a process called LeanCPA (taking out the inefficiencies) which helped us see more than 5% increase in realization." (A)

Expertise in using and implementing technological innovation for clients in specific industries has made an advantage for accounting firms with an advisory function. With in-depth training and abundant experiences, the process of technology implementation can be done with less time and material than before. The knowledge possessed by employees who correspond in person with clients enables them to act as trusted advisors. This, in turn, results in an increase client satisfaction due to the client's positive expectation towards positive results and perceived employee reliability. In addition, because of the competence of a highly-skilled workforce, the company can change its price benchmarking strategy from using cost-based pricing, calculated from the use of time operated and work material, to value-based pricing, derived from market value of the output or estimated value-in-use of the client. Firm D is the only firm who has mentioned and emphasised the effect of technology on the firm's value and pricing strategy. This impact is demonstrated by the positive effect on firm's profitability due to the wider gap between service cost and charged service fee as mentioned:

"…The clients would still get the same value, but they also get the benefit of us being really good at it…What we have now done is, and this is one of the innovations that technology has forced us to do, trying to price most of our consulting services on a value-based pricing scale… Twenty to thirty years ago, we used to price everything on time and materials, but with technology it does not make sense to price on time and materials. There is no reason to pass along all this saving to our clients." (D)

(4) Competitiveness

As a for-profit business, CPA firms must find ways to stay competitive to prevent the risk of going out of business by losing market share. All participants mentioned that they use technologies to stay competitive in different ways. Firm C mentioned that one of the strategies used to keep staff retention rate stable or lower is allowing them to work from home. With the aid of multiple advanced technologies, the firm and the remote employees can connect and continue to work together despite the workers not being in the office:

"It has to do with flexibility and it means technology-wise with the privacy issue that they have to have a private place or a home office set up for them but it's all employee retention for good people." (C)

Firm C also mentioned that these technological innovations help them offer competitive service fees to clients:

"Innovations have to allow us to be efficient and effective and keep our prices competitive." (C)

Firm B used technologies to attract new clients and leveraging their existing client base to gain market share and generate more revenue:

"That is the result you can actually anticipate from this; that will be wonderful. If it also expands our service portfolio then I think that will be a bonus. It could be adding more clients to the firm or allows us to add more services. Even if you don't have more clients, if you can offer a new service to existing clients it still counts." (B)

Conclusions

A number of innovations were identified by the study driven by client expectation and the drive for efficiency. The results suggest that accounting firms engage in direct communication and collaboration with their employees, clients, alliances,

and suppliers as a source of technological innovations. The results agree with Freel (2006), that p-KIBs depend on the cooperation between the client and the supplier in introducing innovation. However, it was determined that accounting firms also depend heavily on their alliance companies. Indirect learning of new technologies is made in collaboration with competitors, through the connection of their mutual supplier. Accounting firms can make decisions regarding the adoption or rejection of new technologies based on changes in the industry and expectations from their employees or clients. The results found many common themes in the technological tools used in their organisations. This paper classifies technological innovations prevalent in the accounting firms into five categories based on their intended purposes: (i) communication; (ii) performance monitoring; (iii) data analysis; (iv) security; and (v) infrastructure purposes.

During interviews, participants were asked to rank the three most important drivers for introducing technological innovation to their firms. After analysing the results from each participant, the three most mentioned drivers were efficiency, profit, and employee retention. Accounting firms do not directly adopt technologies to improve financial performance, instead they utilise technologies mainly to achieve higher efficiency through time saving, automation, and improving workflows. These firms leverage technologies to increase revenue by reducing cost of time and

material, expanding lines of services, attracting more clients, and improving profit margin through changing pricing strategy. As it is currently difficult to hire qualified professionals, firms seek to improve their work process by using new technologies in hopes of attracting employees and stabilising employee retention rate.

When asked about the metrics the firms use to measure the success of a technological innovation, 3 out of 5 participants mentioned that they use qualitative factors, or user feedback and requirement fulfilment as the main measurements of performance. An improved profitability shown through realisation rate and ROI of innovation was mentioned by 2 out of 5 participants as the innovation success metrics. One participant revealed that they did not have a success metric, as innovations are perceived as a necessity. This is contrary to the literature, regarding measuring innovation success. Delgado (2017) argued that ROI has been the key metric to use, while this research found that only one accounting firm mentioned ROI. Participants tended to think of qualitative factors (feedback, requirement fulfilment) more because they have experienced resistance to change from users. Two accounting firms discussed how they introduced a new work process with the incorporation of new technology – and failed. Even after investing time and capital to develop, adopt, and train employees to prepare for transitions, the firms still

risked having to discard the new change due to the unfamiliarity and resistance from employees. Planning for adopting or developing technological innovation should cover both quantitative factors (profit projection) and qualitative factors (user feedback) to reduce the risk of failing, which would adversely affect the firm's business performance.

From analysing interview data and current trends in the accounting industry, trends demonstrated that firms are engaging into more: (i) remote work policies; (ii) big data analysis; (iii) merger and acquisitions; and (iv) cloud computing technologies. Further investigation showed that each trend has different implications on technological innovation in accounting firms. As a result of an employee shortage, accounting firms, which are naturally labour intensive face difficulties in hiring and retaining qualified professionals. In an attempt to decrease employee turnover and increase employee retention, accounting firms are increasingly allowing employees to work from home. Employee to firm connection and collaboration are enabled through the use of technologies. Though remote employees may be more beneficial for the firm, additional precautions should be taken. Remote connections increase the risk of sensitive data being accessed by unauthorised parties. As such, IT security should be improved and monitored constantly, as a data breach can cause serious damage.

With the growth of big data, accounting firms are increasingly adopting several forms of data analytical tools. These tools help to process large amounts of data accurately, find valuable insights, and eliminate irrelevant tasks. Using data analytics tools increase the degree of automation in professionals' work process, which means lower-skilled employees are less critical to providing efficient services. Professionals can avoid risks of self-obsoleting by increasing their own value. As rudimentary tasks are eliminated, work processes will shift to become more analytical. Accounting firms are engaged more and more in mergers and acquisitions. There are cases of accounting firms acquiring a new firm in the same field, technology-based firms, and/or creative-based firms. By acquiring and merging with firms from other fields, the acquiring accounting firms are widening their knowledge base, which helps to equip them with more capacities in other industries. Referring to Miles' domain knowledge for KIBs (2011), the growing trend of M&A causes the acquiring accounting firms to shift more towards the middle of the domain triangle as they expand their knowledge towards technical and creative knowledge. Pavitt's innovation taxonomy (1984) argued that service firms are supplier dominated. The M&A trend may change the view of accounting firms (as service firms) as lacking capabilities (Tether et al., 2001) to innovate. It is worth noting that there is a risk in most M&As, involving the clashing of existing technologies from both parties. One interview participant revealed that they had

experienced a decrease in efficiency due to the lack of compatibility of the legacy and new firm's work systems. This can often be eliminated by leveraging cloud-technology and employee training.

Limitations and Future Work

It would be of benefit to add interviews from a wider range of accountancy firms and also from different ranks and functions within forms to gain a different perspective of the drivers of technological innovation in different parts of the firm. It would also be useful to investigate how employees can be more entrepreneurial with training or by joining networks (Bin Jia and Phillips 2014, Phillips, 2010) Another topic of interest could be to address the issue of first mover advantage vs late adopters when it comes to technological innovation and whether early adopters in this industry gain significant advantage over later adopters.

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Entrepreneurial Competencies and Entrepreneurial Orientation: Moderating Effects of Firm Age and Firm Size

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Abstract

INTRODUCTION - This study argues that moderating effects of firm age and firm size extend significant insights into firm behavior although extant literature has overlooked the influences by treating them as control variables. Following a configuration approach, this study aims to identify the moderating effects of firm age and firm size on entrepreneurial competencies and entrepreneurial orientation relationship.

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METHODOLOGY – A sample of 51 micro, small and medium business owner-managers from Badulla Divisional Secretariat of Sri Lanka was studied by conducting in-depth interviews following a pre-test and a pilot test. Detailed checklists of theoretical criteria of each construct measured in the study were facilitated by interview transcripts in calculating scores for measurement scales.

ANALYSIS – Moderated linear regression test was employed for data analysis and supported by simple slope test analysis.

RESULTS – Results uncovered that moderating effect of firm age on entrepreneurial competencies and entrepreneurial orientation relationship is stronger for small new firms and large older firms.

CONCLUSION – The complexities and nuances of the entrepreneurial competencies and entrepreneurial orientation relationship can be captured by using contingency and configurational approach rather a direct effect model and also without overlooking the effects of firm size and age as control variables.

1. Introduction

Entrepreneurial orientation (EO) is an extensively studied concept in entrepreneurship research (Gupta & Wales, 2017; Wales, 2016). EO of a firm is driven by entrepreneurial competencies (ECS) which is the total of knowledge, traits, attitudes, and skills (Chandler & Jansen, 1992; Man, Lau, & Chan, 2002). ECS are considered to be the basis for an entrepreneurial business environment of a firm (Abd-Hamid, Azizan, & Sorooshian, 2015). The handful of studies investigating effects of ECS on EO models this relationship in a direct effect model (e.g. Wickramaratne, Kiminami, & Yagi, 2014) whereas it is an over-simplification of the possible complexities. This relationship may be contingent upon many other organisational circumstances such as external environment, firm structure, firm age and firm size. A majority of the EO literature considers firm age and firm size as control variables overlooking the complex moderating effects possible to emanate from them. Hence, this study aims to extend this line of research by following a configuration approach to identify the moderating effects of firm age and firm size on ECS and EO relationship.

By doing so, this study advances the theoretical understanding of ECS and EO relationship in a contingency perspective. This study is prompted by calls to develop a deeper understanding of the personal and contextual factors predicting

ECS and firm-level entrepreneurship (e.g. Kyndt & Baert, 2015). Further, studies on the determinants of EO are rarely available (Soininen et al., 2013) while a higher attention has been paid to organisational, environmental and demographic factors that nurture entrepreneurial behaviors. The studies examining ECS and EO relationship tend to build on universal effect models (e.g. Wickramaratne, Kiminami, & Yagi, 2014). Yet, the strength and the direction of the relationships can differ under various circumstances (Harms, Kraus, & Schwarz, 2009). Such an understanding often warrants valuable implications for both entrepreneurship theory and practice (Morris et al., 2013).

Moreover, this study contributes to a richer understanding of the concept of entrepreneurial competencies by extending it in to Sri Lankan micro, small and medium business context. The research on entrepreneurial competencies remain scarce (Kyndt & Baert, 2015).

The remainder of the paper proceeds as follows. Firstly, theoretical background of the study is presented. Secondly, the research methodology of the study is elucidated in detail. Thirdly, data analysis is presented, and that is followed by findings and discussion. Conclusions are made along with implications for research and practice.

2. Literature Review

2.1. Entrepreneurial competencies and entrepreneurial orientation

Cohesive components of knowledge, skills, and attitudes are considered as competencies (Kyndt & Baert, 2015). They are a set of behavioral and observable characteristics strictly related to performance than other entrepreneurial characteristics such as personality traits, intentions or motivations (Bird, 1995). Among many competency models (e.g. Bartram, 2005; Martin & Staines, 1994; Winterton, 2002), this study uses Man and Lau (2000, pp. 237-238)'s six types of ECS; opportunity competencies-market opportunity recognising competencies; conceptual – conceptual abilities related competencies; strategic competencies – strategy development and implementation related competencies; commitment competencies – entrepreneur motivating competencies; relationship competencies – individual and group interactions related competencies and organising competencies – resource organising competencies.

EO is the general tendency toward entrepreneurship (Antoncic & Hisrich, 2001). EO is comprised of three dimensions of innovativeness, risk-taking, and proactiveness (Miller, 1983) which is the core conceptualisation in entrepreneurship theorizing (Wales, 2016). Embracing creativity, experimentation, novelty, technological leadership, in both products and processes is considered to

be innovativeness (Lyon, Lumpkin, & Dess, 2000). The degree of willingness to make large and risky resource commitments for projects with uncertain outcomes (Boohene, Marfo-Yiadom, & Yeboah, 2012; Lyon, Lumpkin, & Dess, 2000), heavy borrowings, and to enter into unknown markets (Lyon, Lumpkin, & Dess, 2000) are reflections of risk-taking behaviour. EO is positively associated with a firm's profitability and growth (Abd-Hamid, Azizan, & Sorooshian, 2015) and performance (Sánchez, 2012). Proper use of ECS with available resources will enable the entrepreneur to recognise broad opportunities for innovation, develop capabilities and organisational flexibility (Man, Lau, & Snape, 2008). Hence, it is hypothesised that:

H_1: There is a positive relationship between entrepreneurial competencies and entrepreneurial orientation

However, the strength and direction of the influence of an independent variable on a dependent variable can vary under different circumstances (Harms, Kraus, & Schwarz, 2009). Firm age and firm size such possible circumstances in addition to being frequently used controlled variables (Rauch et al., 2009). This excessive use of firm age and size as control variables overlooks the possible interaction effects

emerging from them. Therefore, the following section focuses on the potential moderating effects on the ECS and EO relationship.

2.2. The moderating role of firm age

Opportunity, relationship, and conceptual competencies are needed to form the competitive scope of a business while organising, relationship and conceptual competencies create needed capabilities for the firm (Man & Lau, 2000). Yet, engagement in entrepreneurial behaviors is path dependent (Anderson & Eshima, 2013) and effectiveness of EO may also change as the firm develops (Wales, Monsen, & McKelvie, 2011). Firm age is a meaningful boundary condition in innovation and EO research (Anderson & Eshima, 2013; Rosenbusch, Brinckmann, & Bausch, 2011). Older firms tend to have the broader market understanding to design entrepreneurial actions (Cohen & Levinthal, 1990) while there may be less significant outcomes given the declining market relevance of the knowledge (Anderson & Eshima, 2013). The limited knowledge, experience, and availability of other resources detrimental to young firms, yet less structural and procedural inertia increase firm agility (McDowell, Harris, & Geho, 2016). Therefore, it is hypothesised that:

H_2: Firm age moderates the relationship between entrepreneurial competencies and entrepreneurial orientation

2.3. The moderating role of firm size

There is a considerable difference in capabilities among small and larger firms (Ojiako et al., 2015). Larger firms require a more structured approach to executing organisational activities than small firms (Ahuja & Morris Lampert, 2001) often limiting the prompt changes due to structural complexities (Baker and Cullen, 1993). SME owner-managers tend to possess significantly different cognition with compared to large firm managers (Baron, 2004) and SMEs are not overburden by the strictly defined processes and procedures as is the case of larger firms (Aragón-Sánchez & Sánchez-Marín, 2005). Gurau, Dana, and Lasch (2010) found that firm size influences the managerial areas of expertise in SMEs. Further, SME owner-managers showed to have significantly higher level of alertness and business opportunity identification (Ojiako et al., 2015). As businesses get matured, they gain in-depth knowledge and complexities of market behaviors and shape business processes accordingly creating more opportunity for EO (McDowell, Harris, & Geho, 2016). The high performance oriented strategic behaviors of futurity, defensiveness, and analysis (Morgan & Strong, 2003) are associated with older firms as they have the capacity of understanding external environment and design

long-term strategic planning (McDowell, Harris, & Geho, 2016). Therefore, it is hypothesised that:

H_3: The moderation of firm age on the relationship between entrepreneurial competencies and entrepreneurial orientation is stronger when firm size is higher

3. Methods

3.1. Sample and Procedures

The study was conducted in Badulla Divisional Secretariat Division (DS) of the Uva Province that has the highest poverty level in Sri Lanka (Central Bank, 2014, p. 34). Membership of the Small Business Association was treated as the population and the sampling frame. Sampling began with identifying ten industrial sectors that are stated in District Statistical Hand Book (Census and Statistics Department, 2014) to collect data using a structured questionnaire with pre-coded questions. During the pre-test, it was identified that the majority of firms in the identified population are micro businesses. It was also found that respondents had difficulties in responding to the pre-coded structured questionnaire while exhibiting higher self-reported biases of managerial perceptions (Lyon, Lumpkin, & Dess, 2000). Therefore, it was decided to operate in a qualitative mode by adopting a

theoretical sampling strategy to collect data and subsequently to post code them (Kodithuwakku, 1997; Kodithuwakku & Rosa, 2002). Subsequently, the questionnaire was converted into a topic guide. In-depth interviews were carried out with the owner-managers using the topic guide. This approach of "working from a neutral distance away from the organisation" (Boehm, 2008, p. 84) gave respondents the latitude to describe and explain the operation of their businesses in their own order and manner of presentation although the researcher made a systematic attempt to ensure that all the theoretical dimensions included in the topic guide were covered. The decision to interview an additional respondent in each stratum was made based on the marginal contribution to the knowledge of the phenomenon being studied (Kodithuwakku & Rosa, 2002) that led to the final sample of 51 respondents excluding non-respondents.

3.2. Measures and Data Analysis

EO was measured by using the indicators presented in Appendix. ECS was measured by using Man (2001) entrepreneurial competency framework items given the relevance to the Asian context and comprehensiveness of the criteria (Ahmad, 2007). Multiple items indicators were used to measure these variables so as to increase the internal validity (de Vaus, 1995) and reliability (Judd, Smith, & Kidder, 1991; Malhotra & Grover, 1998). Firm age was measured in the number of

years since the business started (Anderson & Eshima, 2013; Sirén et al., 2017) and firm size was measured in terms of the number of employees of the business (Sirén et al., 2017).

The theoretical indicators of each EO construct and the ECS framework items (Man, 2001) were separately entered into two Excel spread-sheets those also acted as checklists for the presence or absence of the theoretical indicators that are being researched. The checklist was executed on a dichotomous scale (Egbetokun, 2014; Tan, Menkhoff, & Chay, 2007) of "yes = 2 (presence of a given theoretical indicator)" and "no =1 (absence of a given theoretical indicator)". Resulting values of theoretical indicators under each variable averaged to get the total value of a given variable per respondent.

Hypotheses were tested by performing moderated regression analysis using Process Macro (Hayes, 2012). Mean-centered approach (Aiken, West, & Reno, 1991) was executed for interaction term calculation. Interaction effects were further examined by plotting them as recommended by Cohen et al. (1983). Simple slope analysis (Preacher, Curran, & Bauer, 2006) was employed to evaluate the interactions further.

4. Findings

4.1. Descriptive Statistics of the study variables

The descriptive statistics and the correlations among the studied variables are summarised in Table 1. On average a business in the studied sample has been operated for nearly 8.5 years and nearly 8 employees have been working in the businesses. Firm age positively associates with firm size (p<0.01) and ECS (p<0.05). ECS positively associated with firm size (p<0.01), firm age (p<0.05) and EO (p<0.01).

Table 1 - Mean, St. Deviation and Correlations among Variables

No	Variable	Mean	St. Dev.	1	2	3
1	Firm Age	8.51	7.387			
2	Firm Size	7.94	12.740	.369**		
3	Entrepreneurial Competencies	111.33	13.807	.306*	.642**	
4	Entrepreneurial Orientation	78.35	12.074	0.243	.546**	.872**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4.2. Moderating Effects of Firm Size and Firm Age

The model summary of the moderated linear regression output is presented in Table 2.

Table 2 - Moderated Linear Regression Output from SPSS Process Macro

Y = Entrepreneurial Orientation, X = Entrepreneurial Competencies, M = Firm Age, W = Firm Size, Sample size = 51

Outcome: Entrepreneurial Orientation
Model Summary

	R	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**
	0.8957	**0.8022**	33.5336	24.9119	7	43	**0.000**

Model

	Coeff	**SE**	**t**	**p**	**LLCI**	**ULCI**
Constant	80.0013	1.4344	55.7722	0.000	77.59	82.4127
Firm Age	-0.2476	0.1696	-1.4598	0.1516	-0.5327	0.0375
Entrepreneurial Competencies	0.6854	0.087	7.8815	**0.0000**	0.5392	0.8316
int_1	-0.0059	0.0155	-0.379	0.7066	-0.0319	0.0202
Firm Size	0.2347	0.2422	0.9689	0.3380	-0.1725	0.6419
int_2	-0.0153	0.009	-1.695	**0.0973**	-0.0304	-0.0001
int_3	-0.0393	0.0349	-1.1273	0.2659	-0.098	0.0193
int_4	0.003	0.0014	2.1211	**0.0397**	0.0006	0.0055

Product terms key:

int_1 = Entrepreneurial Competencies x Firm Age
int_2 = Entrepreneurial Competencies x Firm Size
int_3 = Firm Age x Firm Size
int_4 = Entrepreneurial Competencies x Firm Age x Firm Size

R-square increase due to three-way interaction

	R^2-chng	F(1,df2)	df2	p
int_4	**0.0207**	**4.4991**	**43**	**0.0397**

The model explains 80.2 percent of the variation in EO (R^2=0.80, F(7,43)=24.91, p<0.01). There is a positive direct effect of ECS on EO (b=0.6854, t(51)= 7.8815, p<0.01). Therefore, data support for the Hypothesis 1.

There is no statistically significant moderation by firm age on the relationship between ECS and EO (b=-0.0059, t(51)=-0.379, p>0.10). Hence, data do not support the Hypothesis 2. However, two-way interaction between ECS and firm size is marginally significant with a negative effect (b=-0.0153, t(51)=-1.695, p<0.10), yet the R-square change is not statistically significant (P>0.10). Interestingly, the three-way interaction between ECS, firm age and firm size is statistically significant with a positive effect on EO (b=0.003, t(51)=2.1211, p<0.01). The model's explanatory capacity increases by nearly 2 percent (ΔR^2 = 0.0207, F(4.5, 43), p<0.01) which is a significant improvement of the model. This confirms that the moderation of firm age on the relationship between ECS and EO is affected by firm size. Therefore, data support the Hypothesis 3. Simple slopes test confirmed that the slopes are significantly different from zero (p<0.05), except for the large new firms [t(51)=0.7305, p>0.05]. A decreasing relationship between ECS and EO was found as the firm age increases for small and medium scale businesses, while a substantially increasing relationship for relatively large scale businesses. This indicates that the moderating effect of firm age on ECS and EO

relationship is stronger for older firms. These interactions were plotted as follows (see Figure 1 - Only the low and high firm size related plots are showing given the limited space).

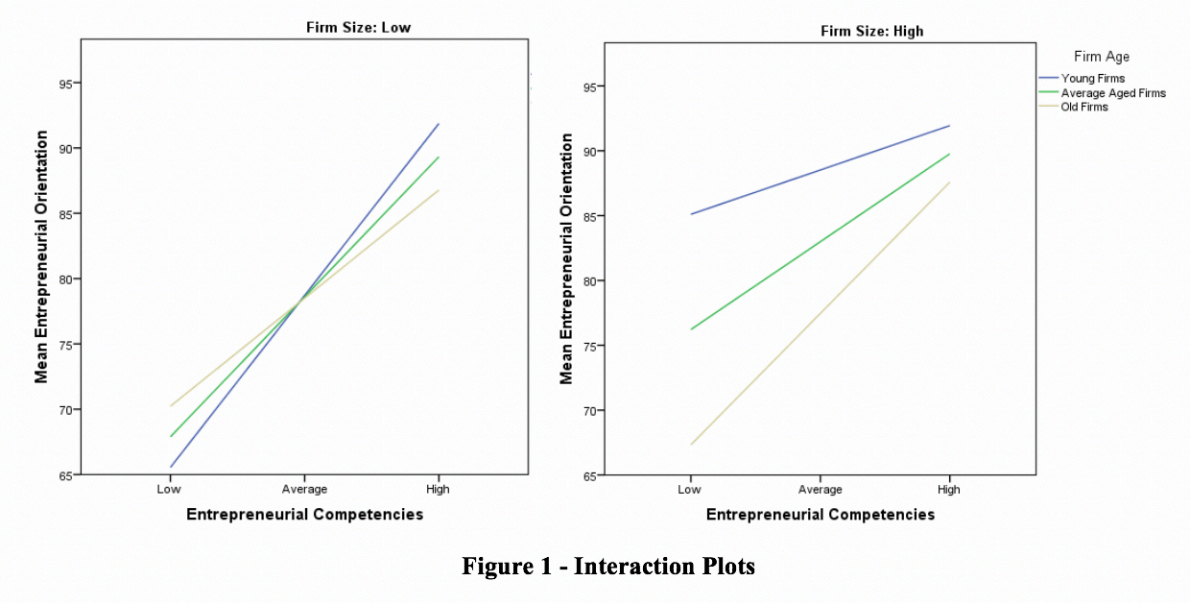

Figure 1 - Interaction Plots

The upward trending lines in both plots further confirm the positive relationship between ECS and EO regardless of firm age or firm size. When the firm size is small, ECS and EO relationship is stronger for young firms while ECS and EO relationship is stronger for older firms when firm size is larger.

5. Discussion

The objective of this study was to identify the moderating effects of firm age and firm size on ECS and EO relationship in small and medium scale businesses in Badulla district of Sri Lanka. Two out of the three hypothesised effects are supported by the data. Results demonstrated that there is a positive direct relationship between ECS and EO. ECS is a strategic construct of entrepreneurial behavior, managerial tendencies, philosophies, and decision-making practices (Anderson & Eshima, 2013). Businesses with higher levels of ECS keep an eye on new business opportunities by scanning and managing the environment in order to secure the competitiveness (Covin & Miles, 1999). Entrepreneurship literature has recognised ECS as necessary factors for business start-up and a requisite for sustainability of a business (RezaeiZadeh et al., 2016), main determinants of opportunity exploitation (Dahl & Reichstein, 2007) and often associated with successful entrepreneurship in SMEs (Colombo & Grilli, 2005).

Moreover, the results found that ECS and EO relationship is stronger for small and young firms. Results also uncovered that for the large firms, ECS and EO relationship is stronger when the firm age increases.

The current study rigorously demonstrate the moderating effects of firm and firm size on ECS and EO relationship which was largely overlooked in the previous literature. While previous studies had often used firm age and firm size as control variables, the current study set out to analyse the moderating effects of firm age and firm size on ECS and EO relationship framing in a contingency perspective. This explicit attempt has opened a new conceptual integration to explain the effects of firm age and firm size by uncovering that ECS and EO relationship is stronger for small and young firms. when the firm age increases, for small and average size firms, ECS and EO relationship effect is decreasing. Planned utilisation of business resources reflects organising competencies (Man, Lau, & Chan, 2002) and micro businesses are often skilled at starting up low cost driven business experiments without heavy financial losses (Lumpkin et al., 2010). New small business owner-managers often possess a strong understanding of products and services and focus efforts on aggressive marketing and developing the customer base (Verreynne & Meyer, 2010). With low experience, small businesses incline towards building relationships with customers rather formal business activities (Morrissey & Pittaway, 2006) and this unfamiliarity and flexibility will encourage them to make prompt decisions and adopt new practices (Lumpkin et al., 2010) leading to higher EO. Further, such opportunity and strategic competencies (Man, Lau, & Snape, 2008) based marketplace understanding and the implementation of the finest

strategic approach are essential for the success of new small ventures (Verreynne & Meyer, 2010; West & Noel, 2009). Therefore, business performance is determined by the appropriate match between resources, strategic orientation, and market conditions while firm age influences strategic approach taken by the business (Verreynne & Meyer, 2010). Continuous external environmental scanning and adapting strategic concentration on gaining market share should be the strategy of emerging owner managers (McDowell, Harris, & Geho, 2016) since that will lead to higher EO.

The inclusion of firm age and firm size as moderated moderators has shed new lights on the effects of firm age and firm size going beyond the traditional explanation of their roles as control variables. This study found that for the large firms, ECS and EO relationship is stronger when the firm age increases. With compared to small firms, moderation effect of firm age on ECS and EO relationship is stronger for large firms. As firms get matured owner managers better understand the complexities associated with industries and can concentrate more on adapting internal processes to commensurate with the external environment (McDowell, Harris, & Geho, 2016). The old firms often get the advantage of being more legitimate in the market and thereby having access to a pool of resources driving them towards more entrepreneurial activities.

Additionally, matured firms possess experienced set of employees with a strong understanding of organisational competencies and culture which will ultimately affect the strategic implementation (Pelham, 1999).

Therefore, it is also evident that the skills and competencies required to run a small firm are qualitatively as well as quantitatively different from those needed in larger organisations (Johnson & Winterton, 1999). Therefore, future studies can investigate the different competency requirements predicting EO in terms of business size. Further, owner-manager and the key competencies of the creator are key determinants of new venture performance (Morris et al., 2013; RezaeiZadeh et al., 2016; Sarwoko et al., 2013) or otherwise the success and failure of the business (Capaldo, Iandoli, & Ponsiglione, 2004; Chandler & Jansen, 1992). Therefore, understanding of the behavior of ECS warrants important consequences for the practice as ECS are considerably important to growth and success of businesses (Mitchelmore & Rowley, 2010).

6. Conclusions

To conclude, the investigation of ECS and EO relationship in a configurational perspective where firm age and firm size are treated as moderated moderators has

shed new lights on possible moderating effects of firm age and firm size beyond the recognition of them as control variables. Especially, the study findings reinforce the importance of importance of capturing and viewing firm age and firm size as moderated moderators. This highlights the interrelated effects of contextual variables on ECS and EO relationship. Study findings further suggest that complexities and nuances of the ECS and EO relationship can be captured by using contingency and configurational approach rather a direct effect model and also without overlooking the effects of firm size and age as control variables. Future studies can advance the findings of this study by empirically testing the relationship between ECS and EO with moderated moderators of firm age and firm size in a large sample context. Moreover, future studies can incorporate other contextual variables such as environmental hostility, and industry sector in to the study model.

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Bricolage: Theoretical and Contemporary Uses of the Concept in Entrepreneurship Studies

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Abstract

It is essential to have mutual understanding of theories, because their theoretical and contemporary uses change over time. Thus, this paper examines theoretical and contemporary uses of Bricolage theory in entrepreneurship studies. In doing so, it reviews scholarly articles on the theory through a documentary analysis method. Its

findings showed that Bricolage was used across different fields of study. The findings also showed that there are differences between original and contemporary uses of the theory. Similarly, there is change in contextual meaning of the theory. Furthermore, it was noted that the theory was applied to different entrepreneurial phenomena, except certain contexts like entrepreneurial process, entrepreneurship education, and digitalization. This paper makes theoretical contribution by outlining key assumptions of Bricolage and its contextual meanings. It also provides insight for scholars and areas for further research.

1. Introduction

Bricolage originates from work of Lévi-Strauss (1966). It denotes making do with current resources. It also refers to creation of something new from little available resources or by combining various limited resources (Baker and Nelson, 2005; Fisher, 2012). It is one of well-known entrepreneurship theories, and it is widely used in various studies (Baker and Nelson, 2005). For example, it was used to investigate entrepreneurship behaviour (e.g. Fisher, 2012), technology development (e.g. Garud and Karnøe, 2003), and social value creation (e.g. Johannisson and Olaison, 2007; Di Domenico et al., 2010; Salunke et al., 2013). The concept was employed in other fields like politics, legal, entertainment, life

science, and education (Baker and Nelson, 2005; Di Domenico et al., 2010). The scholars used the concept both positively and negatively (Baker and Nelson, 2005). With a wide-use of the concept, it is essential to know its origin so that the core meaning of the concept can be upheld and maintained.

Therefore, this paper aims to present the uses of Bricolage, its key assumptions, and application of its theoretical assumption in entrepreneurship studies. Similarly, this paper aims to explore the differences in the theoretical and contemporary uses of the concept in the entrepreneurship studies. Hence, the paper provides answers to these questions: (a) what are the theoretical and contemporary uses of Bricolage in the field of entrepreneurship and others? (b) what are the basic assumptions of Bricolage? (c) how these assumptions were applied in entrepreneurship studies?, and (d) how do theoretical and contemporary uses differ in entrepreneurship studies?

In answering the questions, a documentary method was applied. Scholarly articles in English language were considered. The findings showed that Bricolage has been applied to almost facets of human activities, and fields of study. Thus, the concept was used theoretically and contemporarily. Similarly, the findings showed that "*achieving a goal with whatever available resources*" is still the main assumption of the concept. Additionally, this key assumption was applied to entrepreneurship

phenomena, like new venture creation, technology development, innovation process, and entrepreneurial behaviour. Furthermore, the difference between theoretical and contemporary uses of the concept is that its theoretical use concentrates on "*how to get things done with resources at hand"*, but the contemporary use centres "*on getting things in a specific situation*". The findings noted that there is a change in meaning of the concept.

In view of the above findings, the paper makes a theoretical contribution to entrepreneurship field. It pinpoints meanings of key assumptions of Bricolage theory. It also outlines differences in the use of the theory and changes in the contextual meaning of the theory. Thus, it provides insight for scholars to know the origin and areas for further discussion on the theory. The paper is structured as follows: methodology, findings, reflections, and conclusion.

2. Methodology

Bricolage is widely used. Thus, to present an extent of its usage, a documentary method was employed. This method was used because it enables scholars to synthesize literary works on a specific topic, and to derive new knowledge from documents or artefacts. Its process are data codification, theme development, and result derivation (O'Leary, 2014; Silverman, 2011; Bowen, 2009). Due to the

limited resources and the scope of this paper, Google scholar was used to collect relevant articles on Bricolage. This domain was selected for its wide-use, and containing of other domains (e.g. Scopus, Web of Science, ScienceDirect, and EBSCOhost etc.). Of course, one of the problems associating with the domain is that it contains many irrelevant papers, and small journals are rampant there. To avoid this problem, the core term of this paper, "*Bricolage*", was used in searching for the articles. Also, an attention was paid to only scholarly papers, while conference papers and textbooks (including chapter in the textbooks) were excluded. An attention was also paid to the articles in English language because it was noted that the concept emanated from French language; thus, there were several papers in the language.

When the concept was searched on the Google Scholar, as expected, thousands of result were showed. It was noted that these results were according to the relevance of the concept; so, the searching was restrained to the first 10 pages of the domain. From the page 1, the relevant articles were checked by reading abstract, journal, citations, and accessibility (of this paper author) to the article. After checking, the relevant articles were downloaded, read, and annotated. At this stage, all articles which are previously analysed were excluded from the annotation. It was noted that some articles had done literature review on the concept (e.g. Di Domenico et al.,

2010; Duymedjian and Rüling, 2010; Baker and Nelson, 2005). These articles enabled the data analysis.

The annotated articles were analysed by focusing on these criteria: (1) uses of Bricolage, (2) theoretical meaning of Bricolage (which papers cited and reasons for the citation), (3) the article's contextual meaning of Bricolage, (4) field of study, (5) application of the concept in different field, and (6) nature of research (literature review, conceptual or empirical) of the article. Altogether, 38 papers were analysed and the findings of the analysis are presented in the following section. Also, the details of analysed articles are presented in the appendix.

3. Findings

3.1 The Uses of Bricolage

The theory enjoys popularity, especially in the field of social sciences. Although it originates from anthropology, it is now employed to cognitive sciences, entrepreneurship, information technology (IT/ICT), innovation, and organizational studies. Its main contributions to the organization research, in the past decades, are in form of organizational resilience, sense-making and improvisation, using of technical systems and artefacts, and entrepreneurship (Duymedjian and Rüling,

2010: 133). Likewise, the concept enjoys popularity in these fields: sociological ethnography, political science, women's studies, interpersonal relationships, education, legal studies, evolutionary genetics, biology, and economics (Baker, 2007).

In relation to the above scholars, it was also found that the concept was applied to entrepreneurship studies more than any other fields. The concept was also well-used in the innovation research, which sometimes incorporated entrepreneurship (e.g. Fuglsang, 2010), and ICT (e.g. Ferneley and Bell, 2006). Similarly, the concept was used in organizational and management studies (e.g. Boxenbaum, and Rouleau, 2011). The analysis also revealed that the concept was applied in ethnography, political science, and ICT studies (e.g. Hammersley, 1999; Carstensen, 2011; Büscher et al., 2001 respectively).

Unlike the above scholars, the concept was used in these study areas: qualitative research methodology, natural resource management, design, finance, collaborative planning and policy making, food development, and learning. The most interesting application areas is the use of the concept in the research methodology. There are 4 articles which explain how Bricolage could be used in conducting a qualitative research. Another interesting application area is the use of the concept in the

natural resource management. Logically, the concept seems to be relevant to resource management because "*limitless material resources are not only unavailable most of the time, they may actually be a hindrance. And remaining lean and mean can often be a blessing*." (Gibbert et al., 2007: 15). Meanwhile, natural resource is known for its abundance. Thus, the application of Bricolage to manage such resource seems to be interesting. Therefore, the use of Bricolage appears to be wide.

Furthermore, most of the analysed articles are conceptual and/literature review. An observed reason for this is that the concept is philosophical, in which the scholars were trying to explain how it could be applied. Another observed reason is that the scholars used the concept in proposing their conceptual solution for their field. For instance, Engelen et al (2010) proposed that Bricolage could be used in solving financing problems; while, Innes and Booher (1999) presented how the concept could assist in developing a collaborative plan and decision making. On the other hand, the empirical articles are mostly associated with entrepreneurship and innovation studies. Only few empirical articles are connected with the ICT, design, and culture. The possible reason for the entrepreneurship/innovation empirical articles is understandable because this field is fond of theory testing and building theory. To sum up the uses of Bricolage, Table 1 provides the details.

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Table 1: The Use of Bricolage

Field of Study	Article / Scholars
Entrepreneurship	Baker et al (2003), Garud and Karnøe (2003), Baker and Nelson (2005), Johannisson and Olaison, (2007), Phillips and Tracey (2007), Baker (2007), Banerjee and Campbell (2009), Di Domenico et al (2010), Fisher (2012), Halme et al (2012), Desa (2012), Salunke et al (2013), and Desa and Basu (2013).
Innovation	Fuglsang (2010), Fuglsang and Sørensen (2011), Senyard et al (2014), and Wu et al (2017)
Organizational and management studies	Duymedjian and Rüling (2010) and Boxenbaum and Rouleau (2011)
Research methodology	Kincheloe, (2001), Markham (2005), Kincheloe, (2005), and Rogers (2012).
Ethnography	Hammersley (1999), and Markham (2005).
ICT	Büscher et al (2001), Ferneley and Bell (2006), and Deuze (2006)
Political science	Carstensen (2011)
Natural resource management	Cleaver (2002), Sehring (2009), and Merrey and Cook (2012).
Finance	MacKenzie, D. (2003), and Engelen et al (2010).
Collaborative planning and policy making	Innes and Booher (1999)
Food development	Horlick-Jones et al (2007)
Design	Louridas (1999)
Learning	Freeman (2007)

Culture	Russel and Tyler (2005)

Now, considering the uses of Bricolage from the scholars, it can be deduced that the concept has been applied to almost facets of human activities, and fields of study. However, it was noticed that the concept has not yet applied to visual arts, language learning, and most importantly, entrepreneurial process, and teaching entrepreneurship.

3.2. The Key Assumptions of Bricolage

During the article analysis, an attention was paid to the theoretical meaning of Bricolage. This enabled the author of this paper to focus on cited works among the scholars. An observation was noted that almost analysed articles made reference to the theorist works - Lévi-Strauss (1966, 7, and 8). Meanwhile, few scholars like Merrey and Cook (2012) and Büscher et al (2001) did not mention the theorist specifically, but they tried to refer to the theoretical meaning of Bricolage in their texts. With this observation, the following Table 2 was drawn to show the theoretical assumptions of the concept in different fields of study.

Table 2: The Key Assumptions of Bricolage in the Fields of Study

Field of study	Theoretical Assumptions
Entrepreneurship	Making do with what is at hand, Recombination of resources for new purposes, Improvisation, Making use

	of redundant resources to solve problems at hand, and Human relation to their environment.
Innovation	Tinkering, Using current resources to create new forms and order from tools and materials at hand, Making do with whatever is at hand by reuse and recombination, Making do by applying combinations of the resources at hand to new problems and opportunities, Doing things differently using resources at hand, and Improvisation.
Organizational and management studies	Doing things with whatever is at hand, and Improvisation.
Research methodology	Employing historiographical, philosophical, and social theoretical lenses to gain better understanding; Developing a social, cultural, psychological, and educational science of complexity; Combination of multiple methodological practices, and empirical materials, perspectives to understand a study, and Juxtaposition of different narratives (interpretive method).
Ethnography	Combination of multiple methodological practices, and empirical materials, perspectives to understand a study.
ICT	Using current resources to create new forms and order from tools and materials at hand.
Political science	Working with one's hands and devious means to achieve one's goal.
Natural resource management	Gathering and applying analogies, and styles of existing institutions, and Interweaving and transforming informal and formal institutions for positive change.
Finance	Improvisation, and Building things according to events.

Collaborative planning and policy making	Making sense of innovative consensus building, and Reasoning.
Food development	Whatever at hand.
Design	Tinkering.
Learning	Piecing together, and Make sensing of learning.
Culture	Making do with whatever at hand by reuse.

From the above Table 2, it can be noted that all the fields denote the concept to be: making do, recombination of resources at hand for a certain purpose (e.g. solving problem, utilizing opportunity, influencing existing institution, understanding phenomenon, managing crisis etc.), improvisation, tinkering, and sense-making. All these assumptions are actually referred to by the theorist himself. This might be the reason for not getting a specific assumption of the theory as Duymedjian and Rüling, (2010) pointed out that:

It is important to keep in mind that, despite the precision of his writing, Lévi-Strauss does not provide a clear definition of bricolage. He expresses and illustrates his ideas through frequent changes in perspectives, addressing as much the process of bricolage as the role of the bricoleur, and drawing on multiple comparisons of bricolage, craft, myth, play, and art. The figure of the bricoleur is developed

through comparison with an opposite figure, the 'ingénieur', a term (not easily translated into English) rooted in the historical time and process of the Enlightenment, which conveys an array of notions (including a specific belief in the superiority of rationality and scientific reasoning) related to the French engineering tradition. From our reading, three elements are paramount to understanding bricolage according to Lévi-Strauss: stock or repertoire—his view of the resources used; dialogue—the process of bricolage; and outcome— the nature of its results. (p.137)

When the above quotation and the work of Di Domenico et al (2010), Duymedjian and Rüling (2010), and Baker and Nelson (2005) were juxtaposed, the noticeable key assumptions of Bricolage are:

(a) **Making do with any available resource**: most of the above-listed scholars interpreted Bricolage as doing something with whatever resources (tools, materials, methods, techniques, time, money, etc.) for a particular reason. This assumption was narrated by Freeman (2007) when explaining the work of Lévi-Strauss (1966) that:

The bricoleur, in contrast to the scientist or engineer, acquires and assembles tools and materials as he or she goes, keeping them until they might be used. Each is

shaped in part by its previous application but remains inevitably underdetermined, imperfectly understood, open to manipulation for whatever purpose is at hand. Not only are tools selected according to the bricoleur's purpose, but that purpose itself is shaped in part by the tools and material available. The properties of each—tools, materials, and project—are uncovered in process. (p. 486).

(b) **Recombination or Re-use of any available resource**: many scholars also interpreted Bricolage as re-use of whatever available resources for a certain goal. Many entrepreneurship scholars made use of this assumption as it is shown in the works of Di Domenico et al (2010), Duymedjian and Rüling (2010), and Baker and Nelson (2005). In the fields of culture and ICT, Deuze (2006) quoted Hartley (2002: 22) that Lévi-Strauss (1966) assumed that Bricolage is "the creation of objects with materials to hand, re-using existing artefacts and incorporating bits and pieces." This assumption is synonymous to improvisation and tinkering, as Baker (2007), Engelen et al (2010), Boxenbaum, and Rouleau (2011), and Senyard et al (2014) explained.

(c) **Combination of any available tools**: this interpretation seems to be common with the scholars from the research methodology, culture, and ethnography. They interpreted Bricolage as a combination of different available

tools or methods or practices to get better understanding of a certain phenomenon. For an example, Rogers (2012) quoted Denzin and Lincoln (1999) that "the combination of multiple methodological practices, and empirical materials, perspectives, and observers in a single study is best understood, as a strategy that adds rigor, breadth, complexity, richness, and depth to any inquiry" (p. 4).

Summarily, the main assumption of Bricolage centres on doing something with any available means instead of searching for needed means. Therefore, Bricolage denote getting things done with whatever available resources.

3.3 The Application of Bricolage Theoretical Assumptions in Entrepreneurship Studies

From the immediate subsection, the primary theoretical assumption of Bricolage is achieving a goal with whatever at hand. But, how has this assumption been applied to the entrepreneurship studies? In order to answer this question, an attention was paid to contextual meanings of the concept during the article analysis. The following Table 3 shows the details.

Table 3: Application and Contextual Meanings of Bricolage

Article	Application of Bricolage	Contextual Meaning of Bricolage

Baker et al (2003)	Investigating existence, channels, and implications of strategic improvisation in knowledge-intensive new businesses.	Network bricolage as a dependence on pre-existing contact networks as the means at hand.
Garud and Karnøe (2003)	Examining the roles of agency in the technology development	Co-development and commercialization of new technology among the stakeholders
Baker and Nelson (2005)	Investigating how entrepreneurs in resource-constrained areas manage to develop new and unique services	Make do with what is at hand; create something from nothing by exploiting physical, social, or institutional inputs that other firms rejected or ignored.
Johannisson and Olaison (2007)	Investigating how people deal with natural disasters - emergency entrepreneurship	Social bricolage is a spontaneous collective effort, means combining and locally—in time and space—integrating chunks of everyday routines according to the events and associated needs that the drama produces.
Phillips and Tracey (2007)	Explaining different discussions relating to institutional theory and strategic entrepreneurship	Making do by applying combinations of the resources at hand to new problems and

Baker (2007)	Presenting how the Bricolage was used in developing a new business.	It is improvisation and it implies reliance on the resources at hand.
Banerjee and Campbell (2009)	Examining "*inventor Bricolage*" or "*reconstruction of technological capabilities*"	Inventor bricolage is recombining the knowledge of inventors on hand to address opportunities.
Di Domenico et al (2010)	Explaining Bricolage in the social entrepreneurship	Making do with limited resources available and creating something from nothing for a social end
Fisher (2012)	Investigating entrepreneurial behaviour	Entrepreneurs create new businesses with limited available resources by taking actions and participating in community engagement for their company growth
Halme et al (2012	Explaining how Bricolage can be used for innovation activities in large companies.	Intrapreneurial Bricolage is an entrepreneurial activity within a large organization characterized by creative bundling of scarce resources.
Desa (2012)	Investigating how international social entrepreneurs overcome their obstacles.	Bricolage acts as a legitimating mechanism for institutional change.
Salunke et al (2013)	Researching the relationship between sustained competitive	Combination of resources at hand to innovate and stay ahead of rivals.

	advantage and strategic entrepreneurship.	
Desa and Basu (2013)	Studying processes of resource mobilization -- optimization and bricolage on social enterprises.	Bricolage enables social ventures mitigate conditions of resource constraint and occasionally enables the venture to recognize new opportunities to scale up operations and/ or extend its mission.

Drawing upon Table 3, it can be deduced that underneath Bricolage assumption is present in the above studies. Although the scholars applied the concept for different phenomena, the core assumption was evident in their studies. Because innovation is part of entrepreneurship, the scholars from this subset was also examined; unsurprisingly, they applied the main assumption of the concept in their studies like that of entrepreneurship.

3.4 The Differences between Theoretical and Contemporary Uses of Bricolage in Entrepreneurship Studies

According to the subsections 3.2 and 3.3, Bricolage was used in the different aspects of entrepreneurship as well as other fields of study. Likewise, the different assumptions of the concept were explained. Meanwhile, if an attention could pay to

the use of the concept, a couple of differences could be noticed between the original and contemporary uses. The first difference is that the theoretical use focuses on how to get things done with resources at hand; but, the contemporary use focuses on getting things in a specific situation. For examples, Baker and Nelson (2005) used Bricolage to describe how the entrepreneurs manoeuvre their resource predicaments and create new businesses. These scholars, contemporarily, termed the concept as "Entrepreneur Bricolage". Similarly, Baker et al (2003) employed the concept to the companies on how these enterprises improve their resources through their existing network, and they came up with "Network Bricolage". These examples show that, despite the fact, the first scholar (Baker) is the same first author, he and his team used the concept to arrive at different contemporary uses, because they focused on a certain issue in each study. This difference is present in the work of Phillips and Tracey (2007) who proposed "Symbolic Bricolage", Di Domenico et al (2010) who suggested "Social Bricolage", Halme et al (2012) who presented "Intrapreneurial Bricolage", Banerjee and Campbell (2009) who explained "Inventor bricolage", and Johannisson and Olaison, (2007) who applied the concept to the emergency entrepreneurship and developed "Social Bricolage".

Apart from the entrepreneurship studies, the first difference also appears in other fields as it is noted in the work of Cleaver (2002), Sehring (2009), and Merrey and Cook (2012) for "Institutional Bricolage", Freeman (2007) for "Epistemological Bricolage", Innes and Booher (1999) for "Collaborative Bricolage", and Duymedjian and Rüling (2010) for "Collective Bricolage".

The second difference is the focus of the core assumption of the concept at the time of use. For instance, if the "Making do" assumption was focused during the use of the concept, the contemporary use seems to be "Improvisation or Tinkering". Examples of studies for this difference are Ferneley and Bell (2006) and Wu et al (2017). The last difference is echoed by Duymedjian and Rüling, (2010) when they stated that:

"Research on bricolage in organizations can be summarized from four different angles. In terms of variety, bricolage has been investigated in several theoretical fields such as innovation studies (e.g. Garud and Karnøe 2003), social psychology (e.g. Weick 1993), entrepreneurship (e.g. Baker and Nelson 2005) and information technology (e.g. Ciborra 1992). In terms of levels of analysis, bricolage has been considered as an individual activity (e.g. Weick 1998), as an organizational process (e.g. Ciborra 2002) and as a form of inter-organizational dynamics (e.g. Garud and

Karnøe 2003). In terms of stance, bricolage has mainly been used descriptively as a comprehensive notion to describe ways of doing things, but it has also been given some normative aspects when referred to as a source of resilience (e.g. Weick 1993) or as a way to 'bolster incremental innovation' (Ciborra 2002: 51). Finally, in terms of conceptual complexity, bricolage has moved on from its simplest definition of 'making do', and the relatively frequent assimilations with improvisation, towards the assertion that 'bricolage does not imply improvisation' (Baker et al. 2003: 265) and a much richer definition that emphasizes the nature of the resources at hand and the process of recombining resources for new purposes (Baker and Nelson 2005)." (p.136)

The quotation revealed that there are differences in the use of Bricolage in relation to variety, level of analysis, stance, and conceptual complexity. All these differences seem to contribute to the differences in the meanings of Bricolage. Thus, it can be summarized that differences in the use of Bricolage lead to slight variations in the meaning of the concept.

4. Reflections

So far, the paper has elucidated the origin, the key assumptions, the uses, and the meanings of the Bricolage from both entrepreneurship studies and others. Reflecting on these explanations, differences between contemporary uses of the

concept in entrepreneurship and other fields, and changes in meaning of the concept were noted. They are explained below:

(a) Difference between Contemporary Uses of Bricolage in Entrepreneurship and Other Fields

There are different contemporary uses of Bricolage, which led to the differences in the contextual meaning of the concept. Making reference to the Table 3, the first difference between the contemporary content of Bricolage in the entrepreneurship studies and others is that Bricolage was explained on a specific aspect of the entrepreneurship field; while other studies explained the concept on a general overview of other fields. For example, Halme et al (2012) explained "Intrapreneurial Bricolage" as an integral aspect of organizational entrepreneurship, but Freeman (2007) explained "Epistemological Bricolage" as a big concept of philosophy.

Another difference is that the entrepreneurship scholars developed their contemporary content from empirical study, whereas other fields developed their content mainly from the literature review. For example, Johannisson and Olaison, (2007), who developed "Social Bricolage", arrived at this contemporary from their empirical situation of natural disaster. These scholars used this condition to

develop a new concept "emergency entrepreneurship" and explained their new concept emerged from Bricolage. On the other hand, Duymedjian and Rüling (2010) who used "Collective Bricolage" arrived their contemporary from synthesizing of several scholarly papers.

Furthermore, there are differences in the contemporary use of Bricolage among entrepreneurship empirical studies. It was noted these studies focused on testing of Bricolage concept, and building a new sub-concept of Bricolage. Some empirical studies like Desa (2012), Salunke et al (2013), Desa and Basu (2013), and Ferneley and Bell (2006) tested Bricolage theory. On the other hand, Phillips and Tracey (2007), Di Domenico et al (2010, Halme et al (2012), Banerjee and Campbell (2009), Baker and Nelson (2005), Baket et al (2005), and Johannisson and Olaison, (2007) were building a new conceptual forms of Bricolage theory. This difference is understandable because it is natural for empirical studies to either test a theory or build new one.

(b) Changes in the Meanings of Bricolage

Duymedjian and Rüling (2010) affirm that most of existing literature did well for the application of Bricolage into their various studies, but these scholars notify that the original meaning of the concept is derailed. Thus, these scholars tried to

reconstruct and solidify the concept. In doing so, they came up with two types of Bricolage. According to them, the first type is idea-type and the second is non-ideal type. They explained that that the ideal-type is a configuration of acting, knowing, and an underlying worldview; while non-ideal type is the opposite. When explored their classification, they realized that there is collective Bricolage which consists of familiar and convention-based in relation to interaction and nature of the conventions employed. They pinpointed that the configuration of acting is practice, knowing is epistemology, and underlying worldview is metaphysics. Similarly, they noted that the meaning of Bricolage has three elements: stock (materials), dialogue (process), and result.

In respect to Duymedjian and Rüling (2010) and Table 2 and 3, the original meaning of Bricolage has changed slightly. Although the main assumption or analogy of the concept seems to be the same in the present studies, yet contemporary use and application of the concept to different field of studies changes the core meaning. For instances, Baker and Nelson (2005) argued that the meaning of Bricolage is "resources at hand; recombination of resources for new purposes" (p. 333), Johannisson and Olaison, (2007) defined it as "brings together redundant artefacts in order to compose local responses to problems as they present themselves" (p. 74), and MacKenzie (2003) "Creative scientific practice is

typically not the following of set rules of method" (p. 833). All these definitions are different but their underpin assumptions are the same. For an illustration, they all mentioned stock (materials/method), process, and the ultimate goal of the effort. Additionally, this meaning "using of different tools to analyse certain phenomenon" was prevailing in 1990s and early 2000s. Meanwhile, the improvisation or tinkering, making do, and re-combination of resources meanings of the concept seemed to be prevailed afterwards. This denotes that the meaning of the concept was conceptual in the beginning, while application meaning emerged later. This also denotes that the recent need for resource management, lean manufacturing, cost saving, and internationalization and globalization make "improvisation" meaning widely employed. Therefore, it can be agreed that there is a change in the meaning of the concept, but its core assumption seems to be the same.

Summarily, the above differences and changes in meaning revealed that contextual or applied meanings of Bricolage are somehow different from the original meanings. This is due to wide-use of the concept in the different fields of study. Therefore, it can be deduced that the more a concept is widely used, the higher the possibility of derailing original meaning of the concept.

5. Conclusion and Areas for Further Research

This paper has shown that Bricolage is an important theory in the management field. Its wisdom has been tested across the fields. Hence, it is essential to have mutual understanding of the core meaning of the concept has Duymedjian and Rüling, (2010) called for it. This paper tried to provide a literature review on the concept, focusing on the theoretical and contemporary uses. It also provides answers to the question of changes in the meaning of the concept of period of time. The paper shows that Bricolage is widely used in the empirical studies especially for entrepreneurship research. Therefore, it can be concluded that this paper has provided some useful hints on the meaning and key assumptions of Bricolage. It is, thus, calling for comprehensive literature review on the concept so that the core meaning of the concept can be maintained for future researchers.

Besides, this paper has shown that Bricolage is not an obsolete concept because it is still relevant and scholars are keeping applying it across different fields of study, and on the different topics. Thus, this paper calls for exploration of Bricolage in the field of visual arts, language learning, and teaching entrepreneurship. This exploration may shed more light on the efficiency and relevance of the concept in these proposed study areas. Similarly this calls for exploration of the concept in relation to similar concepts like Effectuation and Lean startup. Although Fisher

(2012) explored both Bricolage and Effectuation, a wide application of both in different contexts would provide more understanding on the entrepreneurship theories. Similarly, exploration the concept in modern contexts like commercialization and digitalization as Gbadegeshin and Heinonen (2016), and Gbadegeshin (2018) did for Lean start-up respectively would add value for Bricolage theory.

Lastly, in spite of contributions of this paper, it has limitations. Its literature review is restrained to few pages of Google Scholars. Likewise, it excluded textbooks, textbook chapters, and conference papers. Similarly, many domains were not used. All these restraints create limitations for the paper and they hinder its generalisation. However, these restraints create a research opportunity for the future studies. For example, future literature review can include restrained sources, and examine papers from 1968 upwards so that a comprehensive result can be arrived.

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Appendix

No	Article	Journal	Field of study	Use of Bricolage	Nature of Research	Previous articles used
1	Innes and Booher (1999)	Journal of the American Planning Association	Collaborative planning and policy making	Bricolage is a form of reasoning	Conceptual	Levi-Strauss (1966)
2	Louridas (1999)	Design Studies	Design	Design as bricolage	Conceptual	Levi-Strauss (1966)
3	Hammersley (1999)	Journal of Contemporary Ethnography	Ethnography	Research methodology	Conceptual	C Levi-Strauss (1966: 17); Lincol and Denzin
4	Kincheloe, (2001)	Qualitative Inquiry	Research Methodology	Bricolage recognizes the dialectical nature of the disciplinary and interdisciplinary relationship and promotes a synergistic interaction between the two concepts	Conceptual	Lincoln and Denzin (2000), Levi-Strauss (1966)
5	Büscher et al (2001)	Computer Supported Cooperative Work	ICT	Bricolage as a method for a situated designing	Empirical	

6	Cleaver (2002)	European Journal of Development Research	Natural Resource Management	Intellectual bricolage	Conceptual	Douglas (1987)
7	Garud and Karnøe (2003)	Research Policy	Entrepreneurship	Co-development of new technology	Empirical	Dorf and Sabel, (1998).
8	Baker et al (2003)	Research Policy	Entrepreneurship	Network bricolage as a dependence on pre-existing contact networks as the means at hand	Conceptual	
9	MacKenzie (2003)	Social Studies of Science	Financial Economics	Creative scientific practice is typically not the following of set rules of method	Conceptual	Levi-Strauss (1966)
10	Baker and Nelson (2005)	Administrative Science Quarterly	Entrepreneurship	Resources at hand; recombination of resources for new purposes,	Literature review / Conceptual	Levi-Strauss (1967), Ciborra, (1996), Campbell, (1997), Stark, (1996), Lanzara, (1998) Hatton, (1989; 1995), York (Maira, 1999), Jacob, 1977; Duboule and Wilkins, 1998), Chao, 1999) ive" (Hull, sation (Weick,

						1993a; Miner, Bas-soff, and Moorman, 2001)
11	Kincheloe (2005)	Qualitative Inquiry	Research Methodology	Bricolage is developing a social, cultural, psychological, and educational science of complexity	Conceptual	Levi-Strauss (1966)Lincoln (2001), Pinar (2001), and McLaren (2001)
12	Russel and Tyler (2005)	Childhood	Culture	refer largely to the ways in which consumer goods can be subject to a range of uses and meanings, particularly within the context of subcultural styles	Empirical	Levi-Strauss (1966), Hebdige, (1979), de Certeau (1984)
13	Markham (2005)	Qualitative Inquiry	Methodology / Ethnography	Bricolage as Interpretive Method	Conceptual	Richardson (1995), Rambo-Ronai(1995), Joyce (1998), Tyler (1986)
14	Ferneley and Bell (2006)	Technovation	Innovation / Entrepreneur ship / ICT	Improvisational approach	Empirical	Cited similar authors above plus: Mintzberg, 1994
15	Deuze (2006)	The Information Society	Culture and Social Media	Bricolage incorporates practices and notions like borrowing, hybridity, mixture,	Empirical	Hartley (2002), Chandler (1998)

				and plagiarism		
16	Phillips and Tracey (2007)	Strategic Organization	Entrepreneurship	Making do by applying combinations of the resources at hand to new problems and opportunities'.	Conceptual	Martens et al., 2006) and storytelling (e.g. Hjorth and Steyaert, 2004
17	Johanniss on and Olaison, (2007)	Review of Social Economy	Entrepreneurship	Social bricolage.	Literature review / Conceptual	Levi-Strauss (1966)
18	Baker (2007)	Journal of Business Venturing	Entrepreneurship	Resources in play;	Conceptual	As previously cited and these: Dumont, 1996), Denzin and Lincoln, 1994; Katovich, 1995; Weinstein and Weinstein, 1991, Conville, 1997, Tushnet, 1999, Rynes and Trank, 1999, Hirabayashi and Kasai, 1993; Jacob, 1977; Lavorgna et al., 2001
19	Freeman (2007)	Administration and Society	Learning	piecing together; make sensing of learning	Conceptual	Levi-Strauss (1966)

20	Horlick-Jones et al (2007)	Health, Risk & Society	Food development	learning and making sense	Conceptual	Irwin et al. 1996; Levi-Strauss (1966: 17)
21	Sehring (2009)	Water Alternatives	Natural Resource Management	Institutional Bricolage	Empirical	Levi-Strauss (1968), Cleaver (2002), Galvan (2004).
22	Banerjee and Campbell (2009)	R&D Management	Entrepreneurship	Inventor bricolage	Conceptual	Cited many scholars in innovation and entrepreneurship.
23	Di Domenico et al (2010)	Entrepreneurship Theory and Practice	Entrepreneurship	Making do with what is at hand	Literature review / Conceptual	As Above and: Baker & Nelson, 2005; Garud & Karnoe, 2003; Johannisson & Olaison, 2008, Rao et al. (2005); Spencer et al., 2005; Miettinen and Virkkunen (2005) Cunha, 2004) , Kamoche et al., 2003
24	Duymedjian and Rüling, (2010)	Organization Studies	Organization studies	an analogy to shed light on the processes underlying mythical thought	Literature review/ Conceptual	As other conceptual papers plus: Orlikowski (2000), Coutu 2002), Schön andWiggins's (1992)

25	Fuglsang (2010)	Journal of Innovation Economics & Management	Innovation / Entrepreneurship	Innovation as Bricolage	Empirical	Levi-Strauss (1966)
26	Engelen et al (2010)	Economy and Society	Finance	improvisation	Conceptual	Nicholas Hildyard (2008), MacKenzie (2003) Levi-Strauss (1966); Ciborra (2002)
27	Boxenbaum, and Rouleau. (2011)	Academy of Management Review	Management	improvisation	Conceptual	Bryant & Lasky, 2007; Denzin and Lincoln, 1994; (Lowe, Moore, & Carr, 2007
28	Carstensen (2011)	European Political Science Review	Political Science	Bricolage as an alternative vision of agency in ideational change	Conceptual	Levi-Strauss (1966), Campbell, (2004, 2005), Milner (2007)
29	Fuglsang and Sørensen (2011)	The Service Industries Journal	Innovation	'bricolage' - as a 'do-it-yourself'	Conceptual	Levi-Strauss (1966); Styhre, 2009; Timmermans & Berg, 1997
30	Merrey and Cook (2012)	Water Alternatives	Natural Resource Management	Institutional Bricolage	Conceptual	

31	Fisher (2012)	Entrepreneurship Theory and Practice	Entrepreneurship	Make do with what is at hand; create something from nothing	Empirical	Baker and Nelson, (2005), Senyard et al (2009)
32	Halme et al (2012)	Journal of Management Studies	Entrepreneurship	process of bricolage through which people use and combine the various resources they have 'at hand' as means of finding workable approaches to problems and opportunities	Conceptual	Lévi-Strauss, 1966 and many above like Baker, Duymedjian and Rüling, (2010), Di …2010,
33	Desa (2012)	Entrepreneurship: Theory & Practice	Entrepreneurship	Bricolage as a mechanism of institutional transformation	Empirical	Cited many of above scholars
34	Rogers (2012)	The Qualitative Report,	Methodology	Meaning-making Bricoleurs	Conceptual	Cited scholars in methodology
35	Desa and Basu (2013)	Strategic Entrepreneurship Journal	Entrepreneurship	Bricolage	Empirical	Cited many scholars in innovation, entre.
36	Salunke et al (2013)	Journal of Business Research	Entrepreneurship	Combining resources at hand to innovate	Empirical	Baker and Nelson, (2005), Di Domenico et al., (2010), Baker (2007), Haugh, & Tracey (2010), Katila & Shane, 2005).
37	Senyard et al (2014)	Journal of Product Innovation Management	Innovation	Defined as making do by applying combinations of the resources at hand to innovation	Empirical	Cited scholars in innovation and entrepreneurship
38	Wu et al (2017)	Journal of Business Research	Innovation	Bricolage effects on two critical new-product advantages	Empirical	Cited almost above scholars

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Assessing the relevance of culture in TPB entrepreneurial intention model: A comparative study in Japan and Pakistan

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Abstract

This article analyzes the entrepreneurial intention model on three key dimensions of theory of planned behavior (TPB): personal attitude, perceived behavioral control, and subjective norms. A comparative study was conducted using samples of university students in Japan and Pakistan having different social structure and culture. Considering Hofstede's cultural characteristics of both countries, we hypothesize that personal attitude and perceived behavioral control would exert higher influence on entrepreneurial intentions in Japan than in Pakistan, and subjective norms would exert higher influence on entrepreneurial intentions in

Pakistan than in Japan. Most of our hypotheses were supported in TPB model of entrepreneurial intentions indicating the generalization of the model across different cultures. The current study also contributes to the existing theory of TPB by providing insights about the association of culture and cognitions relevant to entrepreneurship. We discuss theoretical and practical implications and future research directions.

Introduction

The entrepreneurial activities vary among societies according to their ability to create and sustain them (Carter& Wilton, 2006; Chrisman, Chua, & Steir, 2002). According to past research, entrepreneurial characteristics and the cultural attributes are one of the most significant predictors of exploring entrepreneurial opportunities (Gartner and Shane 1995; Gürol and Atsan, 2006). Entrepreneurs are considered to be successful through their individual characteristics and the values in their society which help them to recognize and create opportunities in the market (Stevenson and Gumpert 1985). Entrepreneurship scholars are developing more understanding of the factors which are contributing towards entrepreneurial process (Markman, Balkin, & Baron, 2002). In this sense, the importance of cognitive variables on entrepreneurial decision making is highlighted by past research (Baron, 2004). Considering the success of cognitive approach in other fields, the

entrepreneurship scholars believe that they have implications in entrepreneurship field (Baron, 2004).

Research scholars have emphasized on comparative studies for in depth understanding of the effect of cognitive factors and cultural values in entrepreneurial process (Liñán, & Chen, 2009). In fact, past research argued that the cognitive approach of measuring the entrepreneurial intentions needs further development for providing a clear association of culture and cognitions relevant to entrepreneurship (Hayton et al., 2002). For instance, past research found that cognitive scripts which were relevant to entrepreneurship were also related to cultural values in form of individualism and power distance suggesting a complex relationship between cultural values, cognitions and entrepreneurial characteristics (Mitchell et al., 2000). Regarding this issue, the current study will test the TPB cognitive model of entrepreneurship using samples from two different countries (Japan and Pakistan). Data thus obtained will be used to see the impact of personal attitude, perceived behavioral control and subjective norms on entrepreneurial intentions (Ajzen, 1991, 2001). The role of culture has given special attention in this study while predicting the entrepreneurship intention model. No specific research comparing the effects of cultural differences on entrepreneurial intentions

for these two countries has been found. The study will also reveal implications for the educators and policymakers.

Both of our comparative samples, Japan and Pakistan have different cultural settings and social structure. Nevertheless, some of the Hofstede's cultural dimensions are related in both countries (Hofstede, 2003). Power-distance (54 for Japan and 55 for Pakistan) scores are broadly equivalent for both countries (Hofstede, 2003). Masculinity is also quite high in both countries (95 for Japan and 50 for Pakistan). However, Japan scores substantially higher in individualism (46 for Japan vs. 14 for Pakistan), which would imply a culture more supportive of entrepreneurship comparatively to Pakistan. According to past research, individualism is strongly linked to entrepreneurial attitude (Hayton, et al., 2002). Therefore, in comparison with Pakistan, personal attitude and perceived behavioral control will have a higher influence on intentions in Japan. Collectivistic cultures play a significant role in the explaining the impact of subjective norms on entrepreneurial intentions (Ajzen, 2001; Begley & Tan, 2001; Kristiansen & Indarti, 2004). Thus, subjective norms in Pakistan are expected to have a much higher effect over entrepreneurial intentions than in Japan (Begley & Tan, 2001). On the other hand, Japan also scores higher on uncertainty avoidance (92 for Japan

vs.70 for Pakistan). It could be considered that in this dimension, Japanese culture is relatively more opposed to entrepreneurship comparatively to Pakistan.

The economic situation of both countries is also very different (Garnitz, Nerb, & Wohlrabe, 2015). Japanese economy is comparatively very strong and the unemployment rate is very low while Pakistan has recently moved from frontier economy to emerging markets where economic institutes are relatively weak with the high unemployment rate (Garnitz, et al., 2015). Research scholars consider that economic institutions are important antecedents to foster entrepreneurship in countries (Stenholm, Acs, & Wuebker, 2013). However, interestingly in Japan where the economic situation is far better has lower entrepreneurship rate comparatively to Pakistan where entrepreneurship rate is quite high (Kelley, Singer, & Herrington, 2012).Therefore, the impact of the economic situation on entrepreneurship in both countries is considered neutral in this study.

Entrepreneurial intentions and theory of planned behavior

According to past research, intentions play a significant role in decisions of the individual to start a business (Zhao, Hills, & Siebert, 2005). Entrepreneurship is a process that occurs gradually over time (Kyrö & Carrier, 2005). In this regard, entrepreneurial intentions will be the first step towards starting some business (Lee

& Wong, 2004). In fact, performing the entrepreneurial behaviour is much dependent on the entrepreneurial intentions (Fayolle et al., 2006; Kolvereid, 1996b). Past research also considered intentions as one of the important predictors of entrepreneurial behaviour (Ajzen, 1991, 2001). Certain factors like habits, beliefs, values and wants contribute to the creation of entrepreneurial behaviour (Bird, 1988; Lee & Wong, 2004). The cognitive factors which influence the entrepreneurial behaviour are called as motivational antecedents (Ajzen, 1991). Moreover, situational factors also influence the intentions of starting a venture (Tubbs & Ekeberg, 1991). For instance, social pressures, time constraints, the influence of other people, and task difficulties are some of the factors affect the entrepreneurial intentions (Lee & Wong, 2004).

Researchers have identified different sets of measurements to measure the cross-cultural entrepreneurial intentions (Chandler & Lyon, 2001; Krueger et al. 2000; Kolvereid and Isaksen, 2006). In this sense, entrepreneurship intention questionnaire (EIQ) was developed based on the theory of planned behavior considering psychology and entrepreneurship literature to overcome the shortcomings of previous instruments of entrepreneurial intentions (Liñán, & Chen, 2009). According to the theory of planned behaviour, three motivational factors

including personal attitude, subjective norms and perceived behavioural control lead the person to carry out entrepreneurial behaviour.

Personal attitude refers to the person's positive and negative evaluation of himself for being an entrepreneur (Ajzen, 2001; Autio et al., 2001). Instead of only focusing on personal liking and disliking it evaluates the advantages and disadvantages to start a business. Subjective norms include the social pressure to start or not starting a business (Ajzen, 2001; Liñán, & Chen, 2009). Perceived behavioural control is close to self-efficacy which means a person with ease or difficulty to become an entrepreneur (Ajzen, 2002; Liñán, & Chen, 2009). It does not include only the feeling but also evaluate the feasibility of becoming an entrepreneur (Ajzen, 2002; Liñán, & Chen, 2009).

Theory and Hypotheses

In an entrepreneurial context, the theory of planned behaviour (TPB) with three motivational factors including personal attitude, subjective norms and perceived behaviour control is increasingly used focusing on entrepreneurial intentions (Shapero, 1982; Bird,1988: Krueger and Brazeal, 1994). According to TPB, intention to carry out certain behaviour depends on the personal attitude of the person towards that behaviour (Ajzen, 1991). Crant, (1996) found that the intention to start a business depends on the personal attitude of the individual. Similar studies found that personal attitude is relevant for individuals with entrepreneurial intentions (Krueger et al.2000; Liñán, 2004; Robinson et al.1991).

According to the theory of planned behaviour, values shared by the people within the culture are also one of the motivational antecedents to entrepreneurship intentions. Subjective norms mean the social pressure to start a business which includes support from family, friends and colleagues (Ajzen, 2001; Begley & Tan, 2001; Kristiansen & Indarti, 2004) Therefore, supportive cultures are perceived to be helpful in the entrepreneurial process (Etzioni, 1987). In this sense, in collectivist cultures, subjective norms play a significant role in explaining the entrepreneurial intentions comparatively to individualistic cultures (Begley & Tan, 2001; Kristiansen & Indarti, 2004).

However, regarding the pattern of relationship in the entrepreneurial intention model, traditionally weak role of subjective norms is one of the important concerns (Liñán, & Chen, 2009). This alleged weakness is not so clear in the entrepreneurship. Some of the scholars working on TPB entrepreneurial intention model simply omitted the subjective norms (Peterman & Kennedy, 2003; Veciana et al., 2005), while others could not find any significant relationship (Autio et al., 2001; Krueger et al., 2000). Comparative studies in different culture settings can be helpful in explaining the role of subjective norms on entrepreneurial intentions (Liñán, & Chen, 2009). Considering our sample characteristics, we have included the subjective norms in the model to explore the clearer role of subjective norms in the TPB model of entrepreneurship.

Entrepreneurial intentions also include behavioural intentions, self-prediction and desire to start a business (Armitage and Conner, 2001).Perceived behavioural control explains the perceived ability to become an entrepreneur (Kolvereid, 1996). According to Davidson, (1995), perceived behavioural control is one of the most important factors influencing the person to start a

business. Moreover perceived behavioural control is a concept similar to self-efficacy and successfully applied to new venture creation (Meyer et al. 1993).

Cultural Considerations in hypothesis development

The entrepreneurship literature is full of discussions about the characteristics of the entrepreneurs (Autio et al., 2001; Chen, Greene, & Crick, 1998; Erikson, 1999; Fayolle, Gailly, & Lassas-Clerc, 2006). Entrepreneurship scholars now turn their attention to see the impact of culture on entrepreneurial characteristics (Hayton, George, & Zahra, 2002; Mcgrath & MacMillan, 1992; Mitchell, Smith, Seawright, & Morse, 2000; Mueller & Thomas, 2001; Mueller et al., 2002). The rate of entrepreneurship is different across countries according to their social and economic development, despite the fact, some cultural values at the individual level are associated with the entrepreneurial characteristics (McGrath, Macmillan, Yang, & Tsai, 1992).

According to past research, cultural variables are one of the most important factors in the entrepreneurial development process (House, Javidan, Hanges, & Dorfman, 2002; Mcgrath et al., 1992). Culture is defined as peculiar values of groups or societies in an underlying system (Mueller & Thomas, 2001). Therefore, cultural factors motivate people to engage in the certain type of behaviors. National culture also influences the entrepreneurship levels both through the values of the society and institutes who represents the culture of the country (Ahlstrom & Bruton, 2002; Dickson, 2004). Although past research found the link between national culture and entrepreneurial process, how culture influence the entrepreneurial behaviour is less explored in the literature (Hayton, George, & Zahra, 2002; Zahra, Jennings, & Kuratko, 1999). Entrepreneurship scholars widely used Hofstede cultural dimensions to explore the link between national culture and entrepreneurial activity (e.g., Busenitz & Lau, 1996; Mitchell et al., 2002;

Mitchell, Smith, Seawright, & Morse, 2000). However, there are two alternative forms in which this influence can be seen (Hofstede et al., 2004). First, culture can shape the economic institutions and make them favourable for the people to start a business. Second, dissatisfied individuals through self-employment would gain personal realization (Hofstede et al., 2004).

Several studies in the past examined the relationship between national culture and individual characteristics including values, beliefs and cognitions (Mueller & Thomas, 2000; Thomas & Mueller, 2000; Mitchel et al., 2000). There are two common approaches used by researchers to examine the association between culture and entrepreneurial characteristics. Some of the researchers examined the questions how national culture is related to entrepreneurial characteristics (Thomas & Mueller, 2000; Mitchel et al., 2000). Others tried to examine the difference between entrepreneurs and non-entrepreneurs across different cultures (Baum et al., 1993; McGrath et al., 1992b; McGrath & MacMillan, 1992). Researchers found that motivational factors in form of recognition, need for independence, learning, need for escape, need for approval, need for personal development are the characteristics of entrepreneurs across cultures. (Shane et al., 1991). Past research also examined the relationship between cognitive factors and cultural values involved in the entrepreneurial process (Mitchell et al., 2000). Mitchell et al. (2000) found that cognitive factors including personal attitudes involved in the venture creation process were related to individualism and power distance. Additionally, past research while comparing entrepreneurs with non-entrepreneurs found that entrepreneurs are usually high in power distance, individualism and masculinity (McGrath et al., 1992) and these characteristics of entrepreneurs were usually consistent across different cultures.

Based on the mentioned literature above some tentative predictions can be made about both samples. Pakistan is much less individualistic than Japan and is among the more collectivistic countries in the world (Hofstede, 2003; Mcgrath et al., 1992). According to past research, subjective norms play a significant role in the explaining the entrepreneurial intentions in collectivistic cultures than individualistic cultures (Ajzen, 2001; Begley & Tan, 2001; Kristiansen & Indarti, 2004). Thus, one should expect that subjective norms in Pakistan would exert a much higher effect over entrepreneurial intentions than in Japan (Begley & Tan, 2001). The role of power distance in entrepreneurial behaviour is confusing among the researchers (Shane, 1993; Hayton, George, & Zahra, 2002). Entrepreneurs when compared with non-entrepreneurs reported to score high on power distance (McGrath et al., 1992b). In fact, some researchers consider power distance as of the personal characteristics of the entrepreneurs regardless of whether the culture is low or high on entrepreneurship (Mcgrath et al., 1992). Busenitzand and Lau (1996) argue that cultures high on power distance would be favourable for entrepreneurial activities. However, Mueller et al. (2002) shared the view that cultures low on power distance will be more favourable to entrepreneurial activity. Considering the broadly equivalent score of power distance in both samples, it could be categorized as the characteristic of both samples.

Entrepreneurship rate is very low in Japan comparatively to Pakistan (Garnitz, et al., 2015). This would be indicating that the motivational intention antecedents for entrepreneurial intentions are different in each culture (Ajzen, 1991; Kolvereid, 1996a). In this sense, the entrepreneurial intention could be more closely linked to the personal attitude among Pakistani respondents, whereas in Japan perceived behaviors control would be a relatively stronger influence. (Ajzen, 1991; Kolvereid, 1996a). However, Japan is high on individualism comparatively to Pakistan

(Hofstede, 2003). According to past research, individualism is strongly linked to entrepreneurial attitude (Hayton, et al., 2002). Japan is also categorized among the collectivistic societies in the world, however in our sample, it is more individualistic compared to Pakistan (Hofstede, 2003). Therefore, in comparison with Pakistan personal attitude will have a higher influence on intentions among Japanese students than Pakistani students. Regarding the effect of higher uncertainty avoidance in Japan, entrepreneurship would be considered uncertain as a career choice and, therefore would be discouraged socially (Busenitz & Lau, 1996; Garnitz, et al., 2015; Mueller et al., 2002). High uncertainty avoidance would feel people insecure about uncertain situations. (Hofstede, 1991). In this sense, perceived behavioral control can be affected. However, in entrepreneurship intention model, perceived behavioral control is a wider concept than self-efficacy and includes the measure of controllability of the behavior in long term. Therefore, considering Japan's scores on long-term orientation (Hofstede, 2003) which is the indication of consistent behaviour, perceived behavioral control would exert stronger influence in Japanese comparatively with Pakistan. Additionally, perceived behavioral control is likely to be influenced by human capital including job experience and education (Liñán, & Chen, 2009). In this sense it would exert higher influence in Japan in comparison with Pakistan.

Hypothesis 1: Personal attitude towards starting a business will have a higher influence on entrepreneurial intentions in Japan than Pakistan.

Hypothesis 2: Subjective norms will have a higher influence on entrepreneurial intentions in Pakistan than Japan.

Hypothesis 3: Perceived behavioral control will have a higher influence on entrepreneurial intentions in Japan than Pakistan.

Method

To test our hypothesis, we administrated the questionnaire to undergraduate university students in Japanese and Pakistani universities as described below. Samples of students are very common in the entrepreneurship literature and considered by entrepreneurship scholars as a proxy for real entrepreneurs (Autio et al., 2001; Fayolle et al., 2006).

Japanese Sample

Participants were recruited from a management class in a public university located in Osaka, Japan. They were offered extra credit in return for participation in the study. All participants were told that participation in the study was anonymous and voluntary. About 90 percent of the students who attended the class agreed to participate in this study, resulting in a sample size of 131, which included 74.5 percent males and 25.95 percent females with an average age of 22.07 (SD=2.07). Over 90 percent of the participants had part-time work experience.

Pakistani Sample

Participants were recruited from a management class in a public university located in Islamabad, Pakistan. Extra credit was given in return for participation in the study. All participants were told that participation in the study was anonymous and voluntary. About 90 percent of the students who attended the class agreed to participate in this study, resulting in a sample size of 120, which included 75.0 percent males and 25.0 percent females with an average age of 21.19 (SD = 1.32).

Dependent Variables

Entrepreneurial intentions have been measured with five items using a Likert scale. Researchers have used mixed self-prediction and interest items to measure the entrepreneurial intentions Chen

et al. (1998) and Zhao et al. (2005). We used the pure intention scale used in EIQ for measuring entrepreneurial intentions. (Armitage & Conner, 2001; Liñán, & Chen, 2009).
The examples of the items include "I am ready to do anything to be an entrepreneur, my professional goal is to become an entrepreneur."

Independent variables

Aggregate attitude scale is used to measure the personal attitude. Earlier researchers used belief based measure of personal attitude (Kolvereid,1996b; Fayolle et al.,2006). According to Ajzen (1991, 2001), beliefs are the antecedents of attitudes suggesting the use of an aggregate measure of personal attitude. For this reason, we choose an aggregate measure of personal attitude including 5 items used in the EIQ (Liñán, & Chen, 2009; Autio et al. (2001). The examples of the items include "A career as entrepreneur is attractive for me, among various options I would rather be an entrepreneur".

According to Ajzen (1991), subjective norms also need aggregate measures. Based on entrepreneurial intention questionnaire, we used the three reference groups including family, friends and colleagues including three items to measure subjective norms by asking about the approval for starting the business from family, friends and colleagues (Liñán, & Chen, 2009). The sample item includes "If you decided to create a firm, would your family approve that decision."

The previous research measured perceived behavioural control through specific self-efficacies (Chenet al., 1998; Zhao et al., 2005). We used an aggregate measure of perceived control behaviour used in entrepreneurial intention questionnaire (Liñán, & Chen, 2009). The examples

of the items include "to start a firm and keep it working would be easy for me, I am prepared to start a viable firm."

Control Variables

To avoid confounding and following the past research on cognition and cultural values on entrepreneurial characteristics, we control for Age, Gender and Job experience (Chenet al., 1998; Liñán, & Chen, 2009; Zhao et al., 2005).

Results

As a preliminary analysis, we tested the reliability of the variables measured in both samples. Reliability coefficient for each variable is also shown in the correlation matrix when available.

Table 1
Descriptive Statistics and Correlation Matrix (Japanese Sample)

		Mean	SD	1	2	3	4	5	6	7
1	Age	22.07	2.07							
2	Gender	0.74	0.44	0.05						
3	Job Experience	2.14	1.35	0.24	-0.08					
4	Entrepreneurial Intentions	3.59	1.46	0.00	0.47**	0.02	(0.97)			
5	Subjective Norms	4.5	0.97	0.03	0.21*	0.09	0.42**	(0.71)		
6	Personal Attitude	4.27	1.31	0.09	0.33**	0.04	0.65**	0.52**	(0.93)	
7	Perceived Behavioral Control	3.28	1.13	0.04	0.31**	0.04	0.69**	0.32**	0.47**	(0.92)

Note: Reliabilities are in parentheses on the diagonal when applicable.
** p<0.01
*p<0.05

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Table 2

Descriptive Statistics and Correlation Matrix (Pakistani Sample)

	Mean	SD	1	2	3	4	5	6	7
Age	21.19	1.32	1						
Gender	0.75	0.43	0.2	1					
Job Experience	0.64	0.64	-0.2	-0.34	1				
Entrepreneurial Intentions	4.91	1.04	-0.11	0.27**	-0.02	(0.86)			
Subjective Norms	5.26	1.11	-0.15	0.22*	0.13	0.51**	(0.76)		
Personal Attitude	5.35	0.98	-0.2	0.11	0.09	0.49**	0.49**	(0.82)	
Perceived Behavioral Control	4.98	0.98	0.09	0.22*	0.11	0.57**	0.49**	0.38**	(0.82)

Note: Reliabilities are in parentheses on the diagonal when applicable.
** p<0.01
*p<0.05

Tables 1 and 2 present means, standard deviations and correlations of personal attitude, subjective norms, perceived control behavior and entrepreneurial intentions for both Japanese and Pakistani samples respectively. As seen in Table 1 and Table 2, some correlations are above 0.5 and raise concerns about multicollinearity. However, we have conducted Variance Inflation Factor test (VIF) for multicollinearity. All the VIF scores are below 10 for both samples indicating that there is no multicollinearity in our regression models (Terjesen, & Hessels, 2009).

Table 3
Regression Analysis (Japanese Sample)

Model	1		2	
	Estimate	t value	Estimate	t value
(Intercept)	2.96	2.37	0.27	0.29
Age	-0.03	-0.57	-0.05	-1.37
Gender	1.6**	5.96**	0.61	3.08
Job Experience	0.08	0.86	0.02	0.27
Personal Attitude			0.41**	5.32
Subjective Norms			0.09	0.93
Perceived Control Behavior			0.58**	7.15
R Squared	0.20		0.63	

*** p<0.001, ** p>0.01, *p<0.05

Table 4
Regression Analysis (Pakistani Sample)

Model	1		2	
	Estimate	t value	Estimate	t value
(Intercept)	6.57**	3.67	0.41	0.28
Age	-0.08	-0.92	-0.01	-0.14
Gender	0.54*	2.14	0.13	0.72
Job Experience	-0.13	-0.94	-0.07	-0.68
Personal Attitude			0.25*	2.59
Subjective Norms			0.23*	2.45
Perceived Behavioral Control			0.44**	4.5
R Squared	0.039		0.52	

** p>0.01, *p<0.05

To test our hypothesis about the impact of personal attitude, subjective norms and perceived control behavior on entrepreneurial intentions, we conducted multiple regressions for both samples. The results of the multiple regressions offered the support for most of our hypothesis in both Japanese and Pakistani samples shown in table 3 and table 4 respectively. In Japanese sample, the personal attitude of students towards starting a business (coefficient: 0.41, p-value < .01) was found to have a stronger influence on entrepreneurial intentions comparatively to Pakistani students (coefficient: 0.25, p-value < .05). Perceived behavioral control in Japanese sample (coefficient: 0.58, p-value < .01) were also found to have a stronger influence on entrepreneurial intentions comparatively to Pakistani sample (coefficient: 0.44, p-value < .01) confirming our hypothesis. For Pakistani Sample, subjective norms (coefficient: 0.23, p-value < .05) were found to have significant positive relationship with entrepreneurial intentions. However, subjective norms were not found to be significant with entrepreneurial intentions in a Japanese sample. Subjective norms and entrepreneurial intention are significantly correlated in a Japanese sample. Past research argued that subjective norms are likely to be influenced by demographics and human capital (Liñán, & Chen, 2009). It is possible that subjective norms also influence the entrepreneurial intention in Japan but are possibly influenced by other determinants in the multiple regression

analysis.

We have also conducted the null hypothesis significance test of the difference between two correlations coefficients in two Independent samples (Meng, Rosenthal, Rubin, 1992). The difference between correlations coefficients was significant for personal attitude ($Z= 1.87$, p-value $< .05$) and for perceived behavioral control ($Z= 2.64$, p-value $< .01$). However, the difference between correlations coefficients was not significant for subjective norms in both Pakistani and Japanese sample.

Discussion

The theory of planned behaviour is widely used in the context of entrepreneurship and received strong empirical support (Kolvereid & Isaksen, 2006). However, researchers urge more comparative studies with cultural considerations on TPB and entrepreneurial process for its generalizability (Liñán, & Chen, 2009). Our study fills this gap by comparing the two countries with different cultures and social structure and more specifically comparing South and East Asian countries. The results of both samples provide insights for future discussions about the theory of planned behavior and consideration of certain issues on its implications across

different cultures. For instance, subjective norms were not found to be significantly related to entrepreneurial intentions in a Japanese sample. Cross-sectional nature of data may be one the reasons for its non-significance. However, Some researchers in past also could not find the relationship between subjective norms and entrepreneurial intentions (Liñán, Chen, 2009; Autio et al., 2001; Krueger et al., 2000). In fact, they have found that subjective norms are influenced by demographics and human capital (Liñán, Chen, 2009). Most of the Japanese students have job experience in our sample, may be the influential reason of non-significance of subjective norms and entrepreneurial intentions. Though Japan is less collectivistic than Pakistan in our sample, broadly it is considered as a collectivist country (Hofstede, 2003) Therefore, it is possible that subjective norms also influence the entrepreneurial intentions in Japan but are possibly influenced by other determinants in the multiple regression analysis. The indirect effects of subjective norms could be an interesting avenue for future research for a better explanation of the results (Liñán, Chen, 2009). Additionally, there may be measurement issues of subjective norms or may be subjective norms are not important in predicting entrepreneurial intentions (Autio et al., 2001; Krueger et al., 2000). Moreover, cultural differences should be considered while measuring and predicting the impact of subjective norms on entrepreneurial intentions. Japan is much individualistic than Pakistan and may be subjective norms are not

important in the explanting the relationship on entrepreneurial intentions in Japan (Ajzen, 2001; Begley & Tan, 2001; Kristiansen & Indarti, 2004).

Secondly, the personal attitude in our sample showed stronger influence on Japanese sample in comparison with Pakistani sample. Entrepreneurship rate is very high in Pakistan compared to Japan which is an indication of the strong and high attitude of the people of Pakistan towards business (Garnitz, et al., 2015). However, Japan is high on individualism comparatively to Pakistan which may have an effect on entrepreneurial attitude on Japanese students in comparison with Pakistani students (Hofstede, 2003).Therefore, cultural consideration is important while predicting the attitude towards starting a business and its impact on entrepreneurship (Liñán, & Chen, 2009). For instance, Japanese students may have a strong attitude towards business but because it is socially discouraged in the society, therefore they are not pursuing it even in the presence of knowledge, skills and abilities (Hofstede, 2003). Institutional variables should also be taken into consideration while exploring the impact of personal attitude on entrepreneurial characteristics. According to past research people in countries with low GDP, low technological sophistication and unstable political environment are likely to take high risks in starting a business for their survival (Liñán, & Chen, 2009). For instance, Pakistan is in top countries on the list of high brain drain and immigration

entrepreneurship because of the unstable environment (Erdağ, 2016). Therefore, an institutional variable may be powerful in the explaining the high entrepreneurship rate in Pakistan. More in-depth understanding of the role of personal attitude on entrepreneurial intentions across culture is needed (Liñán, & Chen, 2009). The cross-sectional data of our study has limitations to explain the role of attitude on intentions. Therefore future research with larger samples and longitudinal studies could be able to explain this complex relationship.

Practical implications

The research scholars around the world are now emphasizing on the entrepreneurial education (Kuratko, 2005). In Asian countries, lack of entrepreneurial education may be one of the factors for moderate entrepreneurship rate in comparison with countries higher in entrepreneurship (Zhang, Duysters, & Cloodt, 2014). Institutional variables play important role in fostering entrepreneurial education, innovation and risk-taking (e.g., Furman, Porter, & Stem, 2002). Considering results of such studies, special attention should be given to the effect of cognitions and cultural values in entrepreneurial education (Kuratko, 2005). Contents should be introduced into the curriculum to increase the personal attitude, subjective norms and behavioural control towards entrepreneurship. The second important implication is for the decision-makers in

the countries. Considering the relevance and the complex role of culture, cognitions and entrepreneurial characteristics in entrepreneurship literature, entrepreneurship-friendly policies and legal reforms for ease of starting a business should be introduced for the promotion of the entrepreneurship in the countries (Minniti, 2008).

Limitations and future research

Our research is not without limitations. First, our samples as business undergraduate students may not be able to fully generalize the characteristics of the real entrepreneurs. Student samples are very common and relevant in measuring the entrepreneurial intentions (Autio et al., 2001; Fayolle et al., 2006). However, in comparative studies, it is very difficult to find the fully compared samples (Liñán, & Chen, 2009). Secondly, our study is cross-sectional which may not be able to fully generalize the results to other cultures. Future research could replicate the results of this study from other countries using longitudinal studies.

Additionally, future research could consider developing an individual measure of cultural values relevant to entrepreneurship (Hayton et al., 2002). Moreover, the cognitive approach of measuring the entrepreneurial intentions based on TPB

needs further development for providing a clear association of culture and cognitions relevant to entrepreneurship (Hayton et al., 2002). For instance, past research found that cognitive scripts which are relevant to entrepreneurship are also related to individualism and power distance suggesting a complex relationship between cultural values and cognitions (Mitchell et al., 2000). Therefore future research should consider developing a comprehensive theoretical model explaining the relationship between cognitions, culture and entrepreneurial characteristics (e.g. Hayton et al., 2002).

Finally, past research found that cultural variables like power distance is not always likely to show homogenous values in societies, in fact, they sometimes vary at societal, group and individual level (see Taras, Kirkman, & Steel, 2010). Therefore, future research could come up with interesting methodologies, design and analysis to explain the complex role of culture on entrepreneurial characteristics (e.g., Erez, 2011; Gelfand et al., 2007).

Conclusion

Our research discussed some unsolved issues about entrepreneurial characteristics and cultural values. We believe our research will provide insights for

entrepreneurship scholars interested in understanding the role of culture and entrepreneurial characteristics. Comparative studies on entrepreneurial characteristics and cultural values are a promising avenue for future research for the deep understanding of the influential role of individual characteristics and cultural values in the whole entrepreneurship process.

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