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The impact of Innovation on the activities of SMEs in the United Kingdom

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Abstract

Innovation is widely recognised in business literature and research as a fundamental source of organisational growth. This is more important in small and medium enterprises, which must find a product or service which is differentiated from their competitors to attract and retain customers and generate business growth. Capturing the opinions of 146 small businesses across the UK operating in a variety of industry sectors, the findings reveal that small businesses in the UK actively engage in innovation. The study further revealed that contrary to previous literature, SMEs favour an incremental approach to innovation over the radical approach. The reason for this is that the majority of their customers prefer consistency and stability in products and services, and therefore there are understandable for adopting an incremental approach. The study also emphasised the need for an innovative culture within their organisations which is considered to be fundamental to business success. The main significant of the study, given the critical value of SMEs to the UK economy, it will help to identify how innovation and the associated knowledge can impact on business growth in this sector.

Keywords*:* impact, entrepreneurs, SMEs, innovation, United Kingdom

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INTRODUCTION

In spite of the fact that there are over 4.5 million Small to Medium-sized Enterprises (SMEs) operating in the United Kingdom (UK) and they are estimated to account for £3,500 billion contributions to UK GDP (FSB, 2015; Rolet, 2013) which makes them crucial to UK economic health and growth. One of the notable characteristics of SMEs in general is that they are able to provide a unique, innovative or differentiated service or product which enables them to carve an exclusive niche in whatever marketplace they operate (Carter & Jones-Evans, 2006). As such, Simpson, Siguaw, and Enz (2006) conclude that innovation is therefore a fundamental element of the success of SMEs. Similarly, Rolet (2013) reports that the UK SMEs market is "the shining beacon of the UK economy", and with innovation being positively correlated with organisational growth, profitability, and employee retention (Morris et al., 2010), it is hardly surprisingly that innovation is so important in a SMEs business context.

Although innovation can be incremental, it is more usually associated with quite significant change and improvement, which certainly in a manufacturing or technological context often requires that a great deal of time and resource is devoted to Research and development (R&D) activity (Kirby, 2003). Whilst large scale firms often have cash reserves to fund such activity, or perhaps they can seek outside investment by trading upon their reputation and previous experience of R&D, SMEs have no such safety net. In the view of Beck and Demirguc-Kunt (2006) SMEs struggle to secure the funding necessary to support innovation. Although some studies on applications of innovation in SMEs have been made, very little research has been devoted to understanding the role of innovation within SMEs in the UK. This has been attributed to the fact that, as a mature and well-established economy and largely service based, there is a little tendency to investigate innovation in this context. Therefore the main objective of this study is to address this limitation in the literature by investigating the impact of innovation on the activities of SMEs in the United Kingdom.

As a consequence, Schaltegger and Wagner (2011) report that many SMEs place increased emphasis on innovation as a means of differentiating their business in competitive markets. Carter and Jones-Evans (2006) indicated that small firms often take advantage of their agile nature to move quickly to spot and monetise new opportunities, and it is therefore unsurprising that entrepreneurs value innovation and the ability to identify new opportunities amongst their workforce. The typically dynamic nature of SMEs is also considered to be a creative force which helps to deliver ongoing innovation (Rosenbusch et al., 2011). It is therefore surprising that there appears to be relatively little research which explores the impact of innovation on the activities of SMEs in the UK

context. Furthermore, given the importance of the personality and skills of entrepreneur if they are to succeed in business, there appears to be little investigation with respect to relationship between the personality of entrepreneurs and their attitudes towards innovation (Barreto, 2013). In light of the contribution of SMEs to the UK economy, and also the crucial role of innovation in their growth, this study seeks to answer the question, "what is the impact of innovation on SMEs activities in a UK".

The unique contribution of the study is that it investigates the issue from the perspective of SME business owners in the UK, particularly exploring their attitudes towards innovation and the role of innovation in driving the growth of their own businesses, and indeed to a lesser extent the contribution to the UK economy. As noted above, the research which has been conducted in this area either concentrated on innovation in SMEs in developing economies, or the role of innovation within larger organisations in response to technological developments (Barreto, 2013). Therefore main significant of the study, given the critical value of SMEs to the UK economy, is that it will help to identify how innovation and the associated knowledge can impact on business growth in this sector.

LITERATURE REVIEW

Even though the terms entrepreneurs and small business owners are often take as synonymous in literature in day-to-day practical activity (Phan, 2004). Hence, Miller (2014) believes that the first step in understanding the role of innovation in SME development is to acknowledge the distinction between entrepreneurship and SMEs, and also to appreciate the balance of skills and capabilities within an entrepreneurial firm, giving them the ability to leverage their tacit knowledge and transform it into a source of business growth. Phan (2004) and Taylor (2007) consider that there is a distinction between entrepreneurs and small business owners. According to Butler (2014) an entrepreneur is defined as "A person who sets up a business or businesses, taking on financial risks in the hope of profit". It is also defined by Yetisen et al. (2015) as the process of starting a business, typically a startup company offering an innovative product, process or service. Allen (2015) observes that entrepreneurs are typically in possession of a particular set of skills and personality traits which distinguish them from a pure small-business owner and in consequence this facilitates subsequent growth of the business. Accordingly, the definition of an SME in the UK is as defined by sections 382 and 465 of the Companies Act 2006. The definition given in the Act is:

> "*A small company is one that has a turnover of not more than £6.5 million, a balance sheet total of not more than £3.26 million and not more than 50 employees. A medium-sized company has a turnover of not more than £25.9 million, a balance sheet total of not*

more than £12.9 million and not more than 250 employees" (Companies Act, Section 382, 2006, p.1).

This definition is worth holding in mind, as often entrepreneurial firms seek to grow rapidly and usually outstrip these constraints in a relatively short period of time (Mairesse & Mohnen, 2010). In contrast, SMEs without such growth aspirations deliberately choose to remain small, or alternatively lack the necessary entrepreneurial and innovative competencies which would enable them to grow. This is another reason why it is helpful to distinguish between the two in an effort to understand whether or not it is possible or indeed desirable to transfer the tacit knowledge associated with entrepreneurial growth to more modest SMEs.

Allen (2015) points out that it is actually very rare for one single individual to possess both the technical knowledge to develop an innovative product, and the sales ability and charisma necessary to market and promote the product leading to rapid growth of a new business opportunity. In contrast, entrepreneurs are usually highly driven, with a flair for sales and a passion for their business idea. As such, Drnovšek, Wincent and Cardon (2010) assert that entrepreneurs often possess a specific and unique set of personality traits often centred around their charisma, and to a certain extent their perceived leadership capability. Entrepreneurs can usually inspire others and deliver a vision of organisational growth which according to Ferreira, Raposo, Rodrigues, Dinis, and do Paço (2012) are characteristics which are often associated with successful innovators in a business setting.

Innovation in a Business Context

Innovation is defined by Drucker (2014, p.9) as "the creation of something new or different". This creation can be small-scale and incremental in nature, such as improving efficiency in organisational process, or large-scale and disruptive such as developing an entirely new product or service. Often it is also understood to mean an improved presentation or delivery of an existing product or service, for example by improving the quality or the level of service associated with such a product (Davenport, 2013). Davenport (2013) further explains that radical disruptive innovation is relatively rare, and normally it is the case that moderate small-scale improvements, potentially on a cumulative basis are more than sufficient to deliver organisational innovation. However, Drucker (2014) believes that the sticking point in innovation is actually transforming new ideas and developments into a practical reality.

It can be seen from Figure 1 that Chesbrough (2013) prefers to reference the more traditional linear innovation model which he believes is the foundation for many of the

contemporary explanations of successful innovation. However, it must be acknowledged that Chesbrough (2013) has extended and enhanced the linear framework model in the context of open innovation. According to previous study, innovation occurs as a result of an unidentified need cause an entrepreneur to identify a need and taking advantage of the same even using a 'push' methodology or alternatively as a result of a market 'pull' whereby it is demand from the market which encourages the generation of a new product or service (Chesbrough, 2013). Cooper (2014) explains that a further variation on the traditional linear innovation model is that of "*phase-gate*" innovation whereby there are feedback loops between the product reaching the marketplace, and then being refined in response to customer feedback.

Figure 1: Traditional Linear Model of Innovation (Chesbrough, 2013)

A further theoretical approach to innovation is the Diffusion of Innovation model, reflected in Figure 2 developed by Rogers (1996, cited in 2010). The Diffusion of Innovation theory suggests that in the first instance a very small minority of the target market will embrace a new product or service, gradually increasing through several stages such as early adopters, and early majority (Rogers, 1996, cited in 2010). The importance of this framework relative to the previous discussions of the characteristics of entrepreneurial firms is that it emphasises the vital importance of new and start-up ventures identifying their target market and encouraging adoption by customers in preference to other established firms. The diffusion of innovation framework illustrates the role of competition in innovation development, and also is often used to describe an overlapping pattern of innovation as competitors respond to innovation by improving upon the new product (Kiesling et al., 2012). In the view of Cho, Hwang, and Lee (2012) this is more akin to the linear model of innovation described above, as competitors respond to a new product or service, which ultimately creates a feedback loop between firms operating in the same industry sector.

Considering these alternative theoretical frameworks, both of which remain in popular use, it is easier to appreciate why there are areas of overlap between the three in a practical application, and also how it can be difficult for a firm, having established a niche as a result of innovation, to understand that it may be necessary to re-develop and

re-define their product in response to competitor activity. According to Oni and Papazafeiropoulou (2014) the key is that entrepreneurial firms recognise the critical importance of continually adapting and evolving, and delivering a product or service which customers want. Such customer-led firms, or at the very least market-led firms appreciate the importance of evolving in response to external circumstances, and this above all others means that they are able to continue growing and developing at a rapid pace. Thus Sila and Dobni (2012) conclude that those firms which stand still and fail to innovate are almost certain to stagnate if not decline. However, in order to understand how these frameworks function in practice it is helpful to critically consider some of the empirical evidence of these alternative explanations in action.

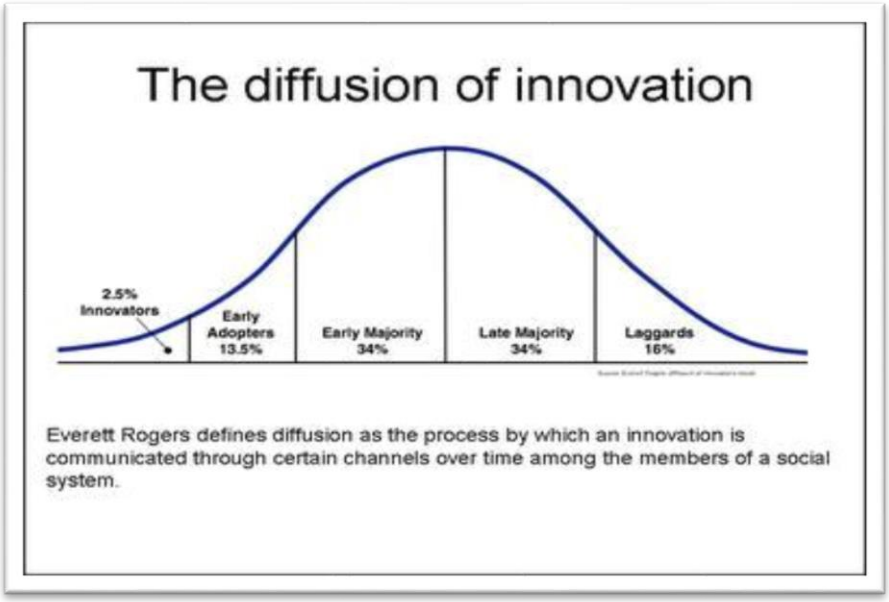

Figure 2: The Diffusion of Innovation Framework (Rodgers, 2010, p.*46)*

Impact of Leveraging Innovation for SMEs Success

The fundamental reason for marketing and innovation featuring so strongly in the literature and empirical evidence is that in order for a business to be successful it must have customers and profit (Afuah, 2015). Further, in order to achieve both it is necessary to find a means of monetising ideas and innovation to deliver successful businesses (Afuah, 2015). Generating financial benefit or gain from business ideas is certainly not a new concept, but, it is considerably more difficult to transform a theoretical concept or idea into a practical outcome which generates income. The monetising of ideas is the final link in the chain between developing an innovative concept and transforming it into a business reality. The role of entrepreneurs is crucial in this regard, as they are the ones who are capable of identifying an opportunity to monetise ideas, and galvanising action

such that employees within any SME to transform an idea into action (Baden-Fuller & Haefliger, 2013).

Understanding how it is that entrepreneurs are able to facilitate this is the crux of the distinction between innovative entrepreneurs and straightforward small-business owners. Once again the issue is that of personality and characteristics, whereby an entrepreneur creates a vision and sells their idea or concept, encouraging others to transform this into action (Van de Vrande et al., 2009). Gladwell (2010) offers a different perspective, and points out that many entrepreneurs have in fact failed several times, and it is therefore wrong to peddle the myth or the impression that successful entrepreneurs suddenly have a brilliant and fully formed idea which is immediately adopted by their target market. Instead, many new successful entrepreneurs initially experienced several cycles of failure while they refined and re-developed their product, thus this has more links to the more traditional linear or iterative process of innovation than Van de Vrande, De Jong, Vanhaverbeke, and De Rochemont (2009) would suggest. In any event, Barringer and Ireland (2008) concluded that the most successful entrepreneurial ventures are those whereby innovation can be transformed into a saleable product or service such that ideas become monetised. Without this, any innovation cannot really be considered as such, as it is not used to the extent whereby it delivers wide scale change or improvement.

Incremental vs Disruptive Innovation

With respect to the distinction between incremental and disruptive innovation, some studies link them to certain industry, pointing out that the terminology 'innovation' is associated with large radical or disruptive innovation which occurs in particular industry settings (De Bono, 1990; & Mei et al., 2013). For example, pharmaceutical and technology since both of these sectors offer the opportunity for seemingly radical development. In contrast, other sectors such as retail, hospitality, professional services or health and beauty rely on developments in other sectors to which they must respond. In view of this, Arieh (2015) believes it is so important to distinguish between the contribution of incremental and disruptive innovation in mature industry settings and SME businesses.

Although much attention is directed towards disruptive innovation and its ability to transform business ventures, Arnold, Fang, and Palmatier (2011) consider that there is a great deal of understated potential within incremental innovation particularly with regard to SMEs which may lack the resources and knowledge to engage in radical R&D. It is then ideal in ensuring that an SME business continues to improve and refine its products and services on incremental basis to guarantee efficiency as possible, to provide the products and services which its customers want and need. Souto (2015) argues that

this type of activity is a scaled-back version of the linear innovation model in that repeated small-scale improvements either on a push or pull basis serve to deliver organisational growth. It is often easier for loyal customers to react to, mindful of the diffusion of innovations model and the fact that it can actually take some considerable time before the majority of customers begin to embrace whatever new product or service a firm delivers (Souto, 2015).

Mindful that for SME businesses it is absolutely critical that they maintain a loyal customer base, there is arguably a strong case for steady incremental innovation rather than radical change which customers may find irritating or disconcerting. With this in mind, a codification of regular small-scale improvements in a modified framework could well be the secret to transferring innovative knowledge.

Considerable empirical research has been undertaken in respect of innovation in SMEs, although a large proportion of this has been conducted in developing economies whereby there is great interest in a way which these economies can continue to grow and expand (Vrgovic et al., 2012; Divakaran et al., 2014). However, there is a relatively little empirical research which has investigated the impact of innovation in SMEs in a European setting, with particular interest directed towards the personalities of entrepreneurs. As noted above, the role of marketing as the UK has become increasingly service driven (Agwu & Murray, 2015). This means that in the absence of a tangible product, it is more important than ever to promote and market a service effectively (Agwu & Murray, 2015).

A study by Koryak, Mole, Lockett, Hayton, Ucbasaran, and Hodgkinson (2015) across SME firms in Germany, France, and Spain determined that the leadership characteristics of entrepreneurs are vital in delivering business growth. In particular, ensuring that the leader of an entrepreneurial venture is able to motivate and inspire employees to continue to develop innovative services. In Spanish firms in particular it was found that many SME ventures focus on delivering high-quality products as a source of differentiation, further underpinned by personalised customer service as the main means of maintaining competitive differential. The role of leaders in this circumstance is that they continually underline the message of focused customer service and the need to maintain a level of customer loyalty such that businesses continue to grow. In contrast, in the same study by Koryak, Mole, Lockett, Hayton, Ucbasaran, and Hodgkinson (2015), German SMEs were found to respond much more to the feedback loop of customer demand (i.e. the pull linear model of innovation), whereby German firms would adapt and improve their products and services in response to customer involvement and

commentary. However, French SME firms found that they benefited more in terms of the diffusion of innovation framework; in particular they reported that reliance upon word-of-mouth as a means of encouraging increased consumer take-up was critically important (Koryak et al., 2015).

In all circumstances there is typically more research devoted to the role of marketing such small businesses, and a tacit implication that the leaders and owners of such firms are able to identify the need for marketing opportunities in the UK context. Few studies consider the relationship between innovation and leadership as a means of stimulating SME business growth, and those that do are largely case study based focusing upon technology and pharmaceutical firms which according to contemporary industry reports are inevitably bought out by much larger rivals once it becomes clear that the product can be monetised (Minguillo et al., 2015).

METHODOLOGY

The population sample itself was considered to be a stratified random sample on the basis that it was distributed to small business owners identified through their association with the Federation of Small Businesses (FSB) who agreed to distribute the e-mail link to the questionnaire through to any of the members who had consented to receive third-party e-mails. Accordingly, it was considered that taking all these factors into consideration, a bespoke survey instrument in the form of questionnaire was the most suitable approach. Out of a total 862 questionnaire was distributed to entrepreneurial small business owners 146 usable questionnaires were returned giving a total response rate of 16.9%. Bryman and Bell (2011) explain that this is an acceptable response rate given the chosen distribution and collection method, and also the population sample. For the purpose of adhering to research ethics in the primary data collection and analysis, and accordingly participants were advised of the purpose and objectives of the research and asked to consent to their involvement prior to being directed to the questionnaire Horn (2009). As explained by Kumar (2014) the issues of reliability and validity which refer to the extent to which the chosen methodology addresses the research problem and also how focused the research study is was achieved.

As the data was collected using an electronic method this resulted in a relatively large xml file which was then cleaned and transferred to SPSS (Statistical Package for Social Sciences) in order to facilitate data analysis for the quantitative element of the questionnaire. The qualitative data from the descriptive questions were subjected to content analysis (Saunders et al., 2012) resulting in thematic interpretation. The study used statistical tests such as descriptive analysis, ANOVA and correlation tests to analyse the data. This is because it follows good practice in the methodological literature, and

also uses the technique of extending a proven research instrument. With regard to generalisability, the use of random population sampling and capture of a sizeable data means that there can be wider application of the results, although it must be remembered that it is constrained by the fact it is conducted in a wholly UK-based setting.

RESULTS AND DISCUSSIONS

As recommended by Field (2013), the first step in data analysis is to consider the descriptive statistics and also frequency analysis associated with the data. Accordingly, Table 1 below presents the descriptive statistics with regard to perceived sources of innovation within entrepreneurial SME businesses. It can be seen from that there is a positive attitude towards innovation with a mean average of 2.95 firms within the population reporting that they invest in R&D within their firm. Furthermore, the statement "we actively seek feedback from customers about improvements" garnered a mean average of 3.05. Interestingly, the lowest mean average score according to Table 1 was the statement "we scan our environment for sources of innovation", which only attracted the mean average score of 2.80. This is interesting given that in the literature it is suggested that most firms respond to environmental initiatives, i.e. competitive behaviour or changes in technology, as a stimulus for innovation (Afuah, 2015; Gök et al., 2015). The results presented in Table 1 would appear to suggest otherwise when compared on an internal basis.

Table 1: Descriptive Statistics – Sources of Innovation

	N	Min	Max	Mean	Std. Dev.	Variance	Kurtosis	Std. Error
Investment in R&D within our firm.	146	1	5	2.95	1.482	2.198	-1.357	.399
We spend time thinking about new products and services.	146	1	5	2.86	1.462	2.138	-1.359	.399
We spend time thinking about improving process efficiency.	146	1	5	2.86	1.403	1.967	-1.314	.399

We actively seek feedback from customers about improvements.	146	1	5	3.05	1.413	1.997	-1.308	.399
We scan our environment for sources of innovation.	146	1	5	2.80	1.398	1.953	-1.213	.399
We have resources devoted to innovation and development within our firm.	146	1	5	2.92	1.467	2.153	-1.360	.399
There is a culture of innovation within our organisation.	146	1	5	2.94	1.376	1.893	-1.257	.399
Employees at all levels are encouraged to develop new ideas.	146	1	5	2.88	1.457	2.123	-1.346	.399
Valid N (listwise)	146							

In order to test for the strength of variation in responses, which, as explained by Pallant (2007), it is important to appreciate the relative weighting or impact of the responses. Therefore ANOVA testing was undertaken with regard to the statements concerned with the sources of innovation as can be seen in Table 2. In particular the F-score is an indication of strength or impact, and the higher the F-score, the greater the level of weighting or importance. As a general guideline, an F-score in excess of 1.0 is considered to be particularly influential, although Pallant (2007) also explains that caution should be advised in terms of a common-sense response as it would be nonsensical to "cut-off" at 1.0 if there were several scores of 0.99. The results in Table 2 demonstrate particularly high F-scores in responses to the statements "we have resources devoted to innovation and development within our firm" (2.637) and "there is a culture of innovation within our organisation" (2.567). These are especially high scores, but are mutually supportive, which would tend to correspond with the findings in Table 1 above. However in order to

be certain on this point, correlation analysis were undertaken and this is displayed in Table 3.

Table 2: ANOVA – Sources of Innovation

		Sum of Squares	df	Mean Square	F	Sig.
We spend time thinking about new products and services.	Between Groups	4.769	5	.954	.438	.822
	Within Groups	305.211	140	2.180		
	Total	309.979	145			
We spend time thinking about improving process efficiency.	Between Groups	6.958	5	1.392	.700	.624
	Within Groups	278.302	140	1.988		
	Total	285.260	145			
We actively seek feedback from customers about improvements.	Between Groups	6.834	5	1.367	.677	.642
	Within Groups	282.728	140	2.019		
	Total	289.562	145			
We scan our environment for sources of innovation.	Between Groups	1.672	5	.334	.166	.975
	Within Groups	281.568	140	2.011		
	Total	283.240	145			
We have resources devoted to innovation and development within our firm.	Between Groups	26.873	5	5.375	2.637	.026
	Within Groups	285.298	140	2.038		
	Total	312.171	145			
There is a culture of innovation within our organisation.	Between Groups	23.050	5	4.610	2.567	.030
	Within Groups	251.395	140	1.796		

	Total	274.445	145			
Employees at all levels are encouraged to develop new ideas.	Between Groups	9.784	5	1.957	.919	.470
	Within Groups	297.997	140	2.129		
	Total	307.781	145			

Table 3 displays correlation analysis of sources of innovation, particularly looking to identify whether there are significant relationships on either a one-tailed or two-tailed basis. There is no significant relationships at either of these levels were identified, although there was evidence of mutual support for Table 1 and Table 2 as it can be seen that there is a score of .992 for the correlation related to a culture of innovation within an organisation in Table 3. Similarly, there was also a notable correlation in respect of time spent thinking about improving efficiency within the organisation (.952), which is indicative of a firm seeking to make perpetual incremental improvements as a form of innovation as opposed to some radical or disruptive change.

Table 3: Correlation Analysis of Sources of Innovation

		1	2	3	4	5	6	7	8
We invest in R&D within our firm.	Pearson Correlation	1	-.013	.040	.130	.012	-.075	.100	.077
	Sig. (2-tailed)		.879	.632	.119	.886	.371	.230	.355
	N	146	146	146	146	146	146	146	146
We spend time thinking about new products and services.	Pearson Correlation	-.013	1	.088	-.013	.043	.040	.016	.037
	Sig. (2-tailed)	.879		.292	.878	.604	.632	.847	.658
	N	146	146	146	146	146	146	146	146
We spend time thinking about improving process efficiency.	Pearson Correlation	.040	.088	1	.035	.137	-.005	-.001	-.045
	Sig. (2-tailed)	.632	.292		.674	.098	.952	.992	.586
	N	146	146	146	146	146	146	146	146

We actively seek feedback from customers about improvements.	Pearson Correlation	.130	-.013	.035	1	.002	-.011	-.062	-.003
	Sig. (2-tailed)	.119	.878	.674		.980	.892	.456	.968
	N	146	146	146	146	146	146	146	146
We scan our environment for sources of innovation.	Pearson Correlation	.012	.043	.137	.002	1	-.078	-.075	.035
	Sig. (2-tailed)	.886	.604	.098	.980		.350	.371	.672
	N	146	146	146	146	146	146	146	146
We have resources devoted to innovation and development within our firm.	Pearson Correlation	-.075	.040	-.005	-.011	-.078	1	.083	.099
	Sig. (2-tailed)	.371	.632	.952	.892	.350		.319	.235
	N	146	146	146	146	146	146	146	146
There is a culture of innovation within our organisation.	Pearson Correlation	.100	.016	-.001	-.062	-.075	.083	1	.089
	Sig. (2-tailed)	.230	.847	.992	.456	.371	.319		.285
	N	146	146	146	146	146	146	146	146
Employees at all levels are encouraged to develop new ideas.	Pearson Correlation	.077	.037	-.045	-.003	.035	.099	.089	1
	Sig. (2-tailed)	.355	.658	.586	.968	.672	.235	.285	
	N	146	146	146	146	146	146	146	146

The descriptive statistics presented below in Table 4 shows the impact of innovation on the activities of firm. The results show a very close grouping of mean average scores, with the lowest score of 2.86 in response to a statement "without innovation our firm would not survive", and the highest mean score of 2.98 in response to the statement "we have sometimes introduced new products and services ahead of customer expectation". Similarly, the level of variance in the scores was also quite closely grouped, suggesting consistency in the responses, which, overall, can be interpreted as the firms in question having a positive overall opinion of innovation and the impact on business activity. This was also true of the reverse scored statements such as "innovation does not deliver

against expectation" (mean score 2.97) and "innovation has little impact on business operations" (mean score 2.94). To investigate these closely grouped statements more carefully, ANOVA was applied and the output of this is displayed in Table 5.

Table 4: Descriptive Statistics – Impact of Innovation

	N	Min	Max	Mean	Std. Dev.	Variance	Kurtosis	Std. Error
Importance of innovation	146	1	5	2.92	1.419	2.015	-1.325	.399
Our customers expect us to develop innovative products and services.	146	1	5	2.90	1.381	1.908	-1.270	.399
Innovation has little impact on business operations.	146	1	5	2.94	1.401	1.962	-1.304	.399
Expectation of customers to innovation	146	1	5	2.95	1.501	2.253	-1.431	.399
Innovation does not deliver against expectation.	146	1	5	2.97	1.369	1.875	-1.163	.399
We are proactive in developing new business opportunities through innovation.	146	1	5	2.92	1.405	1.974	-1.288	.399

Innovation has little impact on business operations.	146	1	5	2.98	1.445	2.089	-1.359	.399
Without innovation our firm would not survive	146	1	5	2.86	1.432	2.050	-1.284	.399
Valid N (listwise)	146							

As can be seen in Table 5 are three high F-Scores in relation to the statements "we are proactive in developing new business opportunities through innovation" (F-Score= 3.491), "innovation has little impact on business operations" (F-Score = 2.136), and, "our customers expect us to develop innovative products and services" (F-Score = 2.050). The fact that all of the F-scores bar one "innovation does not deliver against expectation" (F-Score = .931) were higher than 1.0 is strongly indicative of the perceived importance of impact of innovation amongst the firms which participated in the study.
Innovation has little impact on business operations.

Innovation has a direct positive impact on profitability.

Table 5: ANOVA – Impact of Innovation

		Sum of Squares	df	Mean Square	F	Sig.
Importance of innovation	Between Groups	15.207	4	3.802	2.050	.091
	Within Groups	261.451	141	1.854		
	Total	276.658	145			
Expectation of customers to innovation	Between Groups	16.251	4	4.063	2.136	.079
	Within Groups	268.195	141	1.902		

	Total	284.445	145			
Innovation has little impact on business operations.	Between Groups	9.258	4	2.315	1.028	.395
	Within Groups	317.406	141	2.251		
	Total	326.664	145			
Innovation has a direct positive impact on profitability.	Between Groups	6.999	4	1.750	.931	.448
	Within Groups	264.891	141	1.879		
	Total	271.890	145			
Innovation does not deliver against expectation.	Between Groups	25.787	4	6.447	3.491	.009
	Within Groups	260.384	141	1.847		
	Total	286.171	145			
We are proactive in developing new business opportunities through innovation.	Between Groups	12.013	4	3.003	1.456	.219
	Within Groups	290.925	141	2.063		
	Total	302.938	145			
We have sometimes introduction of new products and services ahead of customer expectation.	Between Groups	13.545	4	3.386	1.683	.157
	Within Groups	283.716	141	2.012		
	Total	297.260	145			

In order to check the internal relationships between the statements, correlation analysis was also conducted, and this is reflected in Table 6. As can be seen, in this instance there were a number of statistically significant relationships at the 0.05% level (highlighted in yellow), which are two-tailed in their significance. This means that there is a greater likelihood of the relationship presenting itself. These flagged significances were in relation to the statements “innovation is crucial to our business” (.184); “our customers expect us to develop innovative products and services” (-.169 and .168), and also "we are proactive in developing new business opportunities through innovation” (.184).

Significance was also noted in response to the statements "innovation does not deliver against expectation" (-.169), and "we have sometimes introduced new products and services ahead of customer expectation" (.168). That some negatively scored statements were flagged in terms of correlation again reinforces the perceived impact of innovation amongst the firms who participated in the study. Overall the high degree of internal consistency illustrates the validity and reliability of the tests and their findings.

Table 6: Correlation Analysis of Impact of Innovation

		1	2	3	4	5	6	7	8
Importance of innovation	Pearson Correlation	1	-.095	.008	-.063	.031	.184*	-.004	-.073
	Sig. (2-tailed)		.253	.923	.448	.712	.026	.961	.381
	N	146	146	146	146	146	146	146	146
Expectation of customers to innovation	Pearson Correlation	-.095	1	.061	-.016	-.169*	-.050	.168*	-.035
	Sig. (2-tailed)	.253		.464	.852	.041	.549	.042	.679
	N	146	146	146	146	146	146	146	146
Innovation has little impact on business operations.	Pearson Correlation	.008	.061	1	.051	.017	.054	-.007	-.052
	Sig. (2-tailed)	.923	.464		.540	.838	.520	.929	.530
	N	146	146	146	146	146	146	146	146
Innovation has a direct positive impact on profitability.	Pearson Correlation	-.063	-.016	.051	1	-.004	-.136	.038	-.147
	Sig. (2-tailed)	.448	.852	.540		.962	.102	.652	.076
	N	146	146	146	146	146	146	146	146
Innovation does not deliver against expectation.	Pearson Correlation	.031	-.169*	.017	-.004	1	-.094	-.042	.026
	Sig. (2-tailed)	.712	.041	.838	.962		.258	.614	.753
	N	146	146	146	146	146	146	146	146

We are proactive in developing new business opportunities through innovation.	Pearson Correlation	.184*	-.050	.054	-.136	-.094	1	-.096	.015
	Sig. (2-tailed)	.026	.549	.520	.102	.258		.250	.854
	N	146	146	146	146	146	146	146	146
We have sometimes introduction of new products and services ahead of customer expectation.	Pearson Correlation	-.004	.168*	-.007	.038	-.042	-.096	1	.019
	Sig. (2-tailed)	.961	.042	.929	.652	.614	.250		.823
	N	146	146	146	146	146	146	146	146
Without innovation our firm would not survive	Pearson Correlation	-.073	-.035	-.052	-.147	.026	.015	.019	1
	Sig. (2-tailed)	.381	.679	.530	.076	.753	.854	.823	
	N	146	146	146	146	146	146	146	146

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

The results of the study revealed a number of similarities and differences with regard to existing theoretical frameworks and empirical research. Whilst the main overarching direction of the results converge with established knowledge in respect of the relationship between innovation and entrepreneurship in SME businesses, there were a number of subtle nuances suggesting that the practical application of innovation within SMEs functions differently than might be anticipated, and particularly amongst UK firms given the culture and preferences of customers. Few studies consider the relationship between innovation and leadership as a means of stimulating SME business growth, and those that do are largely case study based focusing upon technology (Minguillo et al., 2015).

According to the findings, there was a considerable degree of support for the theoretical frameworks and existing empirical evidence in respect of the relationship between innovation and entrepreneurship among small businesses. Referring back to the theoretical framework there was considerable evidence of the linear model of innovation

(Figure 1) (Chesbrough, 2013) and also to a lesser extent the diffusion of innovations model (Figure 2) (Rogers, 2010). The reasons for this appeared to relate to the practicalities of small business operations insofar as small businesses lack the resources or the customer base to merit large-scale investment in R&D and development of radical products ahead of the market curve. Indeed, the small businesses questioned in this study repeatedly identified lack of resources to engage in radical innovation. On occasions where they have tried to introduce quite different products from their established offering, they found that this is met with resistance from customers who generally appeared to dislike change. This point to the fact that, according to diffusion of innovations model, it often takes some considerable amount of time before clients become accustomed to new products and services(Rogers, 2010).

Furthermore, the fact that the scores were higher than anticipated indicates the perceived value of innovation. This tends to support the view that incremental innovation would seem to be the prevalent among SME ventures. However it is interesting to observe that the firms were generally reluctant to introduce products and services which were not necessarily customer led, i.e., they are developed in response to customer feedback and demand. It was also rare for firms in the survey to innovate ahead of customer expectation and this were attributed to the poor investment to return ratio associated with high levels of radical or disruptive R&D, and also quite probably from a practical basis given the costs of resources associated with high level of innovation, which are often simply beyond the scope of many SME operations.

Another area of similarity is in respect of the need for firms to innovate and respond in reaction to the behaviour of competitors and external market circumstances. All of the small firms who participated in the study recognised the critical need to adapt and evolve in response to the actions of their immediate competitors, and also as a result of external circumstances and customer expectations. They identified the delicate balance between customers expecting them to adapt, for example shifting to online retail opportunities, but simultaneously disliking sudden or radical change. All the firms in the survey displayed an awareness of the need to adapt and change, but they were keen to emphasise that little and often is better than sudden and radical.

Finally, there was overwhelming support for the pre-existing knowledge that engaging employees in developing innovations is absolutely fundamental to small business success (Laforet & Tann, 2006; Perkmann & Walsh, 2007). Engendering a culture of innovation within organisations and encouraging employees at all levels to contribute was consistently found to be a crucial factor in small business success, growth and

development. Not only did firms benefit in a practical sense in that they became more efficient in their operations, it also encourages a mind-set of perpetual improvement whereby employees actively look for new ways to improve what they offer to customers (Drucker, 2014).

In terms of divergences of the results of the study from existing theoretical and empirical evidence, it is worth elaborating on the point that the vast majority of small firms in the UK actively choose not to engage in radical innovation. This is contrary to studies by Ripollés and Blesa (2012) which depict a wealth of evidence that in developed economies organisations which have grown exponentially is as a result of radical innovation. On the other hand according to Burke et al. (2009) due to the costs and risks associated with radical and disruptive innovation and the fact that it is very difficult to create what is referred to in strategic terms as "Blue Ocean" in a marketplace, i.e. creating demand for an entirely new market (Burke et al., 2009) SMEs will not adopt a radical innovation unless there is clear evidence of what customers want to buy. All of the firms which participated in the study emphasised that they prefer to react and respond to proven demand in the marketplace, and invariably when they attempted to engage in radical innovation this had not worked particularly effectively. Potentially it would seem that because radical innovation is held up as a shining beacon of good practice in literature, there is a danger of overlooking the day-to-day reality of small firms and innovation and the fact that it is actually much better for small firms to create a culture of perpetual albeit incremental innovation as opposed to sudden and radical change. All the firms in the survey displayed an awareness of the need to adapt and change, but they were keen to emphasise that little and often is better than sudden and radical.

CONCLUSIONS AND RECOMMENDATIONS

The main objective of the study was set out to address the impact of innovation for entrepreneurs in the SME sector in the UK. The overall findings as anticipated are that innovation plays a critical role in business growth, development, and profitability amongst SMEs in the UK. What was interesting in the findings, however, was the marked preference for incremental innovation within small firms instead of the large-scale, radical or disruptive innovation. The reasons for this can be summarised as three driving forces which mean that it is eminently sensible for SME firms to favour incremental innovation over radical innovation. Firstly, the costs and risks associated with large-scale innovation are often prohibitive for SMEs to embark on radical innovation due to unavailability of large cash reserve and therefore focussed on short-term day-to-day operations (Carter & Jones-Evans, 2006). Secondly, the firms which participated in the study repeatedly emphasised that in practice, customers often dislike radical innovation and find it disconcerting. They prefer stability and familiarity and to this effect any

changes are more warmly received if they are moderate and incremental, and customers have in many instances driven recommendations for improvement. Thirdly, small firms are acutely aware that employees are source of invaluable organisational knowledge, and are often the best source of incremental innovation to make small-scale improvements in business operations (Perkmann & Walsh, 2007). Therefore, emphasising a culture of innovation within the firm and providing opportunities for employees to engage is usually considered to be the most important aspect of innovation.

The main policy implication of the study is that firm should listen closely to customers and respond promptly with regards to suggestions for improved products and services and secondly, ensure that employees at all levels of the organisation are involved in any aspect of innovation, as they are the most likely to have practical and affordable ideas for improvement. However it is abundantly clear from the findings that customers of SMEs have a strong preference for incremental innovation. Therefore further investigation into the benefits and application of incremental innovation is therefore recommended to further strengthen the understanding of how this knowledge can be applied in other similarly developed economies which also have a high proportion of SMEs. This is in part attributed to the fact that UK is a mature and well established advanced economy, it is often considered to be less attractive in terms of the likelihood of finding ground-breaking or novel research outcomes (Gök et al., 2015).

REFERENCES

Afuah, A. (2015). *Business model innovation: Concepts, analysis, and cases*. London: Routledge.

Agwu, E. M., & Murray, P. J. (2015). Empirical Study of Barriers to Electronic Commerce Uptake by SMEs in Developing Economies. *International Journal of Innovation in the Digital Economy*, *6*(2), 1-19.

Allen, K. R. (2015). *Launching new ventures: an entrepreneurial approach*. New York: Cengage Learning.

Arieh, A. B. (2015). Optimal Incremental Innovation. *Journal of Labour Economics*, *33*(2), 269-296.

Arnold, T. J., Fang, E. E. & Palmatier, R. W. (2011). The effects of customer Acquisition and retention orientations on a firm's radical and incremental innovation performance. *Journal of the Academy of Marketing Science*, *39*(2), 234-251.

Arthur C. L. (2016). Determinants of the Level of Sustainability Reports of Mining Companies in Ghana. *ADRRI Journal of Arts and Social Sciences*, 6(2), 22-46.

Arthur, C. L., Wu, J. Yago, M. & Jinhua, Z. (2017). Investigating performance indicators disclosure in sustainability reports of large mining companies in Ghana, *Corporate Governance: The International Journal of Business in Society*, https://doi.org/10.1108/CG-05-2016-0124.

Arthur, C. L. and Wu, J. (2017). The effect of corporate characteristics on the level of Management Approach Disclosure of GRI by Ghanaian mining companies. *ADRRI Journal of Arts and Social Sciences*, 26, 6(4), 62-80.

Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, *46*(6), 419-426.

Barreto, H. (2013). *The entrepreneur in microeconomic theory: Disappearance and explanation*. London: Routledge.

Barringer, B., and Ireland, D.R. (2008). *Entrepreneurship: Successfully launching new ventures*. (3rd Ed), Upper Saddle, NJ: Pearson Education.

Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, *30*(11), 2931-2943.

Bryman, A., and Bell, E. (2011). *Business research methods.* (3rd Ed) Oxford: OxfordUniversity Press.

Butler, D. (2014). *Business planning for new ventures: A guide for start-ups and new innovations*. London: Routledge.

Carter, S., & Jones-Evans, D. (2006). *Enterprise and small business: principles, practice and policy*. Harlow: Pearson Education.

Chesbrough, H. (2013). *Open business models: How to thrive in the new innovation landscape*. New York: Harvard Business Press.

Cho, Y., Hwang, J., & Lee, D. (2012). Identification of effective opinion leaders in the diffusion of technological innovation: A social network approach. *Technological Forecasting and Social Change*, *79*(1), 97-106.

Companies Act (2006) *Section 382 [definition of a small business]* [online] available at http://www.legislation.gov.uk/ukpga/2006/46/section/382 retrieved 25th Sep 2015.

Cooper, R. G. (2014). Invited Article: What's Next? After Stage-Gate. *Research-Technology Management*, *57*(1), 20-31.

Davenport, T. H. (2013). *Process innovation: Reengineering work through information technology*. New York: Harvard Business Press.

De Bono, E. (1990). *Lateral thinking.* London: Penguin Books.

Divakaran, S., Shariff, M., & McGinnis, P. J. (2014). Private equity and venture capital in SMEs in developing countries: the role for technical assistance. *World Bank Policy Research Working Paper*, (6827).

Drnovšek, M., Wincent, J., and Cardon, M. S., (2010) Entrepreneurial self-efficacy and business start-up: developing a multi-dimensional definition. *International Journal of Entrepreneurial Behaviour* and *Research*, *16*(4), 329-348.

Drucker, P. (2014). *Innovation and entrepreneurship*. London: Routledge.

Ferreira, J. Raposo, M. Rodrigues, M Dinis, A. do Paço, A., (2012). A model of entrepreneurial intention: An application of the psychological and behavioural approaches. *Journal of Small Business and Enterprise Development*, *19*(3), 424 – 440.

FSB (2015). *SME Business Stats* [online] available at http://www.fsb.org.uk/stats retrieved 4th Oct 2015.

Gladwell, M. (2010). The sure thing: The myth of the daredevil entrepreneur. *The New Yorker*, 24-29.

Gök, A., Waterworth, A., & Shapira, P. (2015). Use of web mining in studying innovation. *Scientometrics*, *102*(1), 653-671.

Kiesling, E., Günther, M., Stummer, C., & Wakolbinger, L. M. (2012). Agent-based simulation of innovation diffusion: a review. *Central European Journal of Operations Research*, *20*(2), 183-230.

Kirby, D. A. (2003). *Entrepreneurship*. Maidenhead: McGraw Hill.

Koryak, O., Mole, K. F., Lockett, A., Hayton, J. C., Ucbasaran, D., &

Hodgkinson, G. P. (2015). Entrepreneurial leadership, capabilities and firm growth. *International Small Business Journal*, *33*(1), 89-105.

Kumar, R. (2014). Research methodology: A step-by-step guide for beginners. (4th Ed) London: Sage.

Laforet, S., & Tann, J. (2006). Innovative characteristics of small manufacturing firms. *Journal of Small Business and Enterprise Development, 13*(3), 363-380.

Mairesse, J., & Mohnen, P. (2010). Using innovation surveys for econometric analysis. *Handbook of the Economics of Innovation*, *2*, 1129-1155.

Mei, M. Q., Laursen, K., & Atuahene-Gima, K. (2013). Learning to Innovate:

How Does Ambidextrous Learning Matter to Radical and Incremental Innovation Capabilities? In *35th DRUID Celebration Conference 2013* (pp. 17-19).

Miller, D. (2014). A Downside to the Entrepreneurial Personality?. *Entrepreneurship Theory and Practice*. *6*(3), 1540-1568.

Minguillo, D., Tijssen, R., & Thelwall, M. (2015). Do science parks promote research and technology? A scientometric analysis of the UK. *Scientometrics*, *102*(1), 701-725.

Morris, M., Kuratko, D., & Covin, J. (2010). *Corporate entrepreneurship & innovation*. Mason, OH: Cengage Learning.

Oni, O., & Papazafeiropoulou, A. (2014). Diverse views on IT innovation diffusion among SMEs: Influencing factors of broadband adoption. *Information Systems Frontiers*, *16*(4), 729-747.

Perkmann, M., & Walsh, K. (2007). University–industry relationships and open innovation: Towards a research agenda. *International Journal of Management Reviews*, *9*(4), 259-280.

Phan, P. H. (2004). Entrepreneurship theory: possibilities and future directions. *Journal of Business Venturing*, *19*(5), 617-620.

Rogers, E. (1999). Diffusion of Innovation A Division of Macmillan Publishing Co., Inc., 866 Third Avenue, New York, N. Y. 10022.

Rolet, X. (3rd Dec 2013). *Meet the UK's fastest-growing SMEs*. [online] available At http://www.telegraph.co.uk/finance/1000-companies-inspire-britain/10485854/Meet-the-UKs-fastest-growing-SMEs.html retrieved 2nd Aug 2015.

Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing, 26*(4), 441-457.

Saunders, M., Lewis, P., and Thornhill, A. (2012). *Research methods for business students.* (6th Ed) London: Financial Times Prentice Hall.

Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. *Business Strategy and the Environment, 20*(4), 222-237.

Sila, I., & Dobni, D. (2012). Patterns of B2B e-commerce usage in SMEs. *Industrial Management & Data Systems*, *112*(8), 1255-1271.

Silverman, D. (2010). Doing qualitative research: a practical handbook. (3rd Ed) London: Sage.

Simpson, P. M., Siguaw, J. A., & Enz, C. A. (2006). Innovation orientation outcomes: The good and the bad. Journal of Business Research, 59(10), 1133-1141.

Souto, J. E. (2015). Business model innovation and business concept innovation as the context of incremental innovation and radical innovation. *Tourism Management*, *51*, 142-155.

Taylor, D. (2007). Entrepreneurship and Small Business. *International Journal of Entrepreneurial Behaviour and Research*, *13*(3), 194–196.

UoM (2015) *Innovation Toolkit* [online] available at
http://www1.umn.edu/ohr/prod/groups/ohr/@pub/@ohr/@toolkit/documents/asset/ohr_asset_393808.pdf retrieved 2nd Aug 2015.

Van de Vrande, V., De Jong, J. P., Vanhaverbeke, W., & De Rochemont, M.
(2009). Open innovation in SMEs: Trends, motives and management challenges. *Technovation, 29*(6), 423-437.

Vrgovic, P., Vidicki, P., Glassman, B., & Walton, A. (2012). Open innovation for SMEs in developing countries – An intermediated communication network model for collaboration beyond obstacles. Innovation: Management, Policy and practice, 14(3), 290-302.

Vrgovic, P., Vidicki, P., Glassman, B., & Walton, A. (2012). Open innovation for SMEs in developing countries–An intermediated communication network model for collaboration beyond obstacles. *Innovation*, *14*(3), 290-302.

Yetisen, A.K., Volpatti, L.R., Coskun, A.F., Cho, S., Kamrani, E., Butt, H.,
Khademhosseini. A., & Yun, S.H. (2015). *Entrepreneurship.* Lab Chip, 15(18), 3638–60.