

Factors Influencing Decisions by Multi-National Companies in Establishing Research and Development Facilities in Ireland

Said Al-Hasan¹, Brychan Thomas^{2*}, and A-M Tierney²

¹EM Normandie Business School, 20 Quai Frissard, 76600 Le Havre, France

²University of South Wales, Pontypridd, CF37 1DL, United Kingdom

Email: salhasan@em-normandie.fr; brychan.thomas@gmx.co.uk

*Corresponding author details: Professor Brychan Thomas; brychan.thomas@gmx.co.uk

ABSTRACT

Multi-National Companies (MNCs) seek to optimise their return on overseas investment by applying stringent techniques for assessing the suitability of new markets. The growth over the last decade in global foreign direct investment (FDI), points to an increasing need by MNCs to find appropriate overseas locations to serve fragmented local markets and to be closer to key customers. The scope of this research is to conduct an exploratory investigation into the factors that specifically influenced decisions by MNCs to invest in Research and Development (R&D) facilities in Ireland. In order to focus the research, a decision was made to explore this question as it relates to the technology sector. The investigative methodologies employed saw the application of both primary and secondary research. An initial review of the relevant literature focused on FDI in the global and Irish contexts. Primary research, in the form of in-depth interviews, was undertaken with existing MNCs in Ireland and a number of key stakeholders from policy makers to academia, whilst a focus group was conducted within IDA Ireland. The results of the research indicate that whilst Ireland has been extremely successful in attracting manufacturing and service-related activity, it has not done as well in securing large scale R&D investment. Equally, the factors that conspired to attract existing R&D investment in Ireland do not follow the more traditional and expected investment requirements matrix as applied by MNCs in seeking new investment locations.

Keywords: Multi-National Companies (MNCs); Research and Development (R&D); Foreign Direct Investment (FDI)

INTRODUCTION

Geographical markets are converging, leading to the emergence of, what some have termed, “the global market” (Littler and Schlieper, 1995). The world is undergoing a new industrial revolution – “the knowledge revolution” – fuelled by the pace of technological change. The world according to Friedman (2005) is “flattening”, as we enter the “participation age” where more and more people join and use the commercial and information networks created by technology. R&D is at the heart of scientific and technological progress and to increasing productivity, exploiting growth opportunities in emerging markets, and creating knowledge-driven competitive advantage.

True globalisation and the advances in e-commerce have transformed the competitive landscape for FDI and as Ohmae (1989) comments “information has made us all global citizens”. Porter’s theory (1990) contends that nations compete with other nations and strive to devise sources of competitive advantage. This underlines the importance for countries to professionally and strategically manage their individual country brand for the purposes of attracting FDI. Kotler, et al. (1999) refers to this as “Strategic Image Management” – the notion of researching a place’s image among its audiences, segmenting and targeting its specific image and its demographic audiences, positioning the place’s benefits to support an existing image or to create a new image.

Kuehn (1999) notes that in no other European Union Country have lifestyles changed as much in the last twenty years as they have in Ireland. Economics have played a strong part in changing the fabric of Ireland. In 1988, The Economist, published a European survey and labelled Ireland “The Poorest Of The Rich”. By 1997, Ireland featured on The Economist’s front cover as “Europe’s Shining Light”. Enter the era of the “Celtic Tiger”, (Sweeney, 1998, Gray, 1997), a moniker for the Republic during its exponential period of growth between the 1990’s and 2001, during which time output growth averaged 10% per annum.

During these years, Ireland was transformed from one of the poorest countries in Western Europe to one of the wealthiest, bringing the ranking of Ireland to fifth in the World Competitiveness Table (OECD, 1999). Unemployment fell from 18% in the 1980’s to 4.9% by 2000, industrial wages grew and public debt was dramatically cut with huge investments in education, public infrastructure and healthcare and an increase in FDI of over 40% (IDA, 2005).

The unprecedented growth enjoyed by Ireland during the formative Celtic Tiger era was principally spawned as a result of extremely high levels of FDI that contributed to the spectacularly high levels of GDP for the same period.

It is not disputed that Ireland has been a successful location for attracting FDI and this has attracted much comment both politically and economically. This paper considers the background to the success of Ireland as an investment location for FDI in the economic context. It will present several perspectives in this regard, in particular looking at the investment landscape for R&D activities and the reasons why MNCs have picked Ireland as a location for R&D investment.

This paper will add to the body of research in a number of ways. Whilst much has been written on the nature of FDI and the success of Ireland in this regard, the literature review revealed that little has been written on the specifics behind the attraction of Ireland as an investment location for R&D activities. This research aims to provide an exploratory review of the investment climate for FDI by MNCs in the Republic of Ireland. The research in particular aims to provide an economic context for the development of Ireland as a successful location for investment by MNCs. The research objectives are: (i) to investigate the key factors influencing decisions by Multi-National Companies to establish a Research & Development facility in Ireland, (ii) to explore the current investment landscape in Ireland for R&D activities and (iii) to assess the importance of the pre-existence of a manufacturing facility in securing an R&D related activity.

THE IRISH ECONOMY, MNCs AND R&D

Ireland, which has a small open economy, is highly integrated into the world market through both trade and investment. Economic conditions are significantly influenced by the global economic environment. On a global scale, in recent years, the economy has been highly resilient. The record growth experience of the 1990's culminated in the period 1997-2000 when the economy averaged growth of over 10% annually. With the international downturn of 2001, slowdown was inevitable. In Ireland's case, it was relatively benign with the economy slowing to a still respectable rate of 5% annually (EI, 2004). The Irish economy has grown at a faster rate than most of its EU neighbours, and growth has been reflected in the increase in national GDP. In fact, Ireland's national income in aggregate terms in 2021 was around €230 billion (based on modified Gross National Income (GNI)) (IEAAC, 2023). Economic achievements have included growth of national income, a reduction in unemployment, and an increase in the number of people at work. Ireland has topped the 30 member OECD economic growth tables, often by a substantial margin.

The IDA Chairman John Dunne has said "Ireland is rated throughout the world, as one of the best locations for foreign direct investment" (IDA, 2005). The economic success story of Ireland is well documented. A key driver in the transformation of the economy has been the success in attracting overseas investment by MNCs, particularly companies with parent company headquarters in the US. Successive lucrative investment initiatives by these MNCs since the 1970's helped transform the Irish economy from one of relative stagnation to one of advanced prosperity in a relatively short period. Inward investment has not followed the global (and regional) pattern in recent years, as the country continues to attract high levels of FDI. Ireland's share of global and EU FDI has sharply increased as a result. Ireland is now the European hub to over one thousand leading multinational companies including finance, ICT, pharmaceuticals and social media, which have made Ireland the centre of their European operations such as Apple, Facebook, Genzyme, Google, GSK, HP, IBM, LinkedIn, Pfizer and Twitter (EII, 2023). Ireland has had a winning combination of stable, competitive wage rates, low tariffs and a business-friendly regulatory environment.

In order to assess the current investment landscape in Ireland for R&D and to address the research question, it is important to outline the current political and economic contexts by way of background. The 2019-2020 Business Expenditure on Research and Development survey results showed that almost €3.26 billion was spent on R&D activities by enterprises in Ireland in 2019 (CSO, 2020). In relation to this Ireland is a leading exporter of high technology products and the country has been the world's second largest exporter of software products after the US (UN International Trade Statistical Yearbook, 2021). The technology industry in particular, has been very successful in attracting overseas investment to Ireland. Five of the top ten technology companies in the world have substantial operations in Ireland. There is now growing recognition that Ireland is a major European centre for software production (Coe, 1997) and the technology sector (computers, electronics, software etc) accounts for the vast bulk of multinational R&D in Ireland. This paper will look at the factors that influence these MNCs operating in the technology sector, in establishing R&D facilities in Ireland.

RESEARCH METHODOLOGY

The two instruments used to gather information on MNCs and R&D in Ireland were in-depth interviews with stakeholders and an e-focus group. A total of thirty stakeholders were contacted firstly by telephone and then by e-mail and asked to participate in an informal interview. The follow-up tailored e-mail to each individual, allowed the authors to provide an introduction to the nature of the academic research, the background to the topic and to outline the request for interviewee participation. The key stakeholders were identified as having a specific interest in the R&D agenda in Ireland. Whilst this could be interpreted as creating an inherent interview bias at the outset, by gaining access to key influencers and stakeholders would serve to better inform the research question.

A total of twenty-two interviews were completed. Ten individuals, who were requested to participate, either declined or were unable to be facilitated within the four-month research window due to their work schedules. Interviews were conducted at the office premises of the interviewee and were recorded and later transcribed. Two interviews were conducted by telephone and recorded due to difficulties relating to access. Each interview lasted approximately one hour. Confidentiality was assured to each participant, given the potentially commercially sensitive nature of the research. Given the nature of the candidates secured, the interviews could be considered as key-informant interviews.

In order to help facilitate the conversation, a number of questions were developed as interview aids. Themes developed from the literature review as well as the research objectives helped to inform this. It was found that invariably, the actual interview was led by the interviewee; such was their interest in the topic. On occasions it was necessary to refocus the discussions by posing the research question.

The authors decided to use the focus group as a supplementary method in order to triangulate the findings from the in-depth interviews. As Morgan (1997) noted, in "multi-method" uses, the focus group will typically add to the data gathered through other qualitative methods. The goal then in using combined methods is to contribute something unique to the researcher's understanding of the phenomenon under study.

Given time constraints and the requirement to secure participation, it was decided to moderate an e-focus group with employees of the Industrial Development Agency (IDA)

Ireland responsible for attraction and retention of inward FDI (IDA, 2023). Guidance on how to conduct an e-focus group was taken from www.e-focusgroup.co.uk. The focus group ran for one week, and eight individuals were invited to participate. An introductory e-mail was sent to the six participants who were able to participate, to outline the background on e-focus groups and the requested participation levels required. An initial question was posed on the nature of the investment landscape in Ireland for FDI at present. This was subsequently followed up by additional questions every two days on the nature of R&D investment specifically. This approach ensured the collation of valuable qualitative data in virtual-time.

Based on the exploratory nature of the research and the need to identify the beliefs and attitudes of key stakeholders, it was decided to select qualitative research methods as being the most appropriate. The importance of the need to adapt qualitative research methods was further underlined after completion of the literature review, where qualitative methods were most frequently employed by key authors. In addition, given the gaps as identified in the literature regarding the attractiveness of Ireland as a location for R&D activities specifically (as opposed to general FDI), it was felt that information gleaned through one-to-one interviews and the e-focus group would provide data that would best link with the research objectives under discussion.

A number of themes emerged from the literature review which allowed the categorisation of the research findings in order to best address the research aim. These themes focused on the factors that, in the opinion of the authors, make Ireland an attractive location for FDI. The research aim principally poses a question as to the factors that influence decisions by MNCs in establishing R&D facilities in Ireland.

The influencing themes that emerged from the literature review were (i) Government Economic Policy, (ii) Educational System, (iii) Labour Skills, (iv) Financial Incentives, (v) Institutional Frameworks, (vi) Cultural Fit and (vii) Role of Investment Development Agency. In order to focus the research aim and to make for a more holistic analysis of the research question, in-turn supplementing the themes from the literature, these themes were complimented with the development of question aids for the in-depth interviews which matched with the research objectives. Themed question aids for the in-depth interviews were: (i) opinion as to investment landscape in Ireland for R&D, (ii) importance of a pre-existing manufacturing facility to securing new investment, (iii) opinion as to key factors influencing decisions by MNCs to invest in R&D facilities in Ireland and (iv) possible attainment of a technology focused R&D Cluster In Ireland.

RESEARCH FINDINGS

Each interview commenced with a reference to the pre-briefing material as sent by e-mail to each participant. In so far as it was possible to control, the same questions were posed to each participant. A general question was posed on FDI to open discussions. With some interviews, tangential topics arose which required the conversation flow to be steered using probing techniques.

Opinion as to investment climate for FDI in Ireland

Ireland continues to be an attractive location for FDI. Opinions varied across all twenty-two interviews as to the current investment landscape in Ireland for R&D however. There was consensus on the need for Ireland to advance its already mature FDI model to enable it to take advantage of more sophisticated inward investment projects in the future. Securing investment in R&D related activity was seen as a key driver in this regard.

A number of infrastructural deficits were pointed out (institutional frameworks, number of researchers, coordinated approach to research initiatives between companies and universities, etc.) which were seen as potential blockers to success.

A number of respondents made reference to a change in fortune of Ireland as of late with a move towards the winning by IDA Ireland of R&D based projects (Dell, Microsoft and Bell Labs were all mentioned) at the expense of the traditional manufacturing type investments. One interviewee expressed a concern that IDA Ireland strategy needs to be re-focused to reflect the strong manufacturing base which for decades has been “the bread and butter on which the strength of the nation was built”. Overall, it was felt that Ireland was now ready to receive a greater number of high-level research projects, with the way being paved by the work of IDA Ireland and Science Foundation Ireland (SFI, 2023) in this regard. Ireland faces competition in particular for this type of investment from Germany, UK and France with the Asian economies and in particular China, presenting the greatest competitive threats.

Importance of a pre-existing manufacturing facility to securing new investment

Results from the in-depth interviews indicated that most respondents firmly believed that in principle, R&D investment in Ireland has been secured on the back of existing manufacturing operations. There was a sense that Ireland has struggled to attract in new R&D investment where the parent company does not already have an existing operation in Ireland. The successful operation of a manufacturing facility and the attainment of a good reputation in the eyes of the parent company made it easier for Irish management to move to the addition of R&D activities, with the emphasis largely on development and not research work per se.

Opinion as to key factors influencing decisions by MNCs to invest in R&D facilities in Ireland

In response to this question, a number of opinions were offered by respondents as to the key factors that in their opinion influence MNCs in setting up an R&D facility in Ireland. The literature also points to a number of factors that worked together to make Ireland an attractive location for FDI (Hannigan, 2000). Rather than bundle these strands together, in the interests of clarity and to streamline these findings in relation to the academic literature, each of these factors will be assessed individually.

Role of Government

The role that Government has played in shaping the economic policy and fortunes of Ireland was seen in the opinions of the respondents, as being of critical importance. The emphasis here was on the importance of ensuring that the right institutional frameworks are in place in order to make it easier to attract in R&D investment. In the past investing monies under the National Development Plan (2000-2006) was seen as significant as was the establishment by Government of Science Foundation Ireland in 2000 (SFI, 2023), with the specific remit of attracting R&D investment through supporting collaborative work between universities and industry. The pro-activity of policy makers in managing the R&D agenda was applauded, although one respondent indicated that “while this is a good start, as a nation we have a long way to go”. Interestingly, ease of access to Government (through the operating arm of IDA Ireland) was lauded as a key factor, as bureaucratic burdens in other locations hampered decision making processes in relation to new investments.

Skills

Ireland has traditionally produced high quality and well-trained engineers. Feedback from the in-depth interviews indicated that MNCs are keen to understand the local skill base in an economy and having the right people in control is seen as key to the success of the operation. Overall, it was felt that if you have the right people, the business will follow. In particular, the flexibility of Irish people in their work practices and approach was singled out as a key differentiator for Ireland. The need for a strong R&D leadership team with the capability to manage the strategic R&D agenda at a local plant was also seen as a key influencing factor.

Funding Incentives

Significantly, opinion varied amongst respondents as to the level of influence that financial incentives can have in securing R&D investment to Ireland. Some respondents were quite approving of the funding mechanisms available to companies, and in particular, the funding provided by Science Foundation Ireland for specific research activities with universities. Opinions from academics who were interviewed indicated that funding was crucial to their survival and so they are extremely supportive of R&D related funding schemes. Any funding which can reduce the initial investment pain, particularly for start-up operations, was lauded. However, a number of opinions negated the value of remunerating companies through grant aid as a mechanism to encourage them to invest in R&D facilities in Ireland. For some, the overriding business case had to be there in the first place, before any investment decision could proceed and grant-aid was not seen as something that could of itself drive a business decision of this nature. The provision of funding incentives was by and large seen as a “sweetener” and “icing on the cake”, once the decision had been made to come to Ireland. More tangible indirect supports like the creation of an easier R&D tax credit system and the guarantee of securing a low corporation tax rate were seen as more significant business drivers.

Role of Irish Management

Interviewees, whilst placing an emphasis on the importance of skills, Government policy and the existence of a manufacturing facility, as important factors in encouraging R&D investment, saw a more fundamental influencing factor – that of the role of the Irish plant manager. Interestingly, ninety percent of respondents indicated that it was their belief that Irish managers played a crucial part in securing R&D investment into Ireland.

Irish managers are typically, but not exclusively, employed by MNCs to manage the Irish operation of the foreign-owned entity. Feedback from the in-depth interviews revealed that management, especially senior management, initially take on board the basic operational mandate for the entity. Thereafter, with intra-organisational global competition for projects, management seek to secure additional investment by offering to compete on global and or European tenders. Some companies were established in Ireland with a specific R&D mandate and some of the interviewees were employees of these operations. However, other interviewees were employed by companies who were established with a traditional and exclusive manufacturing mandate but which subsequently gained responsibility for small-scale development work. Once this development work was seen in the eyes of corporate to be working and more importantly, creating revenue, formal responsibility for increased mandates in the R&D area were rewarded to the Irish site. Most interviewees made reference to the operation of “skunkwork” activities at Irish plants as being the crucial strategy to securing R&D investment.

Typically, the operation, usually with a sole manufacturing remit dips into development work without the knowledge of the parent corporation. Led by senior engineers or technicians and supported by management, the operation builds up a capability in a technical area to a certain level of maturity. Once at that stage, it becomes possible to demonstrate the enhanced capabilities at the plant to the “right people” at parent company headquarters. Provided there is a corporate business need, the feedback indicated that the usual net result is the awarding of the R&D remit to Ireland. Feedback indicated that success in this regard is determined by the work of “key influencers and leaders” at Irish plants, many of whom sit on global boards where the “voice of Ireland” can be heard. Many existing managers of Irish plants have previously worked in the US for large corporates and understand the mechanics, the politics and the business case analysis for how global projects are awarded.

Role of Investment Development Agency

IDA Ireland is the Government agency responsible for attracting FDI. To avoid inherent bias, the opinions of employees of IDA Ireland who were interviewed as part of the research process, were not included under the analysis of this theme. Feedback from the in-depth interviews was very positive overall in relation to the role that IDA has played in the attraction of FDI. Pro-activity, networking and professionalism were, in particular, referenced as laudatory characteristics of employees of the organisation. The role of IDA in working with existing operations to attract in additional activities was welcomed. Specifically, the approach used by IDA Ireland in show-casing existing companies as reference sell models for new companies coming into Ireland, was seen as very positive. Responses however, tended overall to be linked to more generic FDI and did not specifically lean towards success in attracting.

Primary Findings from E-Focus Group

An e-focus group was conducted with staff of IDA Ireland. The purpose of the focus group was to: (i) assess the opinions of participants on the factors that influence MNCs in setting up R&D operations in Ireland and (ii) assess the opinions of the e-focus group in relation to key themes emanating from the research findings.

Factors Influencing MNCs to Establish R&D Facilities

A number of factors were mentioned as key influencers in the decision by MNCs in investing in R&D facilities in Ireland – these ranged from skills to funding to the work of IDA Ireland through the promotion of the “Knowledge Is In Our Nature Theme” (a theme developed by IDA Ireland to promote Ireland as an investment location for the attraction of higher-value jobs). The factors referenced mirror with the principal themes emanating from the literature review as previously discussed.

Role of Irish Management

Given the strong feedback from the in-depth interviews in relation to the role that Irish management can play in influencing the R&D agenda of corporates, the e-focus group was used to test this hypothesis as a variable.

The nature of the influencing role of Irish management as discovered in the in-depth interviews was verified by the findings of the focus group. Responders felt that this can be particularly in evidence if IDA Ireland works in tandem with the company in helping it to “move up the value-chain”, strengthening its position within the parent entity. The verification of this finding by the participants in the focus group adds weight to the importance of the role of Irish management in driving the R&D agenda.

Existence of Manufacturing Facility Being Key to Securing R&D Investment

Equally, it was evident from the focus group findings that having an already established and successfully operated manufacturing facility was a sine qua non to the establishment of a R&D facility.

DISCUSSION

Porter (1990) argues that future battles for competitiveness will not just be fought between organisations but between nations. The extent and character of trends towards the internationalisation and globalisation of innovative activities have been the subjects of lively debates (Ramirez, 2003). A further stream of research has focused on the growth of cross-border technological collaborations as evidence of the growing globalisation of innovation (Mytelka, 1991; Hagedoorn, 1994; Miotti and Schwald, 2003). The rise of international inter and intra-firm R&D networks are therefore at the heart of this conceptualisation of global innovation (Dunning, 1998). Though the majority of firms' R&D activities continue to be located in their country of origin, MNCs are globalising their innovative efforts by developing an international division of labour between geographically dispersed research sites (Pearse and Singh, 1992). At the same time, a number of industries have seen a qualitative increase in the number of cross-border technological alliances (Hagedoorn, 1994).

Golden, *et al.* (2003) indicate that one way to be more competitive is to be innovative. The innovativeness of nations is addressed using the concept of National Systems of Innovation (NSI). These are defined as "a set of institutions whose interactions determine the innovative performance of national firms". The main premise of this concept is that innovation is central to competitiveness, and the key driver of innovation is knowledge. Research and Development activities are seen as the drivers of innovative processes and fundamentally "knowledge" based economies. Establishing a strong R&D base is critical for driving successful economic longevity for most countries in the developed and increasingly developing worlds. The nature of FDI is changing as globalisation and the inherent development of intra and inter-firm alliances reduces the global playing field to fewer and increasingly dispersed locations. It is in this context and against this background that this research sought to explore the factors influencing decisions by MNCs to establish R&D facilities in Ireland.

A review of the academic literature as it relates to the nature of FDI in the Irish context proved interesting. A number of reasons and factors were presented by different authors as explanations for the attractiveness of Ireland as an investment location. Many authors drew considerably on the economic boost that the Republic enjoyed during the Celtic Tiger years where a pro-investment culture was built around the increased economic and social prosperity. This they indicated helped create a milieu that acted as a honey-pot for multi-nationals seeking a European headquarters location. What became evident from the literature review, and as demonstrated in the analysis, is that there was very little concurrence amongst authors as to the salient factors that (i) influence MNCs to invest in Ireland and (ii) make Ireland an attractive location for FDI. Equally, the attractiveness of Ireland specifically as a location for R&D investment was not in the main addressed, authors preferring to address the success of Ireland overall as a location for FDI. The gaps as identified in the literature provided an opportunity for a more focused approach and iterative process to the development of the research question and to the methodologies and analysis employed in conducting the primary research.

The results from the in-depth interviews and the subsequent validation and testing of the findings therein through an e-focus group were revealing. Initial feedback from the interviews indicated that a number of factors conspire to make Ireland an attractive location for R&D investment – these factors ranged from skills of workers to university networks, etc. The principle factors relating to the attractiveness of Ireland as an investment location for R&D were not dissimilar to the factors espoused by the academics on the attractiveness of Ireland as an investment location for FDI more generally.

Significantly however, an analysis of the feedback from the in-depth interviews revealed other factors that have played a more influencing role in the attraction of MNCs to Ireland for R&D namely: (i) role of Irish management, (ii) existence of a manufacturing facility as a pre-cursor to securing an R&D facility and (iii) flexibility of Irish workforce.

These factors did not succinctly emerge from an analysis of the academic literature. The discussion and analysis of the results demonstrated the importance that these key stakeholders attached to these particular factors as key influencers. Given this feedback, the results from the academic research have contributed to the academic advancement of thought in this area. As Hochtberger, *et al.* (2004) noted "a web of extensive international relationships and global interdependencies are equally central determinants of today's firms' economic performance and spatiotemporal behaviour". An affiliate's degree of autonomy profoundly determines a unit's potential to develop external local networks and – as work of e.g. Zanfei (2000) or Anderson, *et al.* (2001) has shown – is subject to both internal corporate interdependencies and the potential resulting from the local milieu. New regionalism literature conceptualises the notion of "localized capabilities" (Maskell and Malmberg, 1999), "regional innovation systems" (Cooke and Morgan, 1998) and "untraded interdependencies" (Storper and Venables, 2002). Partly based on Granovetter's (1985) work in economic sociology, they all stress the distinctive role of embeddedness of economic action within social and political practices. The research question then can be deemed to have been addressed since the research has undertaken an exploratory investigation into the factors influencing the decisions by MNCs to invest in R&D facilities in Ireland.

CONCLUSIONS AND RECOMMENDATIONS

A number of areas could be looked at and considered in order to significantly advance the research in this area. Whilst the in-depth interviews and e-focus group were usefully employed as data collection methods, it is felt that these could be used more strategically if time constraints and resources were not an issue. For example, the number of in-depth interviews could be increased to forty, to include twenty companies who already have an R&D facility in Ireland and twenty companies based in overseas markets that are potentially looking at new overseas markets for R&D functions. Equally, rather than e-focus groups could be facilitated in both Ireland and overseas territories. Use could be made of the IDA Ireland overseas network to tap into prospects and indeed IDA staff who are considerably closer to important decision makers at US and Asian Corporate Headquarters. This study focused on companies operating in the technology sector – further research could be conducted to look at the overall investment landscape for R&D across industry sectors thus completing a more holistic view of the investment landscape in Ireland for R&D activities.

Equally, this work could be further advanced by the completion of a comparative study between Ireland and another country or countries across a global competitiveness matrix for R&D investment. More use could be made of the application of the case study technique in future research as a tool to triangulate findings from primary research in particular. A number of authors made use of this approach, and where applied successfully, the findings are usually quite informative. Case studies whilst typically reflective of a snap-shot in time can be undertaken for longer periods to chart individual company developments.

The success of Ireland as a location for FDI has long been fêted. Economic commentators have more recently indicated however that the Irish model is reaching maturity that needs to be refreshed in order to continue to excel and to compete globally for FDI. The Irish Government has, through the establishment of Science Foundation Ireland and the implementation of the National Development Plan, put the building blocks in place for the creation of an environment where the R&D activities of MNCs are welcomed and encouraged to thrive. This would point to the development of a strategic agenda for R&D in Ireland. However, a strategic R&D agenda is not driven by accident, will not alone be driven by Irish management or by the success of existing manufacturing operations. The traditional "Father & Son" (US Corporate: Irish Operation) or skunkworks approach to securing additional investment to Ireland has become jaded and is not a competitive strategy for securing either enduring or first class FDI in R&D. To be a technology leader in the R&D space one must be able to relate peer-to-peer to overseas investors on one's merits alone. The future of the Irish economy rests on the creation of jobs where human capital is the highest input factor. In order to secure this future, policy makers must ensure that the institutional frameworks are in place to professionally support an R&D ecosystem which will act as a beacon to attract world-class academic and industrial investment projects.

The education system must produce the best engineers. The cost base must remain competitive in order to allow Ireland to compete for global not just European R&D investment. The increasing mobility of FDI is alarming as globalisation and the dis-aggregation of value-chains continues and new locations become the "new Ireland" and the global darling of FDI best practice. Ireland still retains a unique selling proposition for FDI which must continue to be exploited – that of experience. Despite the maturity of the FDI model, Ireland has over many decades built up a strong FDI base and with it the inherent management skills to chart the economy through to achieving the "holy grail" of sustainable higher-value investment. The attraction of knowledge-centric employment opportunities will lead this growth and the promotion of Ireland as a world-class location for R&D investment should be pursued by academics, Government bodies and policy makers alike.

REFERENCES

- [1] Anderson, U., Forsgren, M. and Pederson, T. (2001). 'Subsidiary performance in multinational corporations: the importance of technology embeddedness'. *International Business Review*, 10(1), 3-23.
- [2] Central Statistics Office (CSO) (2020). *Business Expenditure on Research and Development 2019-2020*, Cork: CSO.
- [3] Coe, N. (1997). 'US Transnationals and the Irish Software Industry: Assessing the Nature, Quality and Stability of a new wave of Foreign Direct Investment'. *European Urban and Regional Studies*, 4(3), 211-230.
- [4] Cooke, P. and Morgan, K. (1998). *The Associative Region*, Oxford: Oxford University Press.
- [5] Dunning, J. (1998). 'Location and the Multinational Enterprise: A Neglected Factor?' *Journal of International Business Studies*, 29(1), 45-66.
- [6] Education in Ireland (EII) (2023). *Leading Global Companies in Ireland*, Dublin: EII.
- [7] Enterprise Ireland (EI) (2004). *Economic Profile, Ireland*, September 2004.
- [8] European Union (EU) (1999). *Ireland National Development Plan 2000-2006*, Brussels: European Commission.
- [9] Friedman, T. (2005). *The World Is Flat: A Brief History of the 21st Century*, New York: Farrar, Straus and Giroux.
- [10] Golden, W., Higgins, E. and Lee, S.H. (2003). *National Innovation Systems and Entrepreneurship: Do they impact entrepreneurship?*, Centre for Innovation and Structural Change, NUI, Galway, Ireland; CISC Working Paper No 8.
- [11] Granovetter, M. (1985). 'Economic Action and Social Structure: The Problem of Embeddedness'. *American Journal of Sociology*, 91(3), 481-510.
- [12] Gray, A. (1997). *International Perspectives on the Irish Economy*, Dublin: Indecon Economic Consultants.
- [13] Hagedoorn, J. (1994). 'Strategic technology partnering during the eighties; trends, networks and international patterns', Paper for *Conference on R&D Co-Operation*, Vienna.
- [14] Hannigan, K. (2000). 'Ireland's Economic Performance: A View from the MNCs'. *Irish Business and Administrative Research*, 21(1), 69-83.
- [15] Hochtberger, K., White, M. and Grimes, S. (2004). *The Evolution of Multi-National Computer Services Affiliates in Ireland*, Centre for Innovation and Structural Change, NUI, Galway, Ireland; CISC Working Paper No 13.
- [16] IDA Ireland (2005). *Annual Report*, Dublin: IDA, June 2005.
- [17] IDA Ireland (2023). *Ireland's Foreign Direct Investment (FDI) Agency*, Dublin: IDA, <https://www.idaireland.com>.
- [18] IMD (2004). *World Competitiveness Year Book, 2004*, Lausanne: International Institute for Management Development.
- [19] Irish Economic Association Annual Conference (IEAAC) (2023). *The Irish Economy*, Dublin: IEAAC.
- [20] Kotler, P., Asplund, C., Rein, I and Haider, D.H. (1999). *Marketing Places Europe: Attracting Investment, Industry, and Tourism to European Cities, Communities, States and Nations*, Harlow: Financial Times/Prentice Hall.
- [21] Kuehn, R. (1999). 'Emerald Isle Loses Its Sparkle but It's Still A Gem'. *Irish Independent*, Dublin.

- [22] Littler, D. and Schlieper, K. (1995). 'The Development of The Eurobrand'. *International Marketing Review*, 12(2), 22-37.
- [23] Maskell, P. and Malmberg, A. (1999). 'Localised Learning and Industrial Competitiveness'. *Cambridge Journal of Economics*, 23, 167-85.
- [24] Miotti, L. and Schwald, F. (2003). 'Co-operative R&D: Why and with Whom? An Integrated Framework of Analysis'. *Research Policy*, 32(8), 1481-1499.
- [25] Morgan, D.L. (1997). *Focus Groups as Qualitative Research*, Thousand Oaks: Sage Publications Inc.
- [26] Mytelka, L.K. (1991). (Ed.) *Strategic Partnerships and the World Economy*, London: Pinter Publishers.
- [27] OCEC (1999). *World Competitiveness Table*, Paris: Organisation for Economic Co-operation and Development.
- [28] Ohmae, K. (1989). 'Managing in a Borderless World'. *Harvard Business Review*, 67(3), 152-61.
- [29] Pearce, R. and Singh, S. (1992). *Globalizing Research & Development*, London: Macmillan.
- [30] Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York: The Free Press.
- [31] Ramirez, P. (2003). *The Globalisation of Research amongst leading European and US pharmaceutical multinationals: The Shift of European investment to the USA*. Centre for Innovation and Structural Change, NUI, Galway, Ireland; CISC Working Paper No 9.
- [32] Science Foundation Ireland (SFI) (2023). *For What's Next*, Dublin: SFI, <https://www.sfi.ie>.
- [33] Storper, M. and Venables A.J. (2002). Buzz: The Economic Force of the City, Working Paper presented at the *DRUID Summer Conference* on "Industrial Dynamics of the New and Old Economy – who is embracing whom?", Copenhagen, 2002.
- [34] Sweeney, P. (1998). *The Celtic Tiger: Ireland's Economic Miracle Explained*, 2nd ed., Dublin: Oak Tree Press.
- [35] UN *International Trade Statistical Yearbook* (2021). New York: United Nations.
- [36] Zanfei, A. (2000). 'Transnational Firms and the Changing Organisation of Innovative Activities'. *Cambridge Journal of Economics*, 24(5), 515-542.