

A Comparative Study of Incubators' Landscapes in Europe and the Middle East

Dr. Hanadi AL-Mubarakhi,

Civil Engineering Department, College of Engineering and Petroleum, Kuwait University, Kuwait

Tel: +965-9975-0790 Email: pro5383526@yahoo.com

Dr. Michael Busler

Richard Stockton College, Jimmie Leeds Road, Pomona, NJ 08240, USA.

Tel: +1-609-442-4443 E-mail: michael.busler@stockton.edu

Abstract

This paper reviews literature on incubator models in Europe and the Middle East. We focus on four dimensions: 1) incubators graduate firms, 2) incubators goals, 3) incubators services, and 4) incubators client firms. The methodologies adopted in this study are literature reviews and case studies. The paper concludes four results. First, the total number of graduate firms that have emerged from incubator models in Europe (832) and the Middle East (43). This difference reflects a high rate of start-up companies inside the incubators that graduate a high number of companies. Second, incubators goals focus on fostering entrepreneurship, jobs creation and technology commercialization. Third, incubators services, tangible and intangible, are stronger in Europe than in Middle East models (medium). Finally, in Europe, the total number of incubators client firms is 391, whereas in the Middle East it is 68. We attributed this to the differences in years in which they were founded.

Keywords: Technology incubators, Innovation, Entrepreneurship, Economic development.

1. Introduction

Business incubators act as an active tool to support the structure of new businesses and give them the assistance and support they need to grow (Rice and Matthews, 1995). The attraction of business incubation is based on their ability to generate jobs at a generally low public cost that remain in the community and lead to economic development (Molnar et al., 1997). The most important element of incubators in their early stages is tangible incubator services. Research shows that networking and clustering are the most important factors behind a firm's success (McAdam and McAdam, 2008).

Moreover, Al-Mubarakhi and Busler (2012a) identified the roadmap for incubators as four strategic outcomes: (1) entrepreneurial climate, which 62% indicated was the primary purpose of their incubator; (2) commercialization technologies, indicated by 55.5%; (3) employment, 51.6%; and (4) innovation and diversifying local economies, 46.1%. The research adds value to current literature on sustainability of incubators and outcomes.

The objective of this paper is to describe the incubators' landscapes in Europe and the Middle East focusing on four dimensions: 1) incubators graduate firms, 2) incubators goals, 3) incubators services, and 4) incubators clients.

The paper is structured as follows: Section 2 provides a thorough review of the literature on the details of incubator models. In Section 3, the research methodology includes successful multi-case studies, which describe a number of aspects of business incubation in Europe and the Middle East. In Section 4, the authors briefly discuss the findings of the study drawn from the analysis of comparison between models of European incubators and those in the Middle East. Section 5 concludes with implications of the incubators' model in both regions.

2. Literature review

In Finland, (Autio and Klofsten, 1998) examined the case studies of two incubators to assess their management policies. The findings stated that incubators are embedded in local context and their success could only be analyzed in the local settings. Success stories cannot be generalized. Practitioners should be careful in adopting policies that are found to be important in other incubators. However, Abetti (2004) investigated five case studies among 16 incubators in Finland as to their general assessment for survival rates, job creation, and sales growth. The survival rates reached 95%. The incubators received little funding from the government but were able to create highly skilled cost-effective jobs. For example, the government subsidy per created job was €6,450, which

is much less than the welfare costs per person in Finland. Average sales growth rose by 160% per year during and after incubation in the Helsinki region.

Additionally, Totterman and Sten (2005) discussed the case study of three incubators, three managers, nine tenants, and nine post-incubated clients in Finland. They found that incubator support and networking are important for client firms (incubatees) to benefit from the incubator resources concluding that incubator managers should focus on strategic business networking rather than only providing infrastructure and physical capital to entrepreneurs. Furthermore, (Hytti and Maki, 2007) investigated 131 high-tech firms with an average RR of 83%. They found that firms that are young and have growth potential benefitted more from the incubator services, whereas older firms tended to be less satisfied with services. The incubation period should also be optimal and flexible according to firms' needs.

In Finland and the US, Studdard (2006) surveyed 52 firms with a RR of 18%. The study applied a quantities approach. The findings stated that knowledge acquired by interacting with the incubator manager had no effect on new product development, technological competence, and sales cost, but it did enhance the reputation.

In Italy, Colombo and Delmastro (2002) discussed 45 incubator firms with a RR of 20% that were matched with 45 similar firms that were outside the incubators. A quantitative analysis of the study indicated that Italian incubators were successful in attracting highly skilled entrepreneurs. Although there were no significant differences between on- and off-incubator firms regarding their innovative output, the on-incubator firms outperformed off-incubator firms in employment growth, education of the workforce, participation in EU-sponsored projects, and establishing formal cooperative relations.

A later study done by von Zedwitz and Grimaldi (2006) in Italy investigated case studies of 15 incubators. A qualitative assessment found that incubator services should be type-specific and the portfolio of the services provided should match with the objectives of the incubator. Moreover, the incubator management should be sufficiently experienced to match service needs to incubator purpose.

In the UK Wynarczyk and Raine (2005) conducted, analyzed, and discussed surveys of 17 UK incubators. Quantitative and qualitative evaluations showed that incubators do play an important role in nurturing businesses and creating jobs. The hands-on support provided by the incubator and advisors were found to be vital for firm survival, especially in the early stages of the business.

A further study (Hughes et al., 2007) interviewed 211 UK business incubation programs within a population of approximately 1000 firms. A cluster analysis classified firms into four groups according to their capabilities, determination to access resources and to acquire knowledge. Firms that deliberately pursued goals in networking were found to be more successful than others. Therefore, strategic networking is a crucial factor behind success.

McAdam and Marlow (2007) evaluated a case study done on one university incubator in Ireland. After analyzing detailed interviews with 12 entrepreneurs, they observed that an incubator's facilities, its credible status and networking opportunities provided were important for tenants. However, firms were hesitant to share sensitive information and being in proximity to each other might have adverse effects. Therefore, trust is a critical factor that enables information exchange.

A further study by McAdam and McAdam (2008) in Ireland and the UK observed 18 university incubator firms over 36 months. They found tangible incubator resources to be important for the development of the firm in the early stages. Among a set of factors networking and clustering were rated to be the most important factor behind a firm's success.

Earlier in Switzerland, Thierstein and Wilhelm (2001) investigated case studies of 9 incubators in Switzerland. Studies revealed that a regional economic development aim is missing. This could be partially explained by the fact that contrary to most countries, incubators in Switzerland are privately owned in most cases. However, in Spain, a study (Pena, 2004) used a quantitative approach to evaluate 114 firms in 9 incubators in the areas of sales growth, employment growth, and profit growth. The study found that human capital of entrepreneurs has significant impact on sales and employment growth.

In Germany (Schwartz and Hornych, 2008), the study interviewed 37 professionals in sector-specific incubators. The descriptive study discussed that the availability of specialized equipment and facilities were crucial for the survival of media firms, sector-specific knowledge and know-how. Additionally, they noted that networking was constrained in the incubator because companies more or less compete in the same sector. However, a later study in Germany (Schwartz, 2009) examined the survival of 352 firms from five German business incubations after their graduation. The findings suggested that graduation caused an immediate negative effect on survivability that lasts up to 3 years after leaving the incubators. Furthermore, heterogeneous patterns of post-graduation exit dynamics between the business incubation were observed. It was also found that performance during the incubation period is an indicator of the propensity of business closure after graduation.

In Europe, data from the European Commission benchmarking study (Aerts et al., 2007) analyzed 107 incubators with a RR of 18%. It concluded that tenants' survival rate is positively correlated with the availability of a more balanced screening process. Reliance on one screening process, such as market, financial and management screening, is also positively related to high failure rate. Finally, the incubators role in supporting entrepreneurial spirit by any means is critical for firm survival. In contrast, a Europe and US study (Gassmann and Becker, 2006) investigated 47 interviews and 77 firms from the EC benchmarking survey. The study showed that both the incubator and the ventures benefit from resource and information flows at the initial phase. The main corporation also benefits at the second phase from intangible and tacit knowledge coming from the for-profit incubators and the firms.

Al-Mubarak and Busler (2011a) discussed three practical business incubation European models, the United Kingdom, France, and Germany, based on their adoption as case study examples. These three countries contain approximately 83% of all the incubators located throughout Europe today. This study focused on (1) the nature of incubator financing, (2) the incubator's mission and strategy, and (3) graduation that each in turn offers its incubatee clients. The S.W.O.T analysis of each case study reflected the strengths of each program and complies with its mission and objectives showing great opportunity with the future plans and performance of each program. Business incubators have contributed to the international economy and play a vital role not only in the economic recovery but also in economic development. International adaptation has led to the support of diverse economies, the commercialization of new technologies, jobs creation and wealth building.

In Turkey, another study (Akçomak and Taymaz, 2007) matched sample assessment of 48 incubator firms with a RR of 60%. The study focused on sales growth, employment growth, and innovativeness. It found that there were differences between on- and off-incubator firms in terms of sales and employment but not in innovativeness. Tangible incubator services and seed funding explained this differential. However, Akçomak, (2009) drew lessons from country experiences and assessed the appropriateness of incubators as a tool for entrepreneurship promotion in developing countries. The study assessed that the main weaknesses of incubators in developing countries were their: 1) focus on tangible services rather than intangible services, 2) dependence on government, 3) lack of management and qualified personnel, and 4) lack of incubator planning and creativeness in solving problems.

A recent study showed results of quantitative and qualitative responses used to determine success rates and key indicators of incubators in various countries (Al-Mubarak and Busler, 2012b). This best practice model based on the lessons learned from case studies indicated that the success of incubatees to sustainable graduation is reliant upon: (1) clear objectives, (2) incubators location, (3) access to services, (4) employment creation, and (5) economic development strategy. Moreover, when accomplished, the best practice model can lead to a 90% survival rate of companies and reflects sustainability in the market.

Another recent study (Al-Mubarak and Schrödl, 2011; 2012) proposed measurement models relevant to the international context. Four measured indicators were looked at: 1) graduation of incubated businesses, 2) success of businesses incubated, 3) jobs created by incubation, and 4) salaries paid by incubator clients. The recommendations from the study could be helpful to develop business incubation guidelines for best practices in the GCC, which will lead to the economic development worldwide and to the GCC.

In another study Al-Mubarak and Busler (2010b) indicated business incubators could help young firms survive and grow during their start-up years and could play a key role in the economic development of a community or region. In developing countries, including Kuwait and other GCC member states, business incubators could be particularly valuable in helping to develop local economies, promote technology transfer, create new enterprises, and generate jobs. In addition, the survey results could be used to make recommendations for maximizing the success of incubators, including matching services offered to the needs of clients and involving a range of community stakeholders in the development of their programs. A number of options were proposed for developing and expanding the business incubator concept in Kuwait and GCC member states.

Recently, a study (Al-Mubarak and Busler, 2011b) based on a mixed-method approach clearly stated that business incubation is a tool for economic development with incubation outcomes, such as entrepreneurs, companies created, jobs created, and incubator companies. This was evident in both the United States and developed countries, but still taking shape in the developing countries such as the GCC member states.

Finally, Al-Mubarak and Busler (2011c) examined case studies of 10 incubator organizations in developing countries. The findings of this study indicated business incubators were an effective and innovative tool in supporting start-up businesses. The empirical results highlighted some implications for successfully developing and implementing best practices of business incubation programs. This study further contributes to knowledge regarding the process of business incubation.

3. Methodology

The study employed successful multi-case study methodology that described a number of aspects of business incubation in Europe and the Middle East. In addition, the paper looked at additional ways to compare between two incubation landscapes based on four dimensions: 1) incubators graduate firms, 2) incubators goals, 3) incubators services, and 4) incubators client firms. This study also considered current academic literature and research being undertaken in Europe and the Middle East. See figure 1. Furthermore, the case study method has been recognised as the most effective research strategy to capture the “rich” experience of complex projects (Eisenhardt, K., 1989; Yin, R.K., 1994).

4. Findings

The findings of this study indicated that the incubator’s main goal is economic development (Thierstein and Wilhelm, 2001) and that the development of incubators is reflected in industrial development leading to economic development (Hsu et al., 2003). The incubator offered services, such as support and networking (Totterman and Sten, 2005). The incubator management team should focus on strategic business networking. Furthermore, the benefits for entrepreneurs from the incubators included credibility to the firm, access to funding, business networking, and reputation (Rothschild and Darr, 2005). Finally, incubators offer many benefits, such as jobs creation, technology transfer, fostering entrepreneurship and innovation.

As seen in Table 1 and Table 2, Europe and the Middle East business incubation models are presented with the four key dimensions of 1) incubators graduate firms, 2) incubators goals, 3) incubators services, and 4) incubators client firms. To compare the business incubation dimensions in Europe and the Middle East, most of the countries focused on four goals: 1) transfer technology, 2) entrepreneurship awareness, 3) commercializing technology, and 4) jobs creation, which would lead to economic development. Additionally, in Europe and the Middle East countries, the services offered by incubators were 1) incubation facilities, 2) financial support, 3) advisory services by the incubator’s management staff, 4) mentoring/coaching the entrepreneur, 5) incubation services, for example, internet and photocopy services, 6) networking with marketing, and 7) technology transfer and technology commercialisation from client and graduate firms.

Furthermore, Table 1 presents the number of client firms and number of graduate firms. In Europe’s model, for example, Austria indicated the highest number of client firms is 170 and graduate firms are 404. In contrast, France presented the lowest number of client firms at 11 and in Germany the lowest number graduate firms was 6. In the Middle East model, for example Bahrain, (Table 2) demonstrates the highest number of client and graduate firms as 35 and 30, respectively. However, in Jordon the lowest number of client and graduate firms 6 and 3, respectively.

Table 3 summarizes the differences between incubation approaches and incubation models based on the four key dimensions. The first key dimension used in the comparison table is Incubators Graduate Firms. The total number in the Europe model is 832 and the Middle East model is 43. The reason behind this difference depended on the high rate of start-up companies inside the incubators. Second is the Incubators Goals in Europe and the Middle East. Both focused on fostering entrepreneurship, jobs creation, and technology commercialization. Third is Incubators Services. In the Europe model both tangible and intangible services are strong. However, in the Middle East model both services are medium. We based this difference on two points: 1) best practices and 2) shared successful experiences. In Europe, incubation programs have been established for a longer period of time and could, therefore, share best practices and success stories, whereas the incubator programs have only recently been established and will most like take a number of years to reach the success rate of the Europe model when implementing best practices. Finally, in Europe, the total number of Incubators Client Firms is 391 compared to 68 in the Middle East. We maintain this difference is due to the length of years a program has been founded. Business incaution programs have been founded in Europe earlier than 1980, whereas in the Middle East their inception has been since 2003.

5. Summary and Conclusion

A summary of the four key dimensions of incubation models in Europe and the Middle East are in figure 2.

First, the key dimension of incubators graduate firms totalled 832 in Europe and 43 in the Middle East. This difference depended on the high rate of start-up companies inside the incubators reflecting a high number of graduate companies.

Second, the key dimension of incubators goals in Europe and the Middle East focused on fostering entrepreneurship, jobs creation, and technology commercialization. These goals are evident the United States, Europe, and Middle East models and will most likely continue as an acceleration tool for the 21st century.

Third, the key dimension of incubators services showed that the European model is strong with both tangible and intangible services. However, the Middle East model showed a medium strength of tangible and intangible services. We based this difference on the two points: 1) best practices and 2) shared successful experiences in Europe. However, in the Middle East, the implementation of best practices will most likely need more time in the form of years to reach the success of the models in Europe.

Fourth, the total number of incubators client firms in Europe was 391 and 68 in the Middle East. We contributed this difference to be related to the year the business incubation programs were founded. In Europe many programs have been established earlier than 1980, whereas in the Middle East business incubation programs have been in existence since 2003.

Finally, based on the above conclusions, overall, it is clear that incubators do play an important role in nurturing businesses, creating jobs, and producing high graduation rates of incubatee firms, especially from programs that offered strong tangible and intangible services. Within this landscape, incubators' firms are able to achieve their primary goal of economic development, technology transfer, fostering entrepreneurship, and jobs creation. Based on the findings highlighted in this paper, the authors intend to conduct future research analysing case studies and survey on the implementation of business incubation in different Gulf States. Hence, the authors plan to develop a best practice model for the Gulf Community Council (GCC).

References

- Abetti, P. A. (2004). Government-Supported Incubators in the Helsinki Region, Finland: Infrastructure, Results, and Best Practices. *Journal of Technology Transfer*, 29 (1), 19–40.
- Aerts, K., Matthyssens, P. & Vandenbempt. K. (2007). Critical Role and Screening Practices of European Business Incubators. *Technovation*, 27 (5), 254–67.
- Akçomak, I. S. (2009). Incubators as Tools for Entrepreneurship Promotion in Developing Countries, UNU-WIDER and UNU-MERIT Research Workshop on Entrepreneurship, Technological Innovation, and Development held in Maastricht, the Netherlands, 30-31 October 2008.
- Akçomak, I. S., & Taymaz, E. (2007). Assessing the Effectiveness of Incubators: The Case of Turkey. In V. V. Ramani, and A. V. Bala Krishna (Eds.), *Business incubation: an introduction*. Hyderabad: Icfai University Press.
- Al-Mubarak, H., & Busler, M. (2010a). Sustainable Development through the Inclusion of Business Incubators: A SWOT Analysis. *World Sustainable Development Outlook*, 2010, 51-63. [Online] Available: www.worldsustainable.org.
- Al-Mubarak, H., & Busler, M. (2010b). Business incubators: Findings from worldwide survey, and guidance for the G.C.C states. *Global Business Review*, 11 (1), January-April 2010.
- Al-Mubarak, H., & Busler, M. (2011a). Application of Business Incubators in Europe: A SWOT Analysis. WASD 9th International Conference, Atlantic City, U.S.A., October 26-28, 2011.
- Al-Mubarak, H., & Busler, M. (2011b). The Incubators Economic Indicators: Mixed Approaches. *Journal of Case Research in Business and Economics*, 4. [Online] Available: <http://www.aabri.com/manuscripts/11884.pdf>.
- Al-Mubarak, H., & Busler, M. (2011c). The Development of Entrepreneurial Companies through Business Incubator Programs, *International Journal of Emerging sciences*, 1(2), 95-107.
- Al-Mubarak, H., & Busler, M., (2012a). Road Map of International Business Incubation Performance. *Journal of International Business and Cultural Studies*, 6. [Online] Available: <http://www.aabri.com/manuscripts/121120.pdf>.
- Al-Mubarak, H., & Busler, M. (2012b). Quantitative and Qualitative Approaches of Incubators as Value-added: Best Practice Model. *The Journal of American Academy of Business*, Cambridge, 18, September 2012.
- Al-Mubarak, H., & Schrödl, H. (2011). Measuring the Effectiveness of Business Incubators: A Four Dimensions Approach from a Gulf Cooperation Council Perspective. *Journal of Enterprising Culture*, 19 (4), 435–452.
- Al-Mubarak, H., & Schrödl, H. (2012). Incubating Success towards Gulf Cooperation Council (GCC), *International Journal of Innovation and Knowledge Management in Middle East & North Africa*, 1 (2), 31-56.
- Autio, E., & Klofsten, M. (1998). A Comparative Study of Two European Business Incubators. *Journal of Small Business Management*, 36, 30–43.
- Colombo, M. G., & Delmastro, M. (2002). How Effective Are Technology Business Incubators: Evidence from Italy. *Research Policy*, 31, 1103–22.

- Eisenhardt, K. (1989). Building Theories from Case Study Research. *Academy of Management Review*, 14 (4), 532-50.
- Gassmann, O., & Becker, B. (2006). Towards a Resource-Based View of Corporate Incubators. *International Journal of Innovation Management*, 10 (1), 19-45.
- Hughes, M., Ireland, R. D., & Morgan, R. E. (2007). Stimulating Dynamic Value: Social Capital and Business Incubation as Pathway to Competitive Success. *Long Range Planning*, 40, 154-77.
- Hsu, P. H., J. Z. Shyu, J. Z., Yu, H. C., You, C. C., & Lo, T. S. (2003). Exploring the Interaction Between Incubators and Industrial Clusters: The Case of the ITRI Incubator in Taiwan. *R&D Management*, 33 (1), 79-90.
- Hytti, U., & Maki, K. (2007). Which Firms Benefit Most from the Incubators. *International Journal of Entrepreneurship and Innovation Management*, 7 (6), 506-23.
- InfoDev. (2009). Business Incubators. [Online] Available: <http://www.idisc.net/WorkGroups/index.html>
- McAdam, M., & Marlow, S. (2007). Building Futures or Stealing Secrets?: Entrepreneurial Cooperation and Conflict within Business Incubators. *International Small Business Journal*, 25, 361-82.
- McAdam, M., & McAdam, R. (2008). High Tech Start-ups in University Science Park Incubators: The Relationship Between the Start-Up's Lifecycle Progression and Use of the Incubator's Resources. *Technovation*, 28 (5), 277-90.
- Molnar, L., Adkins, D., Yolanda, B., Grimes, D., Sherman, H., & Tornatzky, L. (1997). *Business incubation works*. Athens, Ohio: NBIA Publications.
- Pena, I. (2004). Business Incubation Centers and New Firm Growth in the Basque Country. *Small Business Economics*, 22 (3-4), 223-36.
- Rice, M. P., & Matthews, J. (1995). *Growing new ventures, creating new jobs: Principles and practices of successful business incubation*. Westport, CT: Quorum Books.
- Rothschild, L., & Darr, A. (2005). Technological Incubators and the Social Construction of Innovation Networks: An Israeli Case Study. *Technovation*, 25, 59-67.
- Schwartz, M. (2009) Beyond incubation: an analysis of firm survival and exit dynamics in the post-graduation period. *Journal of Technology Transfer*, 34, 403-421.
- Schwartz, M., & Hornych, C. (2008). Specialization as Strategy for Business Incubators: An Assessment of the Central German Multimedia Center. *Technovation*, 28, 436-49.
- Studdard, N. L. (2006). The Effectiveness of Entrepreneurial Firm's Knowledge Acquisition from a Business Incubator. *International Entrepreneurship and Management Journal*, 2, 211-25.
- Thierstein, A., & Wilhelm, B. (2001). Incubator, Technology and Innovation Centres in Switzerland: Features and Policy Implications. *Entrepreneurship and Regional Development*, 13 (4), 315-31.
- Totterman, H., & Sten, J. (2005). Start-ups: Business Incubation and Social Capital. *International Journal of Small Business*, 23, 487-511.
- von Zedtwitz, M., & Grimaldi, R. (2006). Are Service Profiles Incubator-Specific? Results from an Empirical Investigation in Italy. *Journal of Technology Transfer*, 31 (4), 459-68.
- Wynarczyk, P., & Raine, A. (2005). The Performance of Business Incubators and Their Potential Development in the North East Region of England. *Local Economy*, 20 (2), 205-20.
- Yin, R. K. (1994). *Case Study Research-Design and Methods*. (2nd ed.). Sage Publications, Newbury Park, CA.

Table 1: Cases studies of European model (Source: www.infodev.org)

Case	Four Key Dimensions			
	Incubators Goals	Incubators Services	No. of Client Firms	No. of Graduate Firms
1)UK	1) Entrepreneurship awareness, 2) Job creation, 3) commercializing technology, and 4)technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6) networking, and 7) technology transfer and commercializing	105	111
2)France	1) Entrepreneurship awareness, 2) job creation, 3) commercializing technology, and 4) technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6) networking, and 7) technology transfer and commercializing	11	75
3)Germany	1) Entrepreneurship awareness, 2) job creation, 3) commercializing technology, and 4) technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services , 6) networking, and 7) technology transfer and commercializing	10	6
4)Spain	1) Entrepreneurship awareness, 2) job creation, 3) commercializing technology, and 4) technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6) networking, and 7) technology transfer and commercializing	39	110
5) Italy	1) Entrepreneurship awareness, 2) job creation, 3) commercializing technology, and 4) technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6) networking, and 7) technology transfer and commercializing	42	62
6) Sweden	1) Export revenues, 2) job creation, and 3) profitable enterprises	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6)networking, and 7) technology transfer and commercializing	14	64
7) Austria	1) Entrepreneurship awareness, 2) job creation, 3) commercializing technology, and 4) technology transfer	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services , 6) networking, and 7) technology transfer and commercializing	170	404
Total			391	832

Table 2: Case studies of Middle East model (Source: www.infodev.org)

Case	Four Key Dimensions			
	Goals	Services	No. of Client Firms	No. of Graduate Firms
1) Bahrain	1) Entrepreneurship awareness, 2) export revenues, 3) job creation, 4) policy impact, 5) profitable enterprises, and 6) research commercialization	1) Facilities, 2) finance, 3) business information, 4) advisory services, 5) virtual incubation, 6) international business services, 8) networking, and 9) commercializing technology	35	30
2) Saudi Arabia 2	1) Entrepreneurship awareness, 2) export revenues, 3) job creation, 4) policy impact, 5) profitable enterprises, and 6) research commercialization	1) Facilities, 2) finance, 3) incubation and business development, 4) advisory services, 5) access to IP and R&D support, 6) international business services, and 7) networking	12	0
3) United Arab Emirates 2	1) Entrepreneurship awareness and 2) profitable enterprises	1) Facilities, 2) finance, 3) incubation and business development, 4) international business services, and 5) networking	0	0
4) Qatar	1) Entrepreneurship awareness, 2) export revenues, 3) job creation, 4) profitable enterprises, and 5) research commercialization	1) Facilities, 2) finance, 3) incubation and business development, 4) networks and synergy, 5) technology transfer, and 6) office and research services	0	0
5) Jordan	1) Entrepreneurship awareness, 2) income generation, 3) job creation, 4) profitable enterprises, and 5) research commercialization	1) Facilities, 2) finance, 3) advisory services, 4) virtual incubation, 5) international business services, 6) networking, and 7) technology transfer	6	3
6) Morocco	1) Entrepreneurship awareness, 2) export revenues, 3) job creation, 4) policy impact, and 5) profitable enterprises	1) Facilities, 2) finance, 3) advisory services, 4) mentoring/coaching, 5) incubation services, 6) international business services, 7) networks and synergy, and 8) technology transfer	8	4
7) Syrian Arabic Republic	1) Entrepreneurship awareness, 2) income generation, 3) job creation, 4) policy impact, and 5) profitable enterprises	1) Facilities 2) Finance 3) Advisory services 4) Virtual incubation 5) Business information 6) International business services 7) Networking 8) Technology transfer	7	6
Total			68	43

Table 3: Comparison of Europe and Middle East models

Dimension	Europe	Middle East
1) Incubators Graduate Firms	832	43
2) Incubators Goals	1) Entrepreneurship awareness 2) Jobs creation 3) Commercializing technology 4) Technology transfer	1) Entrepreneurship awareness 2) Jobs creation 3) Research commercialization
3) Incubators Services	Tangible and intangible (strong)	Tangible and intangible (medium)
4) Incubators Client Firms	391	68

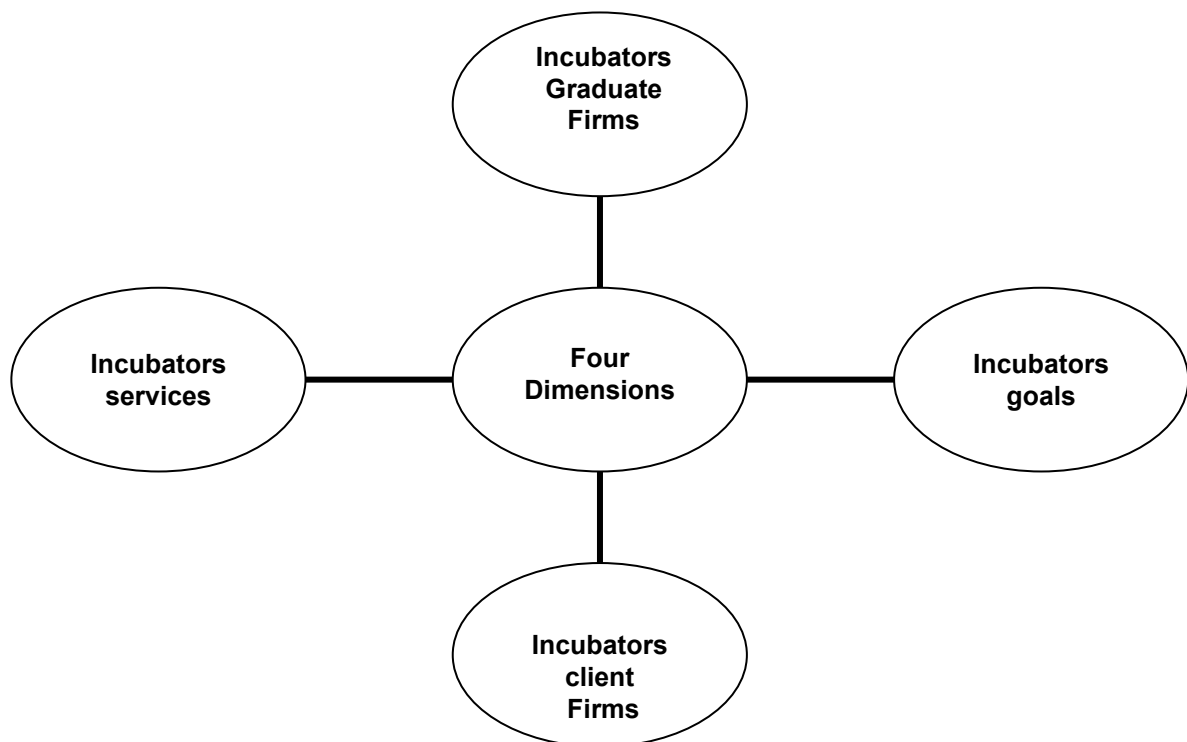


Figure 1: Incubators model four dimensions

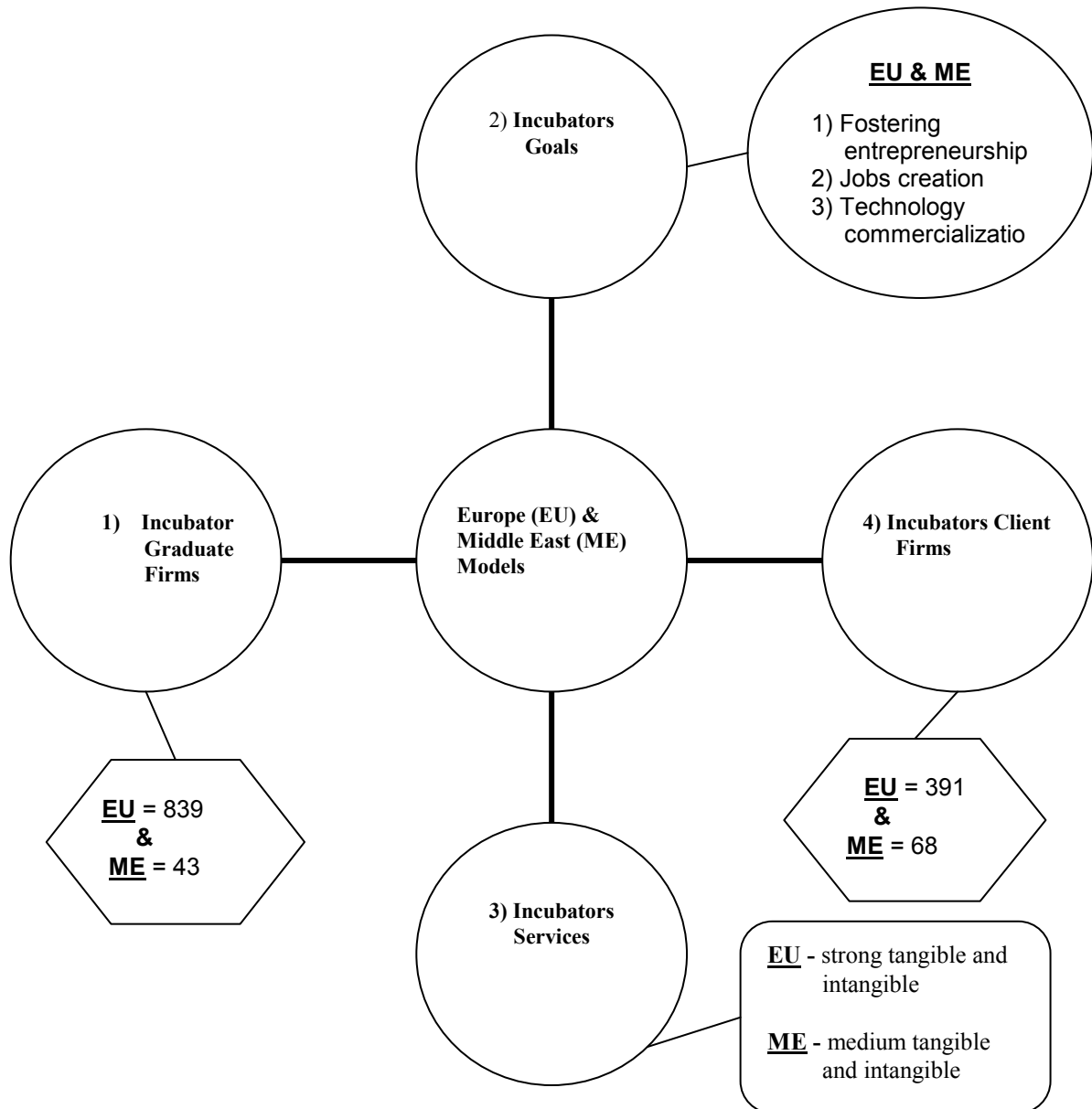


Figure 2. Summary of the four key dimensions of incubation models in the Europe and Middle East

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. **Prospective authors of IISTE journals can find the submission instruction on the following page:**

<http://www.iiste.org/Journals/>

The IISTE editorial team promises to review and publish all the qualified submissions in a fast manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

