Innovation Capital
A Reflection on the Case of the Arab Countries

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INTRODUCTION

Societies and their economies vary in their degree of support to an entrepreneurial environment. There are different types of capital which enhance the entrepreneurial capacity of a country. These include three basic types: *Human Capital*, *Financial Capital*, and *System Capital* (Abouzeedan and Busler, 2004). The first two types are known ones and have been historically discussed and theorized by different researchers. The *System Capital* is a new concept which was established recently in Abouzeedan and Busler (2004). The three types present a single combined component of the total input of a society toward the entrepreneurial activities. Abouzeedan and Busler (2004) have suggested calling this combined form which adds up these three components as the "*Innovation Capital*". Abouzeedan and Busler (2004) have used the terminology "*Innovation*" to hint that the innovative atmosphere reflect itself on the entrepreneurial spirit of a society. Corely et al (2002) have pointed out, that one of the strengths of the US economy that has enabled it to maintain its competitive advantage is its ability to increase productivity in manufacturing while simultaneously increasing employment to the performance of high-tech industries. For long time, that competitive advantage has been sustained through a successful coupling between high education level and intensive research. In relation to the Arab countries, that coupling is very weak.

As Rastogi (2000), points out the world of business is characterized by quick shifting in the commercial environment. In Ballot and Taymaz's (1997) views, expenditures in R&D may be a waste of resources if the firm does not have the skills to transform them into commercial success. We argue that an essential approach to economize and utilize the R&D expenditure is by propagating for more outward expansion emphasizing the international strategic alliances. In their attempt to define the three components, Human Capital, Financial Capital, and System Capital, Abouzeedan and Busler (2004) have admitted that there is an unavoidable shortcoming. The two writers believe that they cannot have definitions which would encompass all the aspects of these terminologies.

The first section of this paper is a general introduction to the issue, in the second, third and fourth section, we present in more depth the concepts of Human Capital, Financial Capital, and System Capital. The fifth section handles the issue of firm performance in the new economy. In the sixth section, we are re-introducing the innovation capital concept and relate that to entrepreneurial situation in economy using the Innovation Balance Matrix. In the seventh section, we apply the IBAM specifically to the Arab World. In the final section, we are summarizing our conclusion.

HUMAN CAPITAL

According to Corely *et al.* (2002), if increases in labor-productivity are at the expense of hour worked rather than increased output, this will add little or nothing for competitiveness as measured by income per capita. Actually increasing the hour-worked rather than increasing output per hour-worked is an inefficient way to increase productivity. Unfortunately, this non-innovative and classical approach is used intensively in the developing countries.

Corely et al (2002) points out that high growth, high productivity industries in the EU and the US are generally characterized by high levels of investment. Romer (1986) postulated that R&D leads to the creation of knowledge that can have a direct affect on technological change, and in addition, because investment in R&D can create spillovers, it also has positive externalities that can generate productivity gains. The empirical evidence from Coe & Helpman (1995) shows that countries with higher R&D per employee have higher levels of total factor productivity growth and that surges in productivity over time might be attributed to increases in R&D involvement per worker.

Corely *et al.* (2002) argues that, in both high and low-tech industries, Europe needs to raise the level of investment in tangible and intangible capital per unit of labor employed. However, particularly in high tech industries, raising the level of investment is likely to show positive returns, especially if it includes appropriate investment in R&D and human capital. Neale (1984) informs us that, discussions of productivity have given increasing pride of place to "knowledge" since Moses Abramovitz and Robert M. Solow have pointed out that much of the increase in America's output should be attributed to technological change (see Abramovitz, 1956 & Solow, 1957). Schultz (1959), proposed then that the high rising productivity should be attributed to "investment in capital" whose main component seems to be knowledge.

In our opinion, the nations in the group of "developing countries" who succeeded in the transformation process into being developed or at least in the road to be developed countries have pursuit a policy of technology-oriented industries. The countries which formed its economies around the dynamic of raw material export (like for example the Arab countries) have failed to induce an observable economic vitality. In other words, those nations traded basically less-expensive goods of far less knowledge embedded value, with more goods with far more knowledge embedded value. In this paper we define the Knowledge Embedded Value (KEV) as: "*The value, expressed in real money, of knowledge attached and embedded in the item or product as a result of innovation, research and development activities.*" The new concept emphasizes that the item value increases as it is moved from being non-processed, un-worked product to a one which is highly processed, worked, and re-formulated item or product. In completion and on top of that we also define, in this work another terminology which is named as: The Knowledge Embedded Value Margin. We define The Knowledge Embedded Value Margin or KEVAM as: "*The economic gain, expressed in real money, obtained when the item or product is processed and worked out further, refined or developed to be a more complex item or product of higher Knowledge Embedded Value.*" This new concept, we believe, is very important in understanding the economic costs due to the lack of the Innovation Capital in the Arab World. According to Neale (1984), the relationships among people, materials, and machines are process-oriented, and derive from culture and upbringing, experience, perceptions, and attitudes, as well as from the natures of materials and machines.

According to Adams (1980), technical change increases the relative productivity of human capital if education and other skills assist in the more rapid application of new technology (see Nelson and Phelps, 1966; Welch, 1970; Schultz, 1971). However, it is important to emphasize the need of high-quality education with the ability to have the desired output. Referring to Ballot and Taymaz (1997), typically R&D and human capital are merged under the categories of "receiver competence" (Eliasson, 1990), "knowledge base", or "absorptive capacity" (Cohen and Levinthal, 1989, 1990). Ballot and Taymaz (1997) enlightens us that, Human capital is thus acquired through training sponsored by the firm. Specific human capital allows learning-by-doing to take place. Productivity is improved without physical investment when the specific skill is available. The higher the specific human capital, the faster the average productivity in the firm converges to the productivity of the new equipment.

Polachek (1995) has argued that, based on the competitive advantages theory, one would think it paradoxical that a country export labor intensive commodities in a time when its wages were relatively high compared to the other countries. Polachek (1995) informs us that, although these developments took place in the 1950s and 1960s, human capital theory actually has roots at least back to Sir William Petty who considered labor 'the father of wealth' (see Kiker, 1971, p. 62). Indeed

according to Kiker "human capital was somewhat prominent in economic thinking until Marshall discarded the notion as unrealistic" (Kiker, 1971, p. 51).

While macroeconomic growth considerations can explain motives for public human capital investment. Other patterns, such as repeated evidence that the most educated workers have the highest earnings led researchers to explore reasons why individuals devote their own resources to educational investments (Becker, 1975). Mincer (1958), in his quest to devise econometric techniques to estimate these returns, is probably the first to model human capital investment using capital theory's mathematical tools. Ben-Porath (1967) was the first to use human capital model to explore how an individual invests over his lifetime. Griliches (1963, 1964) was a pioneer when he tested whether schooling had any real effect on output. Applying his test on farmer education, he found far greater farm production in states with higher levels of education. Referring to Rastogi (2000), in today's volatile environment of business, competitive advantages of firms are temporary. Top managements do not, and cannot, have all the answers to increasingly complex and rapidly changing problem situations facing their firms.

Within the context of their work Abouzeedan and Busler (2004a) have defined the concept of "Human Capital" such that: "*The Human Capital encompasses all the resources in the firm, which are related to the personal capacities of the employees including (and not restricted to): education, work experience and knowledge and cultural heritage. The Human Capital presents the individual human added value to the entrepreneurship environment in society."* Their definition combines both the softer side of the concept, such as the cultural heritage, with the harder side of the terminology, such as education, work experience, and knowledge. Abouzeedan and Busler (2004) have argued that, the first type of Human Capital is obtained via the environment in which the person has been living in. The second sort is obtained through educational and training programs. It is worth to point out that the firms do give much attention for the harder type of Human Capital when recruiting people, than the softer type. This is in contrary to the more profitable strategy which emphasizes the cultural diversity of the working force (Abouzeedan and Busler, 2004).

FINANCIAL CAPITAL

Corley *et al.* (2002), enlightened us that the early studies assumed that growth in the short run was largely driven by capital investment, while long-run growth was due to exogenous technological change studies in this area are based of the neoclassical theory of growth and include Jorgenson and Griliches (1967) whose focus on the measurement issues of tangible investment was an attempt to reduce the size of the unexplained portion of growth due to exogenous changes rather than to explain its determinants. Later studies attempted to explain the determinants of growth by taking into consideration intangible investment, such as R&D that may influence technological charge. Lichtenberg (1992) explains the productivity differences among countries using investment in physical, R&D and human capital. Lichtenberg's view, however, is confirmed to the manufacturing sector and does not take into consideration cross-country effects. Other studies have shown that even when the tangible and intangible investment factors are taken in consideration there are still exists cross-country differences in productivity. Hall and Jones (1999) found that those factors of tangible and intangible can be institutional and relate to differences in social structure, which affect the economic environment and the ability to acquire skills and accumulate the different forms of capital investment.

Abouzeedan and Busler (2004) define The Financial Capital such that: "*The Financial Capital includes (and not restricted to): all the financial resources at the firm deposition, and also the financial resources, which can be realized through the private and public financial institutions of the country. The Financial Capital represents the individual firm added value to the entrepreneurship environment of the society."*

SYSTEM CAPITAL

As pointed by Abouzeedan (2004), the third type of capital is an indicator of the level of support that individual firms receive from the different institutions both governmental and non-governmental. The non-governmental institutions will be including: public establishments, private firms, unions, associations.. etc. The form of such support is varying in accordance with the structure and aims of such institutions. Abouzeedan and Busler (2004) have excluded from this definition any financial support coming to the individual firm as this is covered within the Financial Capital concept. In their article Abouzeedan and Busler (2004) stated that the "System Capital" refers to: "*The effort of governmental as well as other non-governmental concerned public and private institutions of the society to enhance entrepreneurial activities in the society including (and not restricted to) components like: business tax and non-tax regulations, business support programs, infrastructures, research and knowledge and educational institutions. They represent the effort done by the government and non-governmental concerned public and private institutions to support entrepreneurship environment. This type of capital thus represents the added value contributions of the systems into the individual firm innovative and entrepreneurial capacity."* The System Capital differs from the first two types, because it has both a macro and micro economical nature. Abouzeedan and Busler (2004) argue that, if one is concerned with the total effort of the system, both governmental and non-governmental, to support firm establishing frequencies; their survival and growth; and the entrepreneurial input into their activities; then we are looking at the macroeconomic scale of the issue. On the other hand, if we look at that effort as done by individual institutions, and study them as separate entities, then we are more concerned with the microeconomic nature of that type of capital.

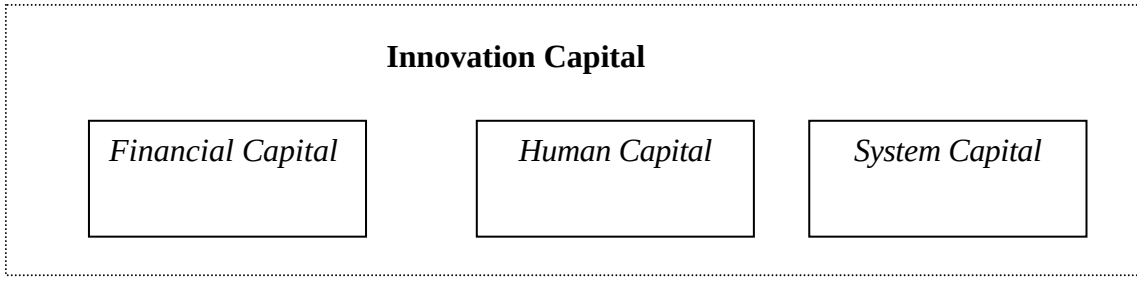
Referring to Deakins (1999, p. 15), Casson's analysis attempts to explain why in some economies entrepreneurs can flourish; yet in others there are low participation rates for people who own their own businesses. According to Deakins (1999, p. 15), Casson's point about the access to resources would appear to be an important one. The clear implication, when we examine such participation rates, is that the environment can be a more powerful influence than any prediction amongst the local population for entrepreneurship. Casson's insight is to view change as an accompaniment to entrepreneurship. The pace of change provides opportunities and the entrepreneur chooses which one to back. Entrepreneurs can vie with each other as their numbers increase, the supply of entrepreneurs depending on their access to resources. The supply into specific entrepreneurial economy will depend on the propensity of any given set of circumstances and the extent to which potential entrepreneurs have access to resources. This will depend on factors such as social mobility, and institutional factors such as the ability to access capital. Actually, the Institutional Theory can be used as an analytical tool to value the "System Capital" of the society. The theory and its relevance to the organizing process is detailed in Scott (2003, p. 119-120). An equilibrium position will result from the extent of resources supply and entrepreneurial demand (Deakins 1999, p. 15).

It is truly that governmental policies as well as public and private non-governmental institutions do have impact also on the other two types of capital, i.e., Human Capital and Financial Capital. However, in the context of their definition of the System Capital, Abouzeedan and Busler (2004) are mainly concerned with the direct impact of these institutions and their policies on firm situation. Thus although the sphere of the System Capital is more aggregate in its nature than the other two types of capital, Abouzeedan and Busler (2004) are still focusing on the micro-level , rather than the macro-level of economy. Simply the firm entity and, even in particular, the SMEs as these are the most sensitive to systems pressures and impacts. That is actually confirmed by the institutional theorists. All the major scholars of the institutionalism stress the large impact institutions have on organizations (see Selznick, 1949; Meyer and Rowan, 1977 & DiMaggio and Powell, 1983).

INNOVATION CAPITAL AND ENTREPRENEURIAL CHARACTER OF ECONOMY

In their work, Abouzeedan and Busler (2004) have argued that there is a combined concept which encompasses the three types of capital, i.e. *Human Capital*, *Financial Capital*, and *System Capital.* The above mentioned types of capital are embedded in the new concept of capital, the "*Innovation Capital*". The components of the Innovation Capital are presented graphically in Figure 1 (see Abouzeedan and Busler, 2004). Abouzeedan and Busler (2004) are theorizing that when the components of the Innovation Capital are in balance, and contributing in equal proportion to the total input, that will lead to an environment with rich innovation activities leading to an entrepreneurial economy. In such economy the entrepreneurial activities are nourished and encouraged to flourish. On the contrary of this situation is another scenario where the components of the Innovation Capital are not balanced (Abouzeedan and Busler, 2004). That occurs due to the expanding proportion of one of these components relative to the other two ones. We argue that, such a condition will lead to poor innovation environment and thus to an economy which is non-entrepreneurial in its nature. When the Innovation Capital components are in non-balanced state, we would have a non-entrepreneurial economy

Figure 1 Components of the Innovation Capital



APPLICATION OF THE IBAM ANALYSIS ON THE ARAB REGION

To clarify better the relationship between the three components of Innovation Capital, and the possible outcomes out of these relationship. Abouzeedan and Busler (2004) invented the Innovation Balance Matrix (IBAM). The Innovation Balance Matrix is an analytical tool to look at different situations regarding the state of the components of the Innovation Capital. Abouzeedan and Busler (2004) have theorized that the different types of component capitals encompassed within the Innovation Capital, can attain two levels representing the non-exaggerated and exaggerated ones. When the three components of the Innovation Capital are at the right non-exaggerated level, then we have an economy which is innovative and entrepreneurial. Abouzeedan and Busler (2004a) have argued that the economic performance of such societies will be the best among the existing economies of the world. In their original article, Abouzeedan and Busler (2004a) have run an analysis of the concept of the IBAM on divers countries like: USA, Japan, Germany, UK. .. etc.

Using similar approach of the IBAM analysis conducted on their analysis, we are running the same analysis to the Arab region. The result of that analysis is shown in Table 1. If we used the same analysis we can divide the Arab countries into basically three groups. In each of these groups, there is only one component at the right level while the others are exaggerated- in a negative way. These groups are designated A, B, and C. If we applied the same approach, there is only optimal solution which is additive, and not any other.

In group (A), the human capital is at the right level, while the others two types of capital are at the wrong level, that is they are negatively exaggerated. However, because most of these countries in the same geographical region, then we have an additive solution. With that we mean there can be a geographical attachment between most of them forming a possible block or market structures. This

group includes countries rich in population, such as Egypt, Sudan, and Morocco. In group (B), the financial capital is at the right level. These include basically the gulf region countries and the solution again is additive.

Table 1 Innovation Balance Matrix Analysis on Arab Countries

Group	HC	FC	SC	Innovation Capital	Countries	Solution Nature
A	1	2	2	Non-balanced	Egypt, Sudan, Morocco, Tunis, Algeria, Yemen	Additive
B	2	1	2	Non-balanced	Gulf States Countries, Libya	Additive
C	2	2	1	Non-balanced	Lebanon, Jordan, Iraq (before 1990), Palestine, Syria	Additive
Total	1	1	1	Balanced	The Arab World	Balanced Matrix

The third group contains countries with the right level of system capital. They have historical experience of being trading regions and they still rely on that. We want to emphasize that these classification, does not mean that the other capital components are existing. It is only a question of the relation of that specific component to the other components of the Innovation Capital. From Table 1, we can see that each of these groups of countries alone has a non-entrepreneurial economy, as they do not have a balance between the three components of the Innovation Capital.

If we tried to find solutions were the countries are combined, we will find that there are unique outcome. Assuming that we can not have to choose the same region twice, when allocating a capital component to be at the right level, we will be choosing a representative of an optimal level for each of the three components of the innovation capital. We will observe that we shall obtain an additive unique solution. The reason for this outcome is that the components of the Innovation Capital are distributed such that none of the Arab countries alone can have the optimal level necessary to have an entrepreneurial economy. They have to combine these components in a more united way.

If we wanted to transfer these countries into an entrepreneurial ones then that additive solution can be only obtain by combing the three groups into a one region, one market, and one economy. Only then we will obtain a Balanced Innovation Capital structure as shown in the last raw of the Table 1.

CONCLUSION

In their work, Abouzeedan and Busler (2004) have analyzed the two known capital types which researchers have discussed regarding the economic activities of societies. These are the *Human Capital* and *Financial Capital*. Abouzeedan and Busler (2004), then introduce a new type of capital which has not been discussed deeply before by scholars. Abouzeedan and Busler (2004), named the new type of capital as System Capital. Abouzeedan and Busler (2004) then used the three types of capital to invent a new from of capital to encompass all of the three components of capital related to innovation. Abouzeedan and Busler (2004) argued that, for an economy to be innovative and entrepreneurial in its most apparent nature, the three components of the Innovation Capital has to be in balance. Exaggerating one of the components in relation to the other two will produce an unbalanced environment in the society. That in turn will lead to negative impact on the total innovative environment of the economy. The analysis produced two types of economies, those who are entrepreneurial and those who are less-entrepreneurial. To analyze the different scenarios possible as a result of the non-balance between the components of the Innovation Capital, Abouzeedan and Busler (2004), have introduced a new analytical tool, which they called the Innovation Balance Matrix or IBAM.

We used the same type of analysis of Abouzeedan and Busler (2004) to look at the situation for the Arab countries. The analysis divided the region into three groups, one with the right level of Human Capital. The second group has a right level of Financial Capital. The third one has a right level of the System capital. We want to emphasize what have been pointed for before by Abouzeedan and Busler (2004a), that the entrepreneurial economy we are referring to is the one which have realized the full potential of its entrepreneurial activities. The IBAM analysis we ran showed that the Arab countries can be divided into three groups, none of them has a balanced Innovation Capital. None of the Arab countries has an entrepreneurial economy; rather all of them are less-entrepreneurial with varying degrees. This result can be used to repulse a myth that is accepted by some economic scholars of the Arab region. The myth of having individual Arab countries to developed, separately, a vital, functioning entrepreneurial economy. Our economic analysis shows that "unity" or what we call "the additive solution" is the only way to solve the lack of solid distribution of the Innovation Capital components in each of the Arab countries. Such balanced distribution, in line with the IBAM concept, is necessary to create the Innovation Capital environment necessary for sustained economic growth.

We only equated the entrepreneurial economy with an economy with good performance indicators such as economic growth. Such assumption was also taken previously by Abouzeedan and Busler (2004). We did not use other measures of entrepreneurial activity.

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