

Organizational Design In Knowledge Intensive Firms Through Road Map

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Abstract: In today competitive markets organizations seek competitive advantage through knowledge and its effective management. Knowledge base organizations are in the center of world attentions and that results in the growth of knowledge creation in recent years. Knowledge base organizations are those which depend highly on the knowledge in a certain field and its play a very vital role in the success of the organization. In these organizations knowledge will have a significant role in the producing goods or services. The basic rule in these organizations is effective management of the knowledge. Effective management requires structure flexibility, knowledge flow in the organization, reengineering of the process and structure renovation. Base on the mentioned importance of knowledge and its integration with organization the structure aspect of the organization is very important. In this article it is tried to develop an effective knowledge management style within a suitable organization structure. In order to achieve the result in the first step the progress of the knowledge intensive firms are reviewed and base on that and with the help of road map an organization structure which fell into the concept of goals achieving will be designed. This tool will help the firms to develop a near future vision and try to develop a structure that goes with it.

Key words: Knowledge intensive firms, organization structure, the organization road map

INTRODUCTION

Today's society is diverse and rapidly changing and it is the organization's ability to adapt or be in fit with the external environment that will determine its overall performance. Furthermore, an organization's external environment has a direct causal influence on its internal structure. On the other hands, the organization structure is influenced by a number of factors in the external environment namely, economic, socio-cultural forces, political forces, technology, size, competitors and customers and so on. This essay aims to discuss about how the external environment has a direct causal influence on its internal structure.

In today's intense competitive environment, many organizations were suffering unprecedented social, economic and political instability, with the great impact posed on western society by the crisis of oil, and the changing environment all the industries were facing. An organizational structure is a formal framework by which job tasks are divided, grouped and coordinated (Robbins, *et al.*, 2003). The top managers of the organizations spend most of efforts to design the organization structure, in order to approach their objectives. To design the organizational structure, it involves six key elements, such as: work specialization, departmentalization, chain-of-command, span of control, centralization and decentralization, and formalization (Robbins, *et al.*, 2003). The right organizational structure would allow their employees to accomplish organizational goals effectively and efficiently.

However, unstable external environment has certain impact on the organization's internal structure; this section is focus on how some kind of external environmental factors that has a direct causal influence on its internal structure.

Technology And Organizational Internal Structure:

Almost all the organizations use some kind of technology to convert their inputs to outputs. They combine their resources into a certain types of activities, in order to archive their goals. For example, Mitsubishi Motors Australia uses workers on assembly line to process and assemble the cars. Employees at Coca-Cola work on a continuous-flow production line to manufacturing Coca-Cola. And employees at MGC produce custom-made Wooden Jigsaw Puzzles for individual customers.

In the 1960s, British scholar, Joan Woodward studied several small manufacturing firms and divided them into three categories: unit production, mass production and process production. She found that the unit and process production line were most effective when matched with an organic structure and mass production was most effective when matched with a mechanistic structure (Robbins, *et al.*, 2003).

Organic structure is a structure that is highly flexible and adaptive to the environment. It has a wide span of control, decentralization and a low formalization. On the other hand, mechanistic organization has a

characteristic of high specialization, rigid departmentalization, a narrow span of control and a higher formalization (Robbins, *et al.*, 2003). It has very little participation in decision making by lower level of employees. For unit production and the process production, it has the same characteristics such as low horizontal differentiation and low formalization which perfectly fit the organizational structure. The mass production has a *visa versa* characteristic to the unit production and the process production. Consequently, mass production is the most effective in a mechanistic structure (Woodward, 1968).

After analyzing her finding and categories of productions, Woodward had concluded several relationships between technological processes and organizational structure: (1) The more complex the technology the greater the number of managers and management levels; (2) Skilled workers undertake work in small groups, span of control is narrow; assembly line workers performing similar skilled tasks permit flat structures by managers; (3) The greater the technological complexity the larger the number of clerical and administrative staff (Woodward, 1970).

2.2 Socio-culture, Political, Economic Environment And Organization Internal Structure:

Firstly, the socio-cultural environment is concerned with the society's attitudes and cultural values. When the organization conducts its business it will need to do so in a way that respects and bears in mind the fact that the socio-cultural environment is characterized by different people and therefore it has to conduct its business in a way that respects and accommodates this environment. Failure to do so can result in bad publicity, losses and even the folding up of the business due to public pressure. The organization due to new trends in the socio-cultural environment is creating a different type of consumer and thus a need for different products, different services and consequently different strategies for its conduct. In a nutshell, the organization has to conduct its business in a way that is adaptable to socio-cultural changes and environments.

2.3 External Competitive Environment And Organization Internal Structure:

Normally, competitors constantly influence a broad range of managerial decisions related to routine business activities and to the development of an organization. If the marketplace is highly competitive, managers must ensure that the organization remains competitive and provides high quality products or services to customers at the right price. Competitors represent a significant factor in formulating the organization's marketing plan and adopting suitable product development, price setting, and promotion and distribution strategies. It is important, therefore, that business owners and managers monitor relevant trends in the marketplace in relation to competition in order to secure the company's survival and growth in a highly competitive environment.

Once particular business has successfully kept its competitive advantage in the intense environment, definitely, the size and the scale of the organization will be changed correspondingly. The size of the organization used to significantly affect the organizational structure. For example, a large organization with thousands of employees will tend to have more specialization, departmentalization, centralization and more rules than the small organizations (Galbraith, 1997). It means more specialized jobs, decreased span of control and the more formalized structure (Robbins, *et al.*, 2003). However, the change of the organizational structure is not directly proportional to the increase in the size of the organization. For instance, if an organization, with a fairly mechanistic structure, that has already had 3000 employees, increases its number of employees by about 500, its mechanistic structure wouldn't change much, though it will become more mechanistic. As the number of employee increases, specialization will switch to a higher degree and more departments will be divided. This will decrease the span of control or increase the number of managers needed to be in charge of those additional employees. It follows that the organization will have to pay more salaries.

On the other hand, a small organization with just a few employees tends to have an organic structure. Instead of having specialized jobs, narrow span of control and the formalized structure, the organic organization is more flexible and highly adaptive (Robbins, *et al.*, 2003).

Characteristics Of Modern Organizations:

It is difficult to find a precise definition for knowledge-intensive organizations even though there is a lot of literature on the subject. However, knowledge-intensive organizations can be recognized from the following characteristics:

Their most valuable asset is intellectual capital – physical assets, such as machinery are of secondary importance (Edvinsson and Malone 1997, p. 10).

Gathering and applying new information and knowledge is essential for the success of the organization (Sydänmaanlakka 2000, p. 25 and p. 255).

They are flexible, adaptive, and they have low organizational hierarchies (Edvinsson and Malone 1997, p. 9).

They produce mass customized products and services using close relations with their customers, suppliers and strategic partners (Edvinsson and Malone 1997, p. 9).

Knowledge-intensiveness is basically just one of the characteristics of modern organizations. Sydänmaanlakka (2000, pp. 24-25) has presented also other characteristics related to knowledge-intensive organizations. First, their business environment changes very rapidly, which forces them to change their strategies accordingly. In addition, the role of employees has changed from simple and controlled work to complicated knowledge work in which the employee has a lot of authority. Finally, the organizational structures are based on processes or projects, and the structures can be changed flexibly to best serve the business objectives.

Knowledge Intensive Firms:

Knowledge-intensive service firms are professional organizations based on a low organizational hierarchy. Creative problem solving is usually produced together with the client. The operational environment of knowledge-intensive service firms is dynamic and it is developing continuously due to privatization and deregulation. This progression has also impacts on internal resources and success factors. Competitiveness models originally created to serve the needs of Industrial Age are not always applicable to model competitiveness in the New Economy. Thus, new point of view is needed.

Successful competition is an important field of strategic management process (Thompson and Strickland, 2001; Grant, 1996). Competition, competitiveness and competitive advantage are approached in many ways in literature. Also levels of their definitions are different. They can be firm-level, regional or national definitions of competitiveness. Knowledge Intensive Business Services (KIBS) is very close to KIS by definition. KIBS means all kinds of business services that are knowledge intensive (Miles, 2001). KIBS-companies can be divided into traditional professional services and services based on new technology (Miles *et al.*, 1994). In KIBS the amount of project tailoring is high and there is only little or no standardization. Tacit knowledge is economically important when producing profitable results and there is always close interaction between the client and the KIBS-companies (Werner, 2001). Hermelin (2001) on the other hand discusses rather about professional business services than KIBS. Like many others, she emphasizes the role of highly skilled employees, public and private sector cooperation and service production. Muller and Zenker (2001) specify three most common characteristics of KIBS that should be highlighted: knowledge intensiveness of services (which separates them from other services), consultancy-function (i.e. solving function), and service production in close interaction with the client (client orientation). (Haataja and Okkonen, 2005) and competence intensive services (KIS) into following three categories: knowledge intensive business services (KIBS), new technology related services, and product and production integrated services. What does it mean to produce a knowledge-intensive service? Adapted from Gadrey *et al.* (1995) and den Hertog (2000), the definition is: “to produce a knowledge-intensive service is to interact with the client and find a solution to a problem together utilizing knowledge as the most important and critical resource (e.g. a bundle of capabilities and competences)”.

Knowledge intensiveness means a business, where knowledge is playing a vital role. Services, products or processes can be knowledge intensive. Knowledge intensiveness is about how knowledge is produced and delivered, not about the amount or extent of knowledge. Knowledge intensive work requires a creative problem solving and abstract thinking. To succeed it requires especially complex knowledge processing and refining. It is not mechanical information processing although it might include that too. Knowledge intensive firms include for example technical, computer and IT, R&D, training, educational, financial, advertising and environmental services (Miles *et al.*, 1994).

Competences:

Løwendahl (2000) and Hermelin (2001) emphasize the role of professionals and special know-how in knowledge work. Services are intangible and often information- and consumer-intensive. Tailoring is produced according to client demand. Services are difficult to transport or store. Production and consumption takes place at the same time, so the product and the process are difficult to separate from each other (Boden and Miles, 2000).

In KIS firms, such as professional organizations, work process is based on personal commitment and reputation (Sheehan, 2002). It requires learning, communication and abstract thinking where teamwork will help the project or other service activity to succeed (compare to organizational capabilities by Chandler 1992 or core competence by Prahalad and Hamel 1990). Division of labor extends from routines to complex problem solving (Løwendahl, 2000). Organization culture should emphasize the development and identification of innovations.

Organization Structure: Flexible Value Network:

According to Løwendahl (2000), the structure of the organization and the nature of the projects and other activities are complex and cross the organizational boundaries. Internal communication can facilitate more active internal networks. Low hierarchy and flexible value networks (Cravens *et al.*, 1996) may enhance innovations and creativity which are essential when pursuing better service and therefore competitiveness. The formal structure establishes broad responsibilities and channels of communication, but since the tasks change and dimensions increase, informal coordination matters (Løwendahl, 2000).

Increasing number of manufacturing companies offer service solutions to clients as part of their business strategy (Grönroos, 2000). Development of competitiveness of KIS 3 **Innovativeness**. KIS appear as bridging institutions in national innovation systems. They are like facilitators, carriers or sources of innovation, and they play a key role in transforming firms into learning organizations (Hauknes, 1998). According to Løwendahl (2000), the value creation process of the professional service firms (i.e. KIS) can be illustrated as follows (i.e. creative/innovative problem solving strategy): (1) selling a credible promise to client, (2) delivering the promised value, and (3) learning from the process to improve future activities. The same value creation process can be adapted to various kinds of knowledge intensive organizations.

Characteristic Of The Knowledge Intensive Firm:

The value creating ability of knowledge-intensive firms is the subject of analysis in this article, and we need a definition of the practical reality of such firms, to form the basis for our analysis. We present four assumptions of organizational characteristics that we consider as the main distinctive features, which need to be included in a theory of value creation, and we shall address them in turn. The first is the assumption that knowledge is the driver for value creation. Professional work is based on an abstract body of knowledge (Etzioni, 1961). We regard knowledge as a dynamic social process that is created continuously. We suggest that “knowing” (Choo 1998) is used as a concept in order to illustrate an action-oriented work. Knowledge-workers have privileges giving the possibility to produce an outcome those clients either use or sell. They are supposed to act with responsibility in the best interests of the clients and other interest groups (Løwendahl 2000). The output of knowledge intensive firms is more or less tailor-made, creating the need for specific organizational arrangements in order to pursue efficiency through the production process.

Our second assumption is that the boundary between the knowledge-intensive firm and the environment is unclear, and more or less irrelevant for the production processes. The concept of the organization based on a distinction between what is regarded as internal factors and the so-called “environment” is less useful. Value creation in knowledge intensive firms is accomplished through the pooling of resources from relevant actors, irrespective of their location in space. Thus, the organization as a network is the most appropriate approach for our purposes. Our third assumption is that knowledge intensive firms are heavily depending on both knowledge exploration and knowledge exploitation. Contemporary theories of knowledge are to a large degree addressing the exploration aspect, stressing the need for organizational innovation and change in modern markets. We argue, however, that the exploration of knowledge represents the organizational output, and as such is the key to survival and firm revenues. A model of a knowledge intensive firm should take into account both these dimensions. The accumulation of knowledge through learning constitutes a driving force in the development and growth of firms because knowledge acquisition opens new “productive opportunities” (Penrose, 1959) and enhances the firm’s ability to exploit these opportunities (Spencer, 1994). The exploitation of knowledge is the result of the production process, whereby outputs responding to market demands are produced. The exploitation of knowledge thus constitutes the ground for economic surplus and growth.

The fourth assumption about knowledge intensive firms is that the structural configuration of the organization, i.e. the network, is characterized by a continuously change in participants and stakeholders. These dynamics are determined by the task at hand, mainly whether the activities are related to exploration vs. exploitation of knowledge. Generally, innovation and creativity requires the pooling of different and complementary resources, while the production process requires efficiency, and thus focus and similarities of knowledge. This corresponds to open vs. closed processes, which calls for different structural configurations. Successful knowledge intensive firms are flexible enough to adjust their configuration of knowledge to meet both these requirements.

A knowledge intensive firm is characterized by the specific ways knowledge is processed and configured, not unlike the “value network” as described by

Stabell and Fjeldstad (1998). These characteristics are the foundation for our model presented in the next section.

The knowledge-intensive firm in the research literature

To undertake our research, we first identified potential papers to analyse by searching a number of online library databases using the keywords “knowledge intensive firm”, “knowledge-intensive” and “knowledge intensive organization”. We were keen that the journals we drew from came from the broad area of organization science and reflected a variety of editorial policies and reviewing processes in order to provide a cross section of contemporary research, aiming for a representative rather than comprehensive review. The abstracts of papers identified from this search were reviewed and potential articles to be included in our research database determined. These were then read in full.

The 23 papers we ultimately selected are those that specifically ground, or claim to ground, the reported research in knowledge-intensive firms. To be included, these studies must also have referred explicitly to the KIF as a specific organization category. Papers reporting research in professional service firms (PSFs) were discarded unless the terms PSF and KIF were used interchangeably. The research studies included in our

analysis are presented in the Appendix. It summarizes the content of each paper by presenting the definition used to define a KIF, the organization(s) studied and the issues and topics explored in the reported research.

Definitions and Descriptions:

The most glaring observation from our examination of the literature is that despite the widespread usage and apparent acceptance of the concept of the knowledge intensive firm in the research literature, there is no obvious or widely used and agreed definition. From our survey we observe that different authors focus on different aspects and characteristics when describing knowledge-intensive firms, but with a clear objective of distinguishing them from other organizational types or, at the very least, suggesting that they represent a new category. With little consistency across empirical studies and vague definitions, the focus of the introductory preamble in many of the papers – particularly the earlier studies – is to justify the research site as a KIF. Two different perspectives, commonly used for classifications of firms, can be discerned in descriptions of KIFs: input and output perspectives.

Characterizing the input perspective, Starbuck (1992) argues that the term “knowledge-intensive” imitates the economists’ labelling of firms as “capital-intensive” or “labour-intensive”. These terms describe the relative importance of capital or labour as inputs to the production process. Labelling a firm as being knowledge-intensive would thus imply that knowledge has more significance than other inputs (i.e. capital and labour).

Similarly, several other researchers also emphasize this aspect, usually expressing it in terms of knowledge, knowledge base and knowledge workers (Ditillo 2004; Donaldson 2001; Pina e Cunha 2001; Nurmi 1998) or communities with highly specialized expertise (Boland and Tenkasi 1995). In this vein, KIFs are characterized as organizations where well-educated and qualified employees form a major part of the work force and engage in mainly “intellectual work” (Starbuck 1992). Nurmi (1998), for example, describes knowledge as the “raw material” for processing in knowledge-intensive firms, while Alvesson (2004) states that a strong knowledge base is a key feature of the KIF.

In contrast to the input perspective, Sveiby and Riesling (1986) have written that knowledge-intensive firms “sell knowledge” while Blackler (1995) has described knowledge-intensive firms as “... staffed by a high proportion of highly qualified staff who trade in knowledge itself”, with Alvesson (2004, p.17) writing that “KIFs can be loosely and preliminary defined as organizations that offer to the market the use of fairly sophisticated knowledge or knowledge-based products”, thus also including knowledge as the output of the production process. This perspective reflects the tradition with industrial classification schemes where organizations are grouped in industries by their outputs, and it is this logic that governs the widely acknowledged distinction between products and services. Indeed most authors use industries to exemplify what firms are included in the KIF category. While management and IT consulting are most commonly referred to (Alvesson 1995; Kärreman *et al* 2002; Morris, 2001; Morris and Empson 1998; Robertson and Swan 2003, 2004; Starbuck 1992) there is little consistency across empirical studies as to what industries can – and perhaps more importantly, what industries cannot – be included within the category. Most researchers tend to use what have traditionally been labelled professional service firms as exemplars of KIFs (Sveiby and Riesling 1986; Starbuck 1992; Winch and Schneider 1993; Alvesson 1993, 2001; McGrath 2005; Morris 2001; Robertson and Swan, 2003) with case studies and practical descriptions focused on such organizations. Indeed, Morris (2001) uses both terms interchangeably. In a paper with Empson (Morris and Empson 1998) they use the term PSF to refer to organizations “that trade mainly on the knowledge of its human capital, that is, its employees and the producer-owners, to develop and deliver intangible solutions to client problems” (p. 610).

Despite this, a number of scholars discuss the problematic overlap and confusion between the categories “knowledge-intensive” and “professional services”, concluding that there is a difference, stressing that knowledge-intensive firms are not necessarily professional services organizations (Alvesson 1995, 2000; Robertson and Swan 2003; Starbuck, 1992). Alvesson (2000) suggests that the term KIF “is broader and does not emphasize the features ascribed to a typical profession, such as a code of ethics, standardized education and criteria for certification, a strong professional association” (p. 1101). This theme is perhaps a reflection of the view that the traditional category of PSF has become less relevant as the importance of the “professions” has decreased, particularly as the main way of regulating abstract knowledge. Yet claims about the possession of knowledge are an important element in the constitution of professions and professionalism (Grey 1998) just as knowledge also plays a central role in the constitution of KIFs. However, Morris and Empson (1998) argue that, although used in imprecise ways, the meaning of the term PSF has instead become widened today with many scholars, such as Alvesson (1993) and Starbuck (1993), using the terms KIF and PSF interchangeably.

That services (as opposed to products) are the sole preserve of knowledge-intensive firms has also been challenged in the literature. Clegg *et al.* (1996) suggest that the notion of knowledge work should also be extended to more traditional forms of work, including manufacturing, while Styhre *et al.* (2002) and Kärreman *et al.* (2002) embrace pharmaceutical companies in their analysis of knowledge-intensive industries, as do Bolland and Tenkasi (1995), who also emphasize firms involved in new product development in leading edge technologies. Alvesson (2004) adds hospitals, universities and investment bankers to the list, with Swart and

Kinnie (2003b) suggesting advertising agencies as typical examples of KIF, and even include a call centre in their analysis, based on the argument that such organizations perform knowledge work. In his study, Yinnon (1996) focuses on the plastics processing industry, which he describes as the manufacturing of high-value added products with characteristics that meet customers' specifications. Referring to the production process as "knowledge-intensive production", he points at requirements for a vast technological infrastructure, the need for services of experts, an educated labour force, R&D facilities, data bases and specialized trading companies for these firms. In addition, McGrath (2005) has argued the central "people-based dilemmas" explored in the KIF literature are not so new, and suggested that early medieval Irish monasteries have "an impressive set of parallels" with contemporary KIFs.

It would be naive to suggest that definitions are as clear-cut as might be suggested above; while some researcher emphasise one viewpoint, many incorporate both perspectives in developing their position. However, most fall back on the logic of industry classifications when exemplifying what are KIFs. For example, Nurmi (1998) defines KIFs as those organizations that "process what they know into knowledge products and services". Or, as proposed by Swart and Kinnie (2003a, p.61) "the distinctive characteristics of KIFs are examined by considering the type of input, or capital, the type of work and the industry characteristics." These sweeping statements are perhaps a reflection of the difficulty of separating input from output and process when analysing knowledge work, but also an illustration the fuzziness of the concept. Yet, as stressed by Starbuck (1992), classifications grouping organizations by input differs from those grouping by output in terms of their usefulness for topic of study.

How The Term Is Used In The Literature:

Then what do scholars use the term for? What is immediately apparent from our analysis is how broadly authors use the concept of the KIF in their studies. Taking a critical perspective Alvesson (1993, 2001) for example, reflects on the notion of a KIF and knowledge work and questions the functionalist understanding of the nature and significance of knowledge, yet still refers to the KIF as a category. Some use the concept of a KIF as an umbrella term when discussing their research. For example, Lee (1999) suggests a "taxonomy of HRM policies of knowledge-based firms". Others, and this represents the bulk of studies, treat the KIF as an organizational category for which their research findings are relevant.

If there is a common thread in this literature, regardless of the definition of KIF or the organization studied, it is the emphasis placed on the reliance on people to perform intellectual work as opposed to manual labour. It is this premise that underpins much of the research in KIFs, which have recently been described as "particularly good examples of contemporary forms of 'people dependent' organizations" (Robertson and Swan 2004, p. 124). KIFs are seen as operating under conditions that invalidate industrial-bureaucratic forms of managerial control (Ditillo 2004; Kärreman *et al.* 2002) and consequently issues around structure and control are among the most common themes addressed by researchers. The dilemmas surrounding the balance between autonomy and control is a frequent research topic and it is generally argued that resolving such dilemmas lends itself to control based around normative processes and culture rather than around hierarchy and structure. Culture, identity and leadership are therefore among the common themes as well as the ability to manage relationships and interactions with clients and other external parties.

Most studies on KIFs use one, or perhaps two, case companies to illustrate the arguments put forth. It appears that the characteristics of the particular organization under study, as well as the topics of interest in the study, guide authors' descriptions of KIFs and their characteristics. For example, Starbuck's (1992) engineering firm 'Garden Company' and law firm 'Wachtell, Lipton, Rosen and Katz' and Alvesson's (1995) Enator seems to shape each study's understanding of what is a KIF. Authors' definitions of KIFs therefore tend to retrospectively borrow the characteristics of the empirical case companies studied; it thus becomes self-referential.

Indeed, it is unclear as to whether empirical cases used as examples of KIFs by some authors would qualify as such by others. As an illustration, the issue of organizational size (critical given the themes typically addressed such as structure, control and identity) is treated very differently by scholars. Accordingly, is unlikely that "Beta", the large, global consulting firm described in Kärreman *et al.* (2002) would be eligible as a KIF in Starbuck's (1992) terms as he claims that as they grow, organizations lose their knowledge-intensity. In contrast, Alvesson (2004, p. 1) writes that the term KIF relates to "large firms employing substantial numbers of people", thus by implication dismissing the possibility of small boutique consulting firms being considered, presumably meaning that he would not regard Winch and Schneider's (1993) architectural practice or Robertson and Swan's (2003) "Universal Consulting" or Morris and Empson (1998) "Valley Consulting" as KIFs. A third contrasting position is taken by Swart and Kinnie (2003b), who contend that one of the key characteristics that distinguishes KIFs from more traditional organizational forms is their growth patterns. According to them, KIFs typically develop from an innovative idea addressing a niche market, but then tend to expand employment rapidly.

Noting the inherent problems with the concept of knowledge in considering KIFs, Starbuck (1992) emphasises “esoteric expertise” that is unique as a key characteristic of KIFs, while in contrast Winch and Schneider (1993) refer to some standardized intangibility as being of central concern in determining whether an organization is a KIF or not. In distinguishing an “expert” from a “professional” and deploying it as a key criteria in defining a KIF and to differentiate it from professional service firms, Starbuck (1992) is at odds with many scholars who include PSF within what they understand the concept of KIF as encompassing (c.f. Alvesson 2001; Donaldson 2001; McGrath 2005; Morris 2001; Morris and Empson 1998). However with this position, Starbuck (1992) seems to later contradict himself when he notes “KIFs may be professional firms” (p. 717).

Despite these contradictions, authors cite each other’s work. This is confusing as the argumentation in a paper might covertly dismiss research by other scholars, essentially as their research site does not meet criteria laid down in the paper for a KIF. Yet that very same work is frequently drawn upon and often the reported research builds on the results of the “dismissed” papers. In addition, the intellectual inheritance of KIF research is limited to a few foundational papers, notably the work of Sveiby and Riesling (1986), Alvesson (1993, 2001), Starbuck, (1992, 1993) and Blackler (1995), but as illustrated above, these scholars do in fact have quite different conceptions of what is a KIF. When referenced, these studies are typically lumped together, usually illegitimately. Several of the later studies use some of the “core features” from earlier foundational papers when defining KIFs, and then add additional features relevant for their own study. For example, Lee (1999) defines knowledge-based firms as “those that are staffed by a high proportion of highly qualified staff”, referencing Alvesson (1993), Blackler (1995) and Starbuck (1992, 1993). On top of this, Lee adds that KIFs “are typically involved intimately in research and development activities” as well as a number of observations relating to the conditions for human resource management in KIFs (e.g. that KIFs typically outsource non-core processes, that job requirements change more often in KIFs than in not so knowledge intensive firms and that many KIFs have developed cultures and systems that support empowerment). However, for these observations Lee references other fields of literature. The publication outlet is a journal on innovation management and the focus of the paper is on HR practices. In a similar vein, Swart and Kinnie (2003a), studying knowledge sharing and HRM practices in KIFs, uses a similar “core definition” of KIFs and then add two more characteristics: that KIFs tend to have different growth patterns when compared with more traditional firms, and they emphasize the importance of market relations that KIFs encounter. Not surprisingly, Swart and Kinnie specifically study ‘growing KIFs’ and the impact of client relationships on HRM systems. With this line of reasoning, the KIF becomes a term to which almost any meaning can be attached. In addition, it is interesting to note that the “foundational papers” referred to above do not treat the KIF category as unproblematic, but spend considerable space on discussing the problems inherent in the concept, sometimes even from a highly critical perspective. Yet, what is subsequently picked up from these papers by other authors are often not so much the problematic aspects of the category, but they are used as a reference to justify their own research site as belonging to “the category of KIFs”.

Knowledge and Organization:

Assuredly, many writers have argued that organization is responsive to knowledge and that in turn organization may shape knowledge. Thus, on a fundamental level the information-processing emphasis in organization theory of the 1960s and 1970s illustrates the first causality, and earlier, Hayek’s (1945) famous argument concerning the need for decentralization when relevant knowledge is “knowledge of time and circumstance” makes a similar point on an even more abstract level. Less abstractly, the innovation management literature has long stressed that such organizational issues as role definition, team composition, the distribution of authority, etc. should be very much responsive to the nature of the development effort.

However, organization also shapes knowledge. Again at a fundamental level, the organizational division of labour implies that processes of knowledge creation become path-dependent. As Brian Loasby (1976: 133) perceptively noted, an organizational structure “... not only determines where an organization’s problems are worked on, but also helps to determine what problems they shall be, how they are defined, and what solutions will be attempted.” Thus, Clark and Fujimoto (1991) pointed out that building “integrating mechanisms,” such as stage-overlapping product development processes and embedding these organizationally would facilitate thick communication across departments.

Many other points of reference can be found in the strategy and organization literatures. More recently, there has been a proliferation of ideas on, for example, alliances and joint ventures as vehicles for knowledge-building (Hamel 1991), internal venturing as means of accomplishing the same goal (Eisenhardt and Brown 1998), of high-performance HRM practices as driving innovation performance (Laursen and Foss 2003), on the “differentiated MNC” as a means of superior leverage of knowledge (Hedlund 1994), on “organizational knowledge structures” (Lyles and Schwenk 1992), and much else. These ideas all relate organization and knowledge issues on some level and to some extent. They are, however, very different and derived from different underlying base disciplines. It is not clear what unites them except a broad concern with the relation between organization and knowledge (Foss, Husted, Michailova and Pedersen 2005).

However, some synthetic attempts do exist. Pondering the issue of what “knowledge approaches can contribute to organizational theory,” Grandori (Grandori and Kogut 2002: 225) recently observed that what has been added is “... a new ‘contingency’ factor for understanding organizational arrangements ... Knowledge complexity, differentiation, and specialization, complementarity and interdependence are emerging as important contingencies affecting effective organization and governance solutions.” It is the contention of the present paper that it is possible to go even further and posit the existence of an emerging, distinctive approach to knowledge governance.

Organizational Structures:

An organizational structure defines the way in which interrelated groups are constructed and interact to get work done. Each agency’s particular situation and need will determine the specific definition of organization. An organization can refer to a whole agency or just one part of it. It can comprise tens of thousands of people or just a few dozen. While each organizational design is somewhat unique, there are a small number of fundamental configurations that describe most organizational forms. These configurations can serve as models for most organizational design work. Management should consider each structure and its inherent strengths and weaknesses in light of how it enables individuals to contribute to organizational objectives and strategy. These structures are described in Table 1.

Type of Structure	Description	Strengths	Weaknesses
Geography/Customer	Organization structured around location or customer types.	Single point of contact, high market awareness, easier for customers to interface and interact.	Less sharing/higher costs, more product or service variability.
Functional	Organization structured by professional disciplines such as marketing, finance, and information technology	Easier to maintain functional expertise, staff tends to be more loyal to profession, usually has lower cost at the unit level.	Tends not to have end-to-end customer view, functional priorities sometime are conflicting, more difficult to change processes due to segregation of functions.
Team Based	Organization working in a project-oriented business with skills and activity overlaps among teams.	Highly collaborative work units, integrated functions, and backup skills.	Some redundancy of functions, lower sense of functional accountability.
Process	Organization structured around its core business processes, and manages processes continuously.	Easier coordination, focused on the customer, more flexible, minimal segregation, flatter, staff gain broader knowledge of the business.	Difficult to implement and sustain, requires cross-functional expertise, long-term management commitment.
Product/Services	Organization structured largely by product groups or service areas.	Centralized accountability, higher quality, faster decision making, focused on the customer of each product/service group.	Lower sharing of functional skills, slightly higher costs, narrower careers, conflicts of product priorities versus enterprise priorities.
Matrix	Organization structured by multiple dimensions such as customer segments (public sector, industrial, health care, etc.) with supporting service area or product horizontals.	Flexible resource planning, high functional expertise exposed to variety, forced cooperation service areas.	Multiple bosses, competition for valuable resources, play managers against one another.

Hybrid organizations are when two or more traditional forms of organizational design are combined. Hybrid organizations are common when the entity is large or geographically dispersed or dealing with complex processes. Strengths of using a hybrid model include the ability to leverage the strengths and weaknesses of each of the models being combined. Weaknesses of the model include some duplication across the organization, as well as a more complex managerial structure. This complexity affects managerial control and coordination of activities across the organization.

Hierarchical Structures

Most organizations are hierarchical. Such organizations are distinguished by several features:

- Relatively few managers control the organization.
- Few units or staffs are under each manager’s control.

- Managers are appointed on merit and expected to be in control of the full range of management functions (including disciplining, and encouraging cooperation and compliance).
- Management style is likely to be “directive.”
- The organizational structure resembles a pyramid.

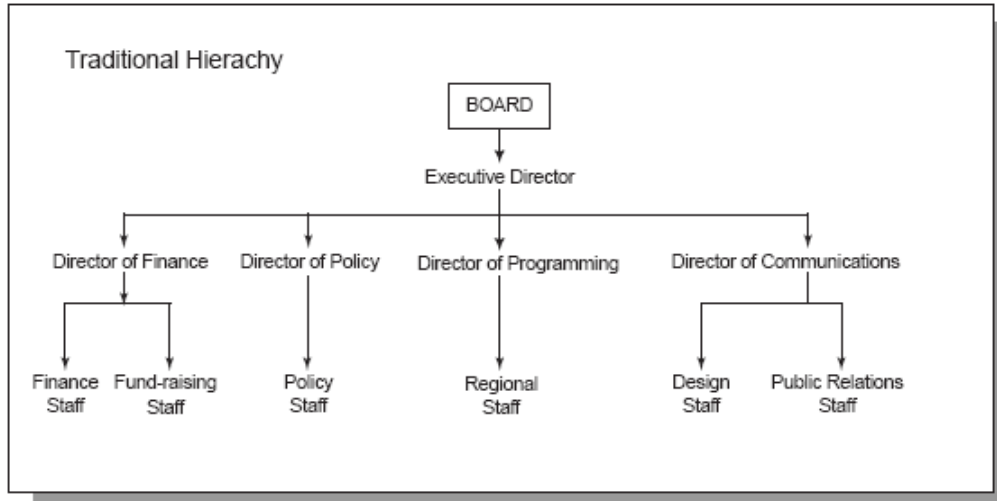


Fig. 1: Structure of a traditional hierarchical organization:1

Team Structure:

Team structures differ from hierarchical structures in several ways. A team structure attempts to link the formal and informal group relations that influence a worker. This type of organization emphasizes interpersonal relations as a determinant of conduct and performance.

Some of the features of this type of organizational structure include:

- Managers who serve more as facilitators and group leaders than final decision-makers.
- Managers whose primary responsibility is setting objectives and evaluating performance.
- Work styles which are more participatory and interactive.
- Focus on tasks, accomplishment of shared objectives, and accountability to the team.
- Use of temporary teams or task forces to deal with particular issues or cross-cutting initiatives.

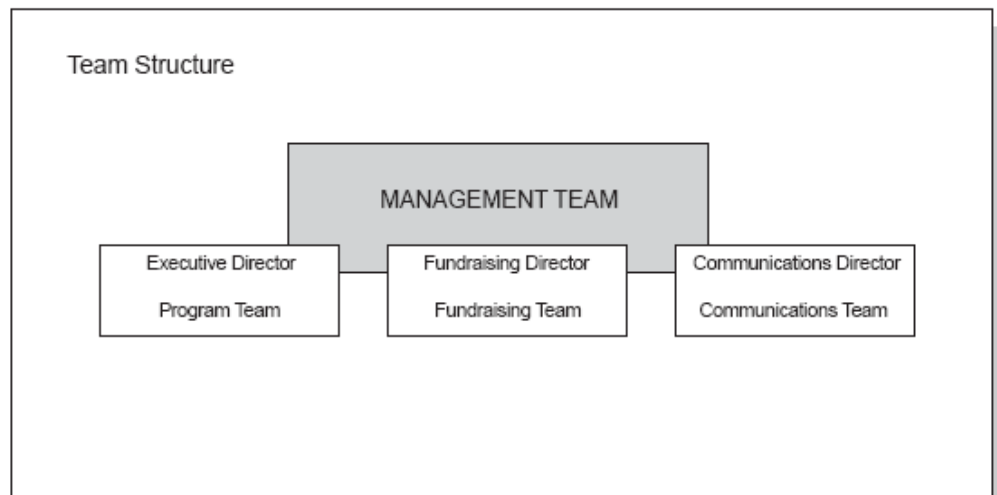


Fig. 2: A team structures

Network Structures:

In some instances, independent or semi-independent organizations form loose affiliations in which they share resources, information, and data, and responsibility for joint projects. An example of this kind of cost-effective organization is a **neighborhood alliance** in which organizations working on different aspects of community development and well-being (e.g., environmental sanitation, health, adolescent programs, and women’s empowerment) coalesce as an umbrella organization and hire a senior program manager, and share office space and material resources. There are many variations on network structures, ranging from totally independent groups coming together for a common cause to affiliates of international organizations (e.g., the Red Cross or the YWCA) that share the same principles and approaches to work. Even with these differences, network structures share common features, including:

- Considerable autonomy among its functional and programming units
- A small core infrastructure that provides certain services needed by all
- Highly responsive and fluid approaches
- Flexible coordination approaches among component organizations as needed
- Decision-making occurring within the context of the strategic alliance among the
- partners

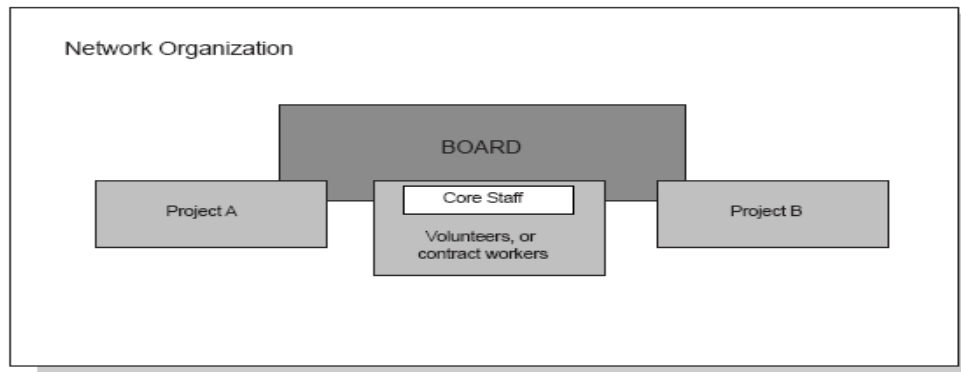


Fig. 3: A network structure

Road map:

The changing environment of today business atmosphere has provided lots of harm to the organizations. Successful organizations in the competitive market implemented a system that could forecast the future changes and suggest the appropriate solution for that. Managers could utilize number of tools in order to complete the task; one of those tools is road map.

Road map was invented at the first of 80’s and it is a type of chart that is base on time and includes different layers. Each of those layers represent and separate issue of the organization. Figure 4 indicate a simple schematic form of a road map. The line that crosses the layers indicates the relationship among layers inside the organization.

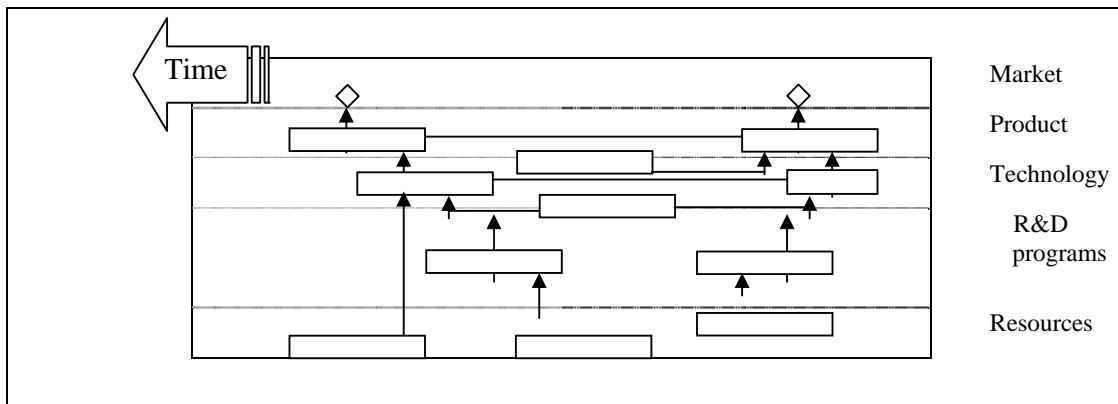


Fig. 4: the schematic view of road map

Road map is a graphical instrument that describes the future of investment plan of the organization. This tool has its own applications:

- 1- planning procedure improvement
- 2- efficient management of research and development
- 3- new product or services development

Organizational structure in knowledge intensive firms

All of the organizations are created for specific purposes the structure of that organization should support the achieving of goals. In past the aim of a knowledge base organization was only knowledge creation. This aim has forced the firms to the point that they provide a very large defense around themselves in order to protect their technology from imitation but also they paid lot of attention to planning and organizing. On the other hand they did not pay any attention to that kind of technology that is not close to what they have. These criteria have shaped a definite type of organization with high horizontal differentiation, centralized control system, top level of hierarchy and formal relationship channels. Figure 5 indicate the general shape of this organization.

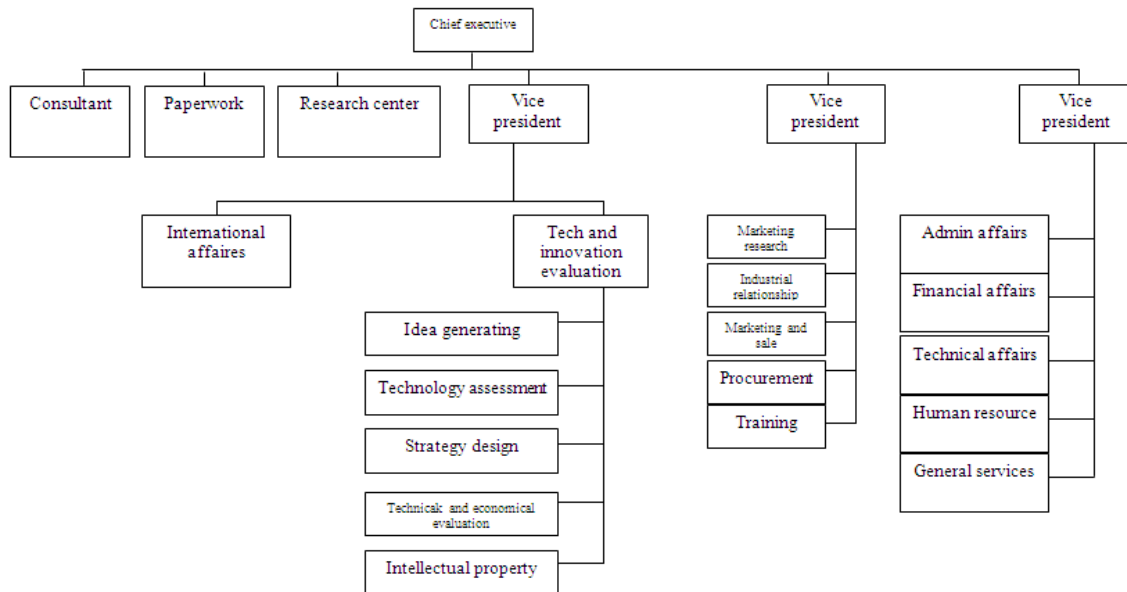


Fig. 5: organizational structure of KIF in past

From the figure 5 it is obvious that this type of organization has high level of formality. Even creativity and innovation has to pass those formalities as well. All the sections are centralized, with defined authorities. This type of structure limits the relationship between the units and avoids close integration of different kind of knowledge. Therefore each section of the organization will follow its own direction and the integrate of the activity is very hard. The result will be lots of technology that has not been considered to be commercialized.

With the respect to what it was described the knowledge intensive organizations have figured out that within this framework of organization it is not possible to create and develop effective and efficient innovation. And in today environment the innovation is vital for their development. Thus they should reform their setting inside the organization.

In the new type of organization, flexibility is a very important criterion. Also the aim of organization has changed as well. They put emphases on commercialization instead of only knowledge creation. In the new structure the ability to figure out the opportunity in the market was a basic activity. Therefore new department by the mean of environmental scanning and analyzing was developed. On the other hand flexibility, decentralization, informality and horizontal relationship between different sections is a new criteria of the organization. Figure 6 indicate the changes that have been made to the structure. In Iran most of the knowledge base organizations are applying this type of organization now days

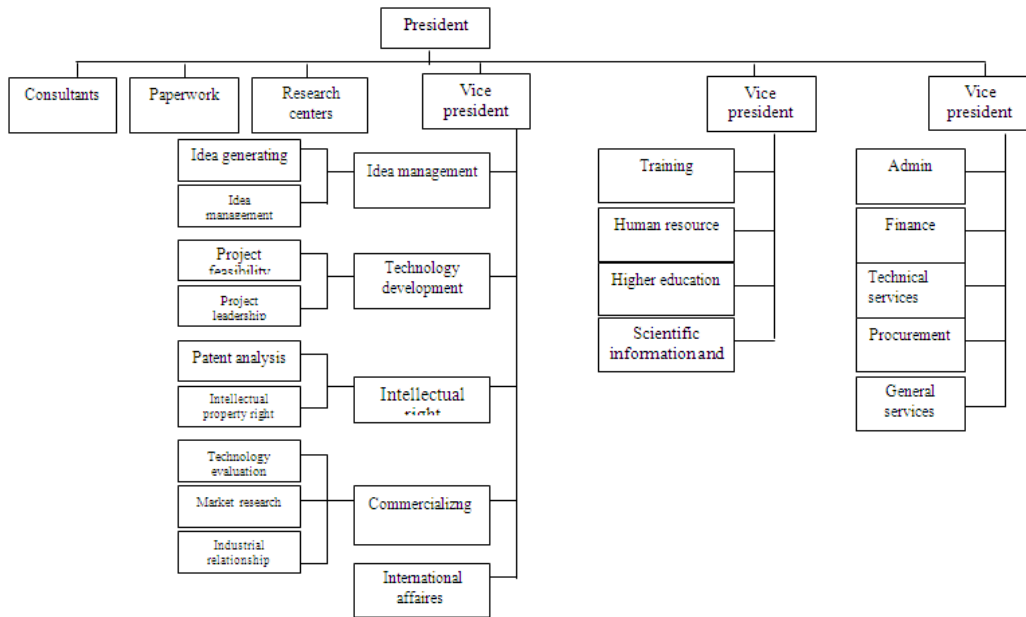


Fig. 6: organizational structure of KIF at present

In this new structure the research centers and marketing sections are decentralized. But the presidents' still wants a definite control over the administrative part of the organization. This structure is more compatible with knowledge creation requirements but the decision making process still takes long time because the information for that is becoming ready with high level of formality. This part of today organization should move toward more flexible structure as the other has done. The new structure which is shown in the figure 7 provides the opportunity for organization to move faster. It should be mentioned that the organization aim is still knowledge commercialization.

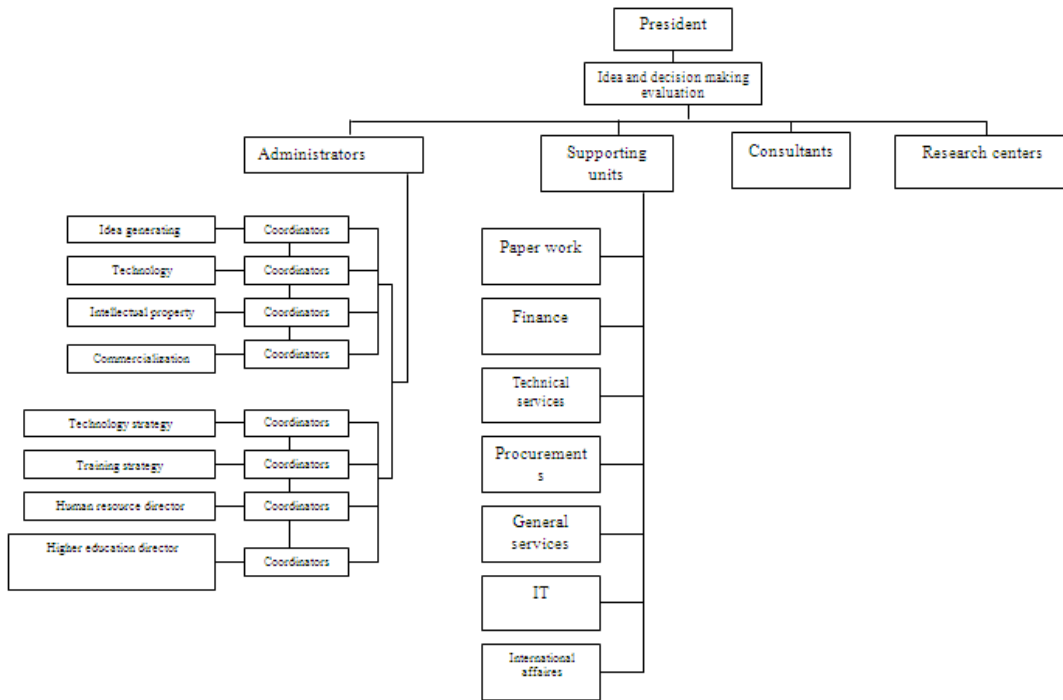


Fig. 7: organizational structure of KIF in future

One of the most important facts in this new structure is the team-based arrangement. But the difference with the previous organizational form is the presence of a committee which evaluates every single proposal to be executed in the organization. The advantage of this section is facilitating the decision-making about the new projects.

The observations and facts from the global activity indicate that knowledge-based companies can not become very large organizations with horizontal diversification. This fact will drive the firms to the point that they have to spin off more knowledge in order to create new affiliated and dependent organizations.

Figure 8 indicates the vision structure of this kind of firm with a unique department which decides for spin-off strategy.

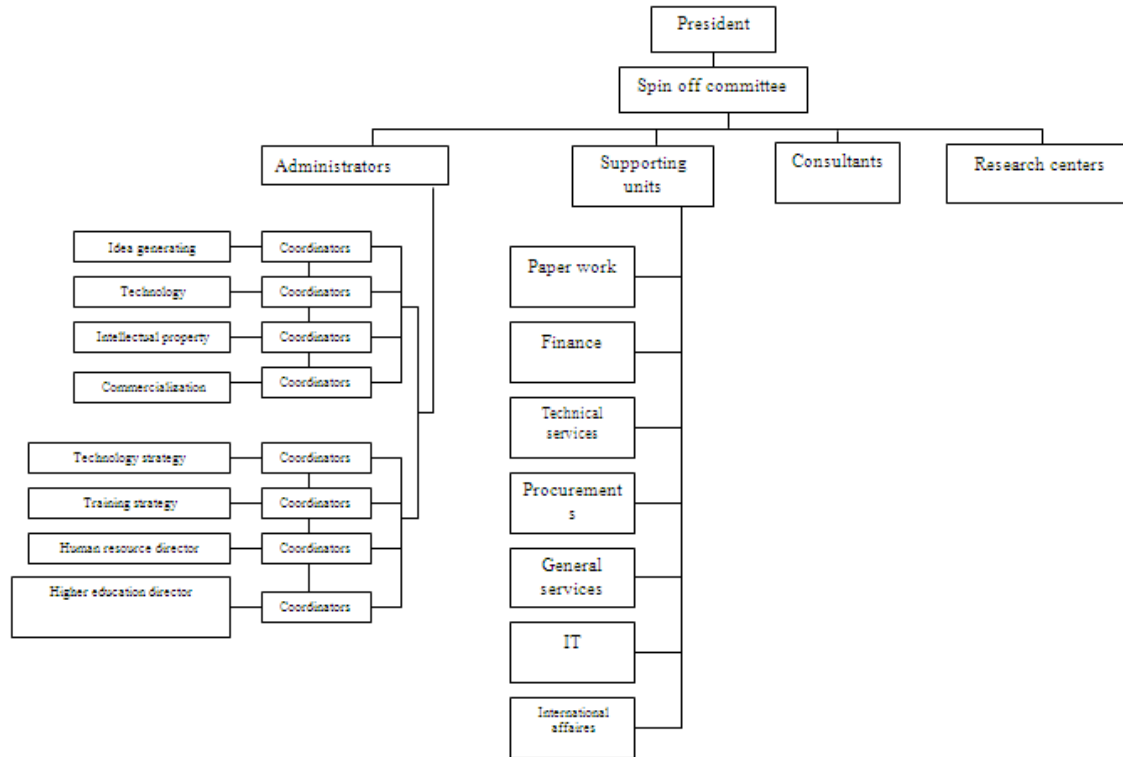


Fig. 8: organizational structure of KIF based on vision

Conclusion:

The concept of knowledge base economy was selected for the present century. The new arena of business environment has started with lots of changes and challenges.

Organization has to manipulate and modify themselves with the changes. The new arena is time for organization to implement knowledge into their organization. The type of companies that has responsibility of knowledge creation is called knowledge based firms.

After business revolution in these years the purpose of knowledge base organization has changed into the knowledge commercialization.

By changing the organizational goals therefore the structure should change as well. To trace the changes of the environments and implement them into the organizational structures manager’s uses different tools one of the useful instruments is road map. In the figure 9 the usage of road map in organizational structure design is shown.

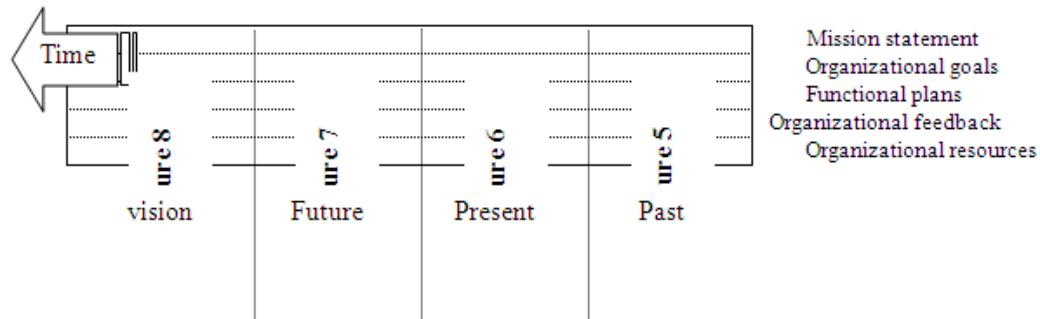


Fig. 9: Road map of organizational structure in knowledge intensive firms

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