



“Prospect of Implementing Organization Flexibility in Egyptian Construction Firms”

Mohamed Moustafa Abou El Kheir.¹, Hesham Ahmed Basiouny.²,
Hossam El Din Hosny Mohamed.³

1. Department of Construction and Building Engineering, Arab Academy for Science Technology and Maritime Transport, Alexandria, Egypt.
2. Department of Construction and Building Engineering, Arab Academy for Science Technology and Maritime Transport, Alexandria, Egypt.
3. Department of Construction Engineering and Utilities, Zagazig University, Egypt.

المخلص:

المرونة هي الطريقة الرئيسية التي تدفع الشركات إلى البقاء على قيد الحياة في بيئة مضطربة، ويمكن أن تؤدي الشركات إلى استخدام مواردها وقدراتها على الاستجابة أو التكيف مع التغيرات البيئية في الوقت المناسب. الهدف من هذا البحث هو إمكانية تنفيذ مرونة المؤسسة في شركات البناء المصرية لإيجاد وتقييم العوامل التي تؤثر على إدارة المرونة التنظيمية لشركات البناء في مصر، لأن الشركات الأكثر مرونة هي أكثر عرضة للبقاء على قيد الحياة والازدهار من أقل مرونة الشركات. يجب اعتماد أسلوب بحثي مع مقابلات استكشافية ومسح على مستوى الصناعة بعد عملية التنفيذ. وأظهرت النتائج أن المرونة التنظيمية لها مفهوم متعدد الأبعاد، ويمكن تصنيفها في ثلاثة أبعاد: المرونة التشغيلية والمرونة التكتيكية والمرونة الاستراتيجية.

Abstract: Flexibility is the major way that drive the firms to survive in the turbulent environment and can lead the firms to utilize its resources and capabilities to respond or adapt to environmental changes in a timely. The aim of this research is the prospect of implementing organization flexibility in Egyptian construction firms to finding and evaluate the factors that affect the organizational flexibility management to construction firms in Egypt, because firms that are more flexible are more likely to survive and prosper than less flexible firms are. A research method with exploratory interviews and an industrywide survey must be adopted after implementation process. The results showed that organizational flexibility have multidimensional concept, it can should be categorized in three dimension: operational flexibility, tactical flexibility, and strategic flexibility.

Keywords: Organization flexibility, Construction firms, Operational flexibility, Strategic flexibility, Tactical flexibility.

1. Introduction

The complex and dynamic environment, signifying uncertainty in decision-making, is a representative type of the environment in the construction industry (Shirazi et al., 1996). Betts and Ofori (1994:205) observed that the environmental dynamism in construction “is growing at an increasing fast pace and is offering proportionately greater strategic opportunities with time, while posing significant threats”. In this study, environmental dynamism refers to the rate of change, absence of pattern and unpredictability of the environment (Dess and Beard, 1984). As a result, contractors have to effectively deal with changes in their business environment in order to maintain their existence.

In general, the changes in the construction industry can be classified into five categories, namely: (i) construction demand (Male, 1991a; Runeson, 2000); (ii) intensity of

competition (Cox and Thompson, 1997; Cheng et al., 2000); (iii) procurement trend (Cartlidge, 2004; Royal Institution of Chartered Surveyors, 2004); (iv) clients' performance criteria of construction services (Winch, 2000; Cartlidge, 2004); and (v) technological possibilities (Gann, 1994; Gruneberg, 2009).

Lansley et al. (1979), who in their pioneering study on flexibility and efficiency in construction, asserted that flexibility and diversity are needed to provide favorable conditions during initial stages of firms' creative process in exploring new strategies for their continued existence. They found that flexible contractors in the United Kingdom (UK), who were successful in adapting to changing demands of the environment, exhibited a different set of characteristics compared with their less successful counterparts.

2. Research problem

In construction research, studies have examined organizational flexibility, but not much research has empirically investigated the degree to which individual organizational attributes or practices affect organizational flexibility.

Some studies (Handa and Ads 1996; Dikmen et al. 2005) have applied flexibility as an independent variable to predict organizational flexibility. However, the focus of studies has not examined and identified the type of organizational attributes that contributes to flexibility. Among the studies that have considered flexibility as a dependent variable or desired outcome (Walker and Loosemore 2003), have analyzed flexibility by using data related to projects, rather than data related to construction organization.

Organizational Flexibility can affects the performance of any construction company, so identify the main factors that affect the organization flexibility and evaluation of the flexibility is a major step in the performance improvement process. According to the available literature, there is no studies that best reflect organization flexibility of the construction company in Egypt and no tools exist to enable construction firms to assess their level of organizational flexibility, so it is expected that there is a gap in knowledge in such research area in Egypt.

3. Literature Review

Flexibility is defined as an attribute of a system technology for coping with the variety of its environmental needs. Flexibility represents a complex and multidimensional concept, difficult to define or summarize, with a significant approach in several papers (Dreyer and Gronhag, 2004).

Thus, Eardley et al. (1997) appreciate that flexibility reflects the capacity to quickly change direction and deviate form a predetermined course of actions, while Evans (1991) defines it as being "the capacity to do something different from what initially planned". Most definitions in studies and researches gravitate around the idea that flexibility is an organization's capability to change and react (Golden and Powel, 2000). For the fact that change could be approached in two manners as initiation and as reaction – Johnson et al. (2003) limits proactive flexibility from reactive flexibility. Proactive flexibility reflects an organization capacity to anticipate change of future environment, while reactive flexibility indicates a capacity to quickly and efficiently respond to changes to present environment, as soon as they become evident (Celuch et al., 2007).

The flexibility of planning process is a critical factor for adapting strategic plans to competitive environment in a permanent change (Dibrell et al., 2007). Bhalla et al. (2006) appreciates that, without managerial actions to ensure survival by flexibility and adjustment, rigidity of planning process may cause, on medium and long term, organization malfunctions. Therefore, flexibility is one of the essential attributes of strategic planning. Flexible strategies have a greater importance on competitive environment described by a high level of uncertainty (Volberda, 1996; Hitt et al., 1998).

The classic definition by Aaker and Mascarenhas holds that flexibility represents the “ability of the organization to adapt to substantial, uncertain and fast occurring (relative to the required reaction time) environmental changes that have a meaningful impact on the organization’s performance”. Aaker and Mascarenhas (1984). Clark (1996) defines strategically flexible companies as ones that are able to shift their operational activities into a new line of business, even if it largely departs from the previous one.

Gray and Olynk (2011) note that the ability to cope with unpredictable environment and strategic flexibility requires ambiguity management skills, understanding of paradoxes, broadening the perspectives of current analyses and focus on activities that facilitate fast reaction to changes. It must also be noted that flexibility, despite being an essential aspect of company strategy, is by no means the only dimension. As emphasized by Evans (1991), another important quality in this context is adaptability, meant here not only as a singular and permanent adjustment to a newly transformed environment, but also as an implied ability to make successive and temporary accommodations through interactions with environment.

Pathak, (2005) adds to the list by postulating other elements, such as agility, versatility and resilience, which constitute the organization’s flexibility and safeguard its long-term development. Golden and Powell, (2000) note that flexibility is defined in a number of ways, the approaches to flexibility measurement are also varied. Professional literature postulates efficiency, responsiveness, versatility and robustness as potential gauges to be used for that purpose. Evans (1991) had flexibility composed of a number of “senses” including adaptability, agility, corrigibility, elasticity, hedging, liquidity, malleability, plasticity, resilience, robustness, and versatility. He argued that each of these organizational flexibilities would be in response to some form of external environmental uncertainties or pressures. The type of reaction could be “offensive” or “defensive” and he categorized these senses into those categories.

F. Suarez, M. Cusumano, and C. Fine, (1995) note that no accord among researchers as to the correlations between flexibility and productivity. While some studies show the correlation to be negative, others suggest a positive relation between those two notions. In addition, B. Dreyer and K. Grønhaug, (2004) argue that it is the correlation between flexibility and productivity that helps companies achieve long-term competitive advantage, even in highly volatile and unstable lines of business.

Past construction, management research (Lansley et al. 1979; Walker and Loosemore 2003) has generally regarded flexibility as a uni dimensional concept. Organizational flexibility has been used to assess projects (Walker and Shen 2002; Walker and Loosemore 2003) and organizational performance (Handa and Adas 1996; Dikmen et al. 2005). Manufacturing studies have generally considered flexibility as an integrative multidimensional concept consisting of different dimensions and a range of flexibility types under each dimension (Volberda 1998; Oke 2005).

4. Research aim and objectives

The major aims of this research are to attempt to define organization flexibility in construction, to identify its major drivers, and to construct a solution that can be used as a decision support tool by corporate managers in the diagnosis and solution of organizational problems in Egypt.

The major objectives of this study can be highlighted as follows:

1. Defining the determinants of organization flexibility to make organization flexibility a measurable concept.
2. Identifying Problems that can affect the organization flexibility of the construction firms in Egypt, consider the political and economic situation of the country, legal restriction, and the environmental, technological, and sociocultural challenges.

5. Organization Flexibility importance in Egypt

Strategic flexibility present a major importance in Egyptian organizational practice, especially in the context of contemporary dynamism, manifested economically, technically, technologically, managerially and so on. The strategy is “the most representative product” of an organization for it defines long termed orientation. The moment in which a firm launches a new strategy must be prepared thoroughly, similar to launching a new product on market. Essential instrument of strategic management, strategic planning stands in the ensemble of activities by which the organizations is prepared for implementation of new strategy with the objective of gaining more favourable competitive position compared to competition firms (Ionescu, 2004). On strategic level, flexibility supposes permanent improvement of process and activities, materialized in obtaining sustainable competitive advantages (Matthyssens et al., 2005).

Published studies and researches emphasize the importance of flexibility, as a natural source to obtain competitive advantage and also as a management instrument for rapid change situations which come from organization environment (Spicer and Sadler-Smith, 2006; Alpkhan et al., 2007). Organizational learning has an essential role in obtaining flexibility, in substantiation competitive strategies and establishing organization performances (Santos-Vijande, Lopez-Sanchez and Trespalacios, 2012).

Flexibility management as a systematic approach is not a new concept. Sager (1990) found several examples of flexibility as one approach to prepare for the effects of uncertainty in planning. However, Sager also points out that flexibility is an important term very often used by planners but rarely scrutinized theoretically.

In construction research, studies have examined organizational flexibility, but not much research has empirically investigated the degree to which individual organizational attributes or practices affect organizational flexibility. Some studies (Handa and Adas 1996; Dikmen et al. 2005) have applied flexibility as an independent variable to predict organizational effectiveness. However, the focus of studies has not examined and identified the type of organizational attributes that contribute to flexibility. Among the studies that have considered flexibility as a dependent variable or desired outcome, many (e.g., Walker and Loosemore 2003; Gil et al. 2005) have analyzed flexibility by using data related to projects, rather than data related to construction organizations.

(Benson et al 2012) show us an example; the managers should learn about the success or failure of their competitors so that they could respond to changes effectively and avoid any mistake that could jeopardize their business.

This ultimately forms a loop in which contractors engage in a continuous process of competence building by developing the right kind of and range of resources and coordination flexibilities, coupled with competence leveraging that effectively utilizes the current resource and coordination flexibilities. This provides contractors with a higher level of organizational flexibility potential and therefore enables them to engage more actively in determining their continued existence.

The scope of this research is focus on implementing the organization flexibility in Egyptian construction firms. Egyptian construction industry was chosen because no study has been evaluate the flexibility behavior of Egyptian contractors or we can say that the Egyptian market do not know the meaning of flexibility and their dynamic effects of the environment.

6. Organization flexibility evaluation

Generic factors will enable the achievement of all the flexibility types. However, the level of the impact of each of these factors on system flexibility may vary and may be dependent on the industry or the plant concerned.

Deepening flexibility issues, renowned professor Henk Volberda from Erasmus University in Rotterdam differentiates four types of flexibility: conservatory, operational, structural and strategic.

Conservatory flexibility resides in static procedures of organizational performances optimization while the results remain constant in time. Operational flexibility most frequent is an ensemble of abilities, routine, which mainly follows increase of activity volume. Structural flexibility aims for changes on organizational and decisional level, in order to adapt to environment evolution, while Strategic flexibility generates modifications within inside objectives and activities, manifesting especially when novel changes upon the environment. Strategic flexibility presents a double dimension: quality and novelty (Volberda, 1996).

On structural organization perspective, organization flexibility aims to following main directions: specialization of employees' knowledge horizon in order to fulfil objectives; the existence of a permanent communication between organizational subdivisions, as well as inside them; moving authority centre towards the area which carries complex tasks; constantly redefining tasks, competencies and responsibilities by adjustment and interaction; supporting human resources in their approach to reaching specific job objectives, by sending useful information and consultancy.

Other authors (Moldoveanu and Dobrin, 2007) consider that flexibility is a function of several variables arising from the organization's functional approach, namely: flexible manufacturing, commercial flexibility, flexibility, information, research and development flexibility, organizational flexibility, human resource flexibility, geographical flexibility. Financial flexibility may be a restriction in achieving manufacturing flexibility, which in turn can stimulate and complement the commercial flexibility. Managers are tasked to create and maintain a balance between the seven types of operational flexibility. Therefore, organizational flexibility, particularly strategic one, directs operation of the organization, conditioning decisively its long-term

performance. (Nadkarni and Naraynan, 2007). In this context, the area of management literature increasingly recognizes more flexibility issues in general and the strategic, in particular, as an important area of research (Nadkarni and Hermann, 2010).

Supply chain management extends the concept of functional integration beyond the Firm to all firms in the supply chain (Ellram and Cooper, 1990). Supply chain management seeks to enhance competitive performance by closely integrating the internal functions within a company and effectively linking them with the external operations of suppliers and channel members (Vickery et al., 1999). Jack and Raturi (2002) suggest that effective supply chain management allows a firm to efficiently use its network of suppliers and vendors to respond to uncertainties in demand. However, in their investigation of the sources of volume flexibility, they find no significant relationship between external sources of volume flexibility and a firm's volume flexibility capability cited by Oke, A. (2005).

Grigore (2007) approach that Supply chain flexibility takes into account two main aspects: Process flexibility of each supply chain plant, concerning the number of product types that can be manufactured in each production site (supplier or assembler). Logistics flexibility, related to the different logistics strategies, which can be adopted either to release a product to a market or to procure a component from a supplier.

The flexibility dimensions are: Product flexibility, defined in a supply chain framework as the ability to handle difficult, non-standard orders, to meet special customer specifications, and to produce products characterized by numerous features, options, sizes, and colors. Volume flexibility, defined as the ability to effectively increase or decrease aggregate production in response to customer demand). Volume flexibility directly affects supply chain's performance by preventing out-of-stock conditions for products that are suddenly in high demand or by preventing high inventory levels. Routing flexibility- is the capability of processing a part through varying routes by using alternative machines, flexible material handling, and flexible transporting network; this flexibility reduces the negative impact of environmental uncertainty and unforeseen inefficiencies in the production process. Delivery flexibility is the company's capability to adapt lead times to the customer requirements; an example of high delivery flexibility is JIT, when suppliers deliver the products to the customer at the right quantity, place and time. Trans-shipment flexibility involves movement of stock between locations at the same echelon level where physical distances between the demand locations and the supply locations are small. Postponement flexibility implies the capability of keeping products in their generic form as long as possible, in order to incorporate the customer's product requirements in later stages. Sourcing flexibility is related to the company's ability to find another supplier for each specific component or raw material. A flexibility dimension suitable to many industries is responsiveness to target markets (response to market flexibility). This flexibility captures the overall ability of the firm to respond to the needs of its target markets. Launch flexibility the ability to rapidly introduce many new products and product varieties is a strategically important flexibility that requires the integration of numerous value activities across the entire supply chain. Access flexibility – the ability to provide widespread or intensive distribution coverage. This flexibility is facilitated by the close coordination of downstream activities in the supply chain whether performed internally or externally to the firm.

7. Previous works:

IONESCU et al, (2012) appreciate that, strategic variables of flexible organization are the complex of resources, organizational culture, competitive capacity and competitive position. From functional perspective, organizational resources complex includes human resources, research-development resources, commercial resources, technical and technological resources, as well as financial resources. To these categories, it is added knowledge, which tends to become more and more important within the set of organizational resources.

Sanchez & Perez (2005) provide in depth classification of flexibility based on different aspects such as hierarchical aspects (flexibility at shop, plant or company level), functional aspects (flexibility in operations, marketing, logistics), strategic aspects (centered on the strategic relevance of flexibility), measurement aspects (focused on global flexibility measures vs context specific ones), object of change (flexibility of product, mix, volume) and time horizon aspects (long term vs short terms flexibility).

Koskela (2000) describes how production principles such as just-in-time has been adopted in a theoretical framework aimed at the construction industry under the term lean construction. In this framework, the term “last responsive moment” is used to achieve flexibility in projects (Ballard & Howell, 2003). According to Ballard & Howell (2003), the last responsive moment means that decisions must be made within the lead-time for realizing alternatives and that a decision should not be made until it has to be made.

Mandelbaum & Buzacott (1990) uses the number of the remaining alternatives after a decision has been taken as a measure of flexibility. Eikeland (2001) discusses “room for manoeuvring” related to project flexibility. He relates “room for manoeuvring” to the internal uncertainty of the project, represented by future yet undetermined internal decisions. According to Eikeland (2001), a decision is within the room for manoeuvring if it does not violate the consequences of previous decisions.

Kreiner (1995) points out that the traditional focus on stability in project management becomes challenged under uncertainty, which creates what he calls “drifting environments”. A number of scholars, including Mintzberg (1994) and Bettis & Hitt (1995), argue that flexibility is necessary in order to face the changes, uncertainty and turbulence in the business environment.

The real options paradigm (for example Amram & Kulatlaka, 1999) illustrates that uncertainty can increase the owner’s value of a project, as long as flexibility is preserved and resources are not irreversibly committed.

Miller & Lessard (2001) lists "late locking" as a key success criterion for large engineering projects, along with an exploring, iterative front-end process. Hall (1980) suggests a risk-avoiding strategy, based on minimal commitments at each stage where decisions are necessary. He argues for an incremental or adaptive approach, rather than creating new projects. He suggests enlargements and adaptation of existing projects rather than building new ones, whenever possible.

Olsson N (2004) Note that flexibility discussed is not seen as an alternative to strategic management, but as a means to help realizing a strategy, in the way that Samset (1998) argues that successful projects are characterized by a distinct strategy in combination with sufficient tactical flexibility.

Olsson N (2004) appreciate that flexibility is primarily useful to improve effectiveness of projects rather than efficiency. The arguments in favor of flexibility emphasize the possibility for increased effectiveness while the arguments against highlight the problem of reduced efficiency. Flexibility is often seen as a threat to delivering the project on time and within budget. In such a perspective, a project needs to be clearly defined in the front-end phase and executed according to the plans with as few adjustments or remaining decisions as possible, in order to maximize efficiency. On the other hand, flexibility is also seen as help to achieve the project's purpose. A project with sufficient flexibility to utilize opportunities to increase the value for owners and users might in the end prove to be more effective.

Several research papers address the issue of flexibility and its relevance to the firm's performance. There are several authors that prove the existence of the relationship between flexibility and the performance by empirical studies as well as theoretical research where researchers have the similar argument that flexibility dimensions have direct effects on performance (financial - net profit, sales growth; and non-financial – lead time and customer satisfaction) (Fantazy et al., 2009).

Vickery et al. (1999) conduct the empirical study on the relationships between different dimensions of the supply chain flexibility and overall firm performance. The research proves that flexibility is related to all measures of business performance and more than that, it is highly related to market share and its growth. What is important is that each of the supply chain flexibilities is related to at least one measure of total firm performance.

The study of Lao et al. (2010) examine the relationship between supply flexibility and supply management, and extended the concept of supply flexibility in terms of supplier flexibility and supply network flexibility on relevant supply chain performance measures. The authors conclude on the important role of supply network flexibility in supply chain performance improvement. In order to improve the supply chain performance of the company, the complexity of products and services should be considered. Thus, supply network should be designed in accordance with dynamic operations and market changes.

Radomska (2015) verify the relations between individual areas of the strategic management process distinguished by the feature of flexibility. No relations between strategy flexibility and the achieved financial results or the readiness to modify the activity profile were detected. There is, however, a relation between flexibility and irregularity of the works on the strategy and the forming allocation of roles when their performance and the level of employee engagement in conceptual works and their decision-making freedom regarding the implementation of the developed strategies.

Based on the literature review, organizational flexibility (Y) is a multidimensional dependent variable that consists of (1) operational flexibility (YOF); (2) tactical flexibility (YTF); and (3) strategic flexibility (YSF). Lim et al. (2007) in a previous study have further operationalized these dimensions. Operational flexibility (YOF) is operationalized into modification flexibility (Koste and Malhotra 1999); financial flexibility (Llorens et al. 2005); material flexibility (Yadav et al. 2000); process flexibility (Browne et al. 1984); and spanning flexibility (Zhang et al. 2003). Tactical flexibility (YTF) is operationalized by numerical flexibility (Yadav et al. 2000); functional flexibility (Yadav et al. 2000); expansion flexibility (Sethi and Sethi 1990); and operation flexibility (Koste and Malhotra 1999). Strategic flexibility (YSF) is

operationalized into volume flexibility (Sethi and Sethi 1990); procurement flexibility (Swafford et al. 2006); product flexibility (Browne et al. 1984); and logistic flexibility (Swafford et al. 2006). Noted By (Benson et al. 2012).

Several construction-related studies have examined the influence of individual organizational attributes toward achieving flexibility. The organizational attributes include:

- (1) Human resource (Lansley et al. 1979).
- (2) Organizational structure and management style (Handa and Adas 1996).
- (3) Information and process technologies (Gil et al. 2005).
- (4) Organizational culture (Walker and Loosemore 2003).

These identified organizational attributes are to some extent similar to those identified in manufacturing-related studies (e.g., Vickery et al. 1999), unless the latter has additionally considered the two factors of supply chain capability and business strategy.

Four perspectives of organizational studies underpin organizational flexibility: the dynamic contingency view of firms (Child 1972); the organizational learning perspective (Cyert and March 1963); the resource-based view of firms (Penrose 1995) and the complex adaptive system perspective (Prigogine and Stengers 1984). In brief, these theories collectively explain how contractors behave, learn, adapt, compete, and evolve in response to changes in the business environment within which they operated for the study period from 1997 to 2007, thereby justifying the sample selection.

From the complex adaptive system perspective, a contractor is seen as a self-organizing system that consists of many interrelated agents evolving and adapting to its environment especially because the Singapore's construction industry underwent 10 years of unprecedented economic volatility. Contractors who survived through this period may have ultimately emerged into a higher performance entity. From the resource-based perspective, the interrelated agents within the self-organizing system refer to the contractors' resources and capabilities that provide the basis for their strategies and the primary source of competitiveness. By learning and understanding the implications of their past actions and surroundings, managers integrate, build, and reconfigure their firms' resources and capabilities into different strategies to adapt and respond flexibly to changes within their business environment.

A large study on organizational flexibility of construction firms was conducted to investigate the multidimensionality of organizational flexibility; the importance weights of flexibility types; the determinants of organizational flexibility; and models to predict organizational flexibility. (Benson et al 2007) reports on the importance weights of flexibility types and models, which were developed to predict organizational flexibility.

8. Discussion of implementation prospect

Flexibility is more valued by the stakeholders that have a responsibility for the overall profitability or societal benefit of a project, compared to those who are only responsible for the cost side of the project. Most authors agree on the value of flexibility in the front-end phase of projects. Flexibility is also generally seen as an advantage in industrial development project (Verganti, 1999). Clark & Fujimoto (1991) and Midler

(1995) illustrate this based on the automotive industry. The benefits of flexibility are easier to visualize and implement in industrial development projects than in more standardized civil engineering projects.

Bernardes and Hanna (2009) Agility requires the skill of anticipating potential opportunities in the environment, thus emphasizing the operating aspects of company functioning. Sanchez, et al (2009) note that flexibility, productivity and quality are often used as basic measures of management effectiveness, also the Egyptian construction industry have a shortage in the use of the management concept in their project, therefore the flexibility is way to activate the management system in our construction firms.

A growing need for organizational flexibility arises from a convergence of the above changes in the construction industry. As a result, construction firms have to gain flexibility in their endeavors to be adaptive and responsive to changes in the business environment within which they operate.

Flexibility may be defined as the ability to change or react with little penalty in time, effort, cost or performance (Upton, 1994). This definition reflects the ability of the company to react to uncertainty in the marketplace rapidly, effectively without significant loss in time, costs and efforts, which leads to the company's performance improvements in terms of operational, financial and organizational aspects.

From the literature review, three dimensions of organizational flexibility (YOF, YTF, and YSF) and 15 flexibility types were identified. In addition, 52 organizational attributes and practices were identified from (Benson et al 2012).

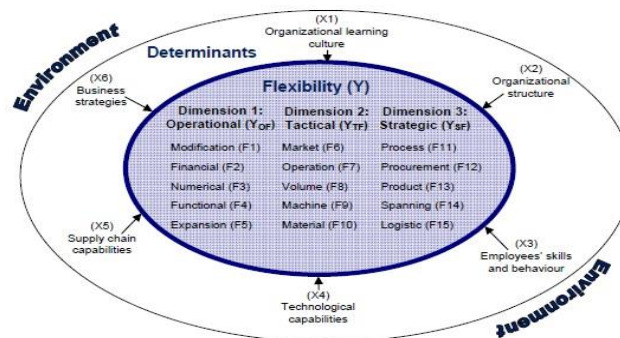


Figure 1 Conceptual framework for organizational flexibility

The conceptual framework of this study was taken by (Benson et al 2012) as the conceptual framework for organizational flexibility in construction businesses. It can be seen that organizational flexibility may comprise three dimensions: (i) operational flexibility (YOF); (ii) tactical flexibility (YTF); and (iii) strategic flexibility (YSF), which could be operationalized into 15 flexibility types: (i) modification flexibility (F1); (ii) financial flexibility (F2); (iii) numerical flexibility (F3); (iv) functional flexibility (F4); (v) expansion flexibility (F5); (vi) market flexibility (F6); (vii) operation flexibility (F7); (viii) volume flexibility (F8); (ix) machine flexibility (F9); (x) material flexibility (F10); (xi) process flexibility (F11); (xii) procurement flexibility (F12); (xiii) product flexibility (F13); (xiv) spanning flexibility (F14); and (xv) logistic flexibility (F15). However, it is recognized that some of the flexibility types may not be applicable in the context of the construction industry. (Benson et al. 2012) appreciate that organizational flexibility may apparently be influenced to varying degrees by six

factors: organizational learning culture (X1); organizational structure (X2); employee skills and behavior (X3); technological capabilities (X4); supply chain capabilities (X5); and business strategies (X6).

9. Conclusion

Based on the features of flexibility extracted from previous studies, organizational flexibility is defined in this study as “the ability of an organization to effectively utilize its resources and capabilities to respond or readapt, in a timely and reversible manner to environmental changes, through a continuous learning process”. Based on this definition, the aim of this study is to investigate the organizational flexibility management of construction firms in Egypt from an integrative multi-dimensional perspective.

The need for construction firms to be flexible, via the effective utilization of organizational resources and capabilities for improved responsiveness, is important because of the increasing rate of changes in the business environment within which they operate. Achieving organizational flexibility is also important because it has a significant correlation with a firm’s turnover; therefore, it is very important that the flexibility meaning to be located in the construction market in Egypt.

4. References

- A. GRAY AND N. OLYNK, “MAKING DECISIONS THAT PROVIDE STRATEGIC FLEXIBILITY,” *AGRI MARKETING*, PP. 21, JUNE 2011.
- A. M. SANCHEZ, J. M. V. JIMENEZ, M. P. PEREZ, AND P. D. L. CARNICER, “INNOVATION AND LABOR FLEXIBILITY, A SPANISH STUDY OF DIFFERENCES ACROSS INDUSTRIES AND TYPE OF INNOVATION,” *INTERNATIONAL JOURNAL OF MANPOWER*, VOL. 30, NO. 4, PP. 360-376, 2009.
- A. TONI AND S. TONCHIA, “DEFINITIONS BETWEEN OPERATIONAL AND STRATEGIC FLEXIBILITIES,” *THE INTERNATIONAL JOURNAL OF MANAGEMENT SCIENCE*, NO. 33, PP. 538, 2005.
- ALPKAN, L., YILMAZ, C. AND KAYA, N. (2007), “MARKET ORIENTATION AND PLANNING FLEXIBILITY IN SMES”, *INTERNATIONAL SMALL BUSINESS JOURNAL*, VOL.25, NO.2, P.152-172.
- AMRAM, M. & KULATLAKA, N. 1999. *REAL OPTIONS: MANAGING STRATEGIC INVESTMENT IN AN UNCERTAIN WORLD*. FINANCIAL MANAGEMENT ASSOCIATION SURVEY AND SYNTHESIS SERIES, HARVARD BUSINESS SCHOOL PRESS, BOSTON.
- AMRAM, M., KULATLAKA, N., 1999. *REAL OPTIONS: MANAGING STRATEGIC INVESTMENT IN AN UNCERTAIN WORLD*, FINANCIAL MANAGEMENT ASSOCIATION SURVEY AND SYNTHESIS SERIES, HARVARD BUSINESS SCHOOL PRESS, BOSTON.
- B. DREYER AND K. GRØNHAUG, (2004) “UNCERTAINTY, FLEXIBILITY AND SUSTAINED COMPETITIVE ADVANTAGE,” *JOURNAL OF BUSINESS RESEARCH*, NO. 57, PP. 492.
- BALLARD, G., HOWELL, G.A., 2003. *LEAN PROJECT MANAGEMENT*, *BUILDING RESEARCH & INFORMATION*, VOL 31, ISSUE 2, PP 119-133.
- BETTIS, R. A., HITT, M. A., 1995. *THE NEW COMPETITIVE LANDSCAPE*, *STRATEGIC MANAGEMENT JOURNAL*, VOL.16, 7-19.
- BHALLA, A., HENDERSON, S. AND WATKINS, D. (2006), “A MULTIPARADIGMATIC PERSPECTIVE OF STRATEGY”, *INTERNATIONAL SMALL BUSINESS JOURNAL*, VOL.24, No.5, P.515–537.

- BRENNAN, M.L. & TRIGEORGIS, L. 2000. PROJECT FLEXIBILITY, AGENCY, AND COMPETITION: NEW DEVELOPMENTS IN THE THEORY AND APPLICATION OF REAL OPTIONS. OXFORD UNIVERSITY PRESS, NEW YORK.
- CELUCH, K., MURPHY, G. B., AND CALLAWAY, S. K. (2007), "MORE BANG FOR YOUR BUCK: SMALL FIRMS AND THE IMPORTANCE OF ALIGNED INFORMATION TECHNOLOGY CAPABILITIES AND STRATEGIC FLEXIBILITY", JOURNAL OF HIGH TECHNOLOGY MANAGEMENT RESEARCH, VOL.17, NO.2, P.187-197.
- CLARK, K. B., FUJIMOTO, T., 1991. PRODUCT DEVELOPMENT PERFORMANCE: STRATEGY, ORGANIZATION, AND MANAGEMENT IN THE WORLD AUTO INDUSTRY, HARVARD BUSINESS SCHOOL PRESS, BOSTON, MASSACHUSETTS.
- D. AAKER AND B. MASCARENHAS, "THE NEED FOR STRATEGIC FLEXIBILITY," JOURNAL OF BUSINESS STRATEGY, VOL. 5, NO. 2, PP. 74, 1984.
- D. UPTON, "THE MANAGEMENT OF MANUFACTURING FLEXIBILITY," CALIFORNIA MANAGEMENT REVIEW, PP. 72-89, 1994.
- DIBRELL, C., DOWN, J. AND BULL, L. (2007), "DYNAMIC STRATEGIC PLANNING: ACHIEVING STRATEGIC FLEXIBILITY THROUGH FORMALIZATION", JOURNAL OF BUSINESS AND MANAGEMENT, 13(1), P.21-35.
- DIKMEN, I., BIRGONUL, M. T., AND KIZILTAS, S. (2005). "PREDICTION OF ORGANIZATIONAL EFFECTIVENESS IN CONSTRUCTION COMPANIES." J. CONSTR. ENG. MANAGE., 131(2), 252-261.
- E. BERNARDES AND M. HANNA, "A THEORETICAL REVIEW OF FLEXIBILITY, AGILITY AND RESPONSIVENESS IN THE OPERATIONS MANAGEMENT LITERATURE, TOWARD A CONCEPTUAL DEFINITION OF CUSTOMER RESPONSIVENESS," INTERNATIONAL JOURNAL OF OPERATIONS AND PRODUCTION MANAGEMENT, VOL. 29, NO. 1, PP. 47, 2009.
- EARDLEY, A., AVISON, D., AND POWELL, P., (1997), "STRATEGIC INFORMATION SYSTEMS: AN ANALYSIS OF DEVELOPMENT TECHNIQUES WHICH SEEK TO INCORPORATE STRATEGIC FLEXIBILITY", JOURNAL OF ORGANIZATIONAL COMPUTING, 7(1), P.57-77.
- ELLRAM, L.M. AND COOPER, M.C. (1990), "SUPPLY CHAIN MANAGEMENT, PARTNERSHIPS, AND THE SUPPLIER-THIRD PARTY RELATIONSHIPS", INTERNATIONAL JOURNAL OF LOGISTICS MANAGEMENT, VOL. 1 NO. 2, PP. 1-10.
- EVANS, J. S. (1991), "STRATEGIC FLEXIBILITY FOR HIGH TECHNOLOGY MANOEUVRES: A CONCEPTUAL FRAMEWORK", JOURNAL OF MANAGEMENT STUDIES, 28(1), P.69-89.
- F. SUAREZ, M. CUSUMANO, AND C. FINE, (1995) "AN EMPIRICAL STUDY OF FLEXIBILITY IN MANUFACTURING SYSTEMS," SLOAN MANAGEMENT REVIEW, NO. 37, PP. 25-32.
- GOLDEN, W. AND POWEL, P. (2000), "TOWARDS A DEFINITION OF FLEXIBILITY: IN SEARCH OF THE HOLYGRAIL?", OMEGA, 28, P.373-384.
- GRIGORE, S 2007. SUPPLY CHAIN FLEXIBILITY, ROMANIAN ECONOMIC AND BUSINESS REVIEW, Vo2.No 1, 66-70.
- HALL, P., 1980. GREAT PLANNING DISASTERS, WEIDENFELD AND NICOLSON, LONDON.
- HANDA, V., AND ADAS, A. (1996). "PREDICTING THE LEVEL OF ORGANIZATIONAL EFFECTIVENESS: A METHODOLOGY FOR THE CONSTRUCTION FIRM." CONSTR. MANAGE. ECON., 14(4), 341-352.
- IONESCU, V.C., CORNESCU, V., & DRUICĂ, E. (2012). FLEXIBLE ORGANIZATION. GLOBAL BUSINESS AND MANAGEMENT RESEARCH: AN INTERNATIONAL JOURNAL, 4(3/4), 277-285.
- J. EVANS, "STRATEGIC FLEXIBILITY FOR TECHNOLOGY MANOEUVRES: A CONCEPTUAL FRAMEWORK," JOURNAL OF MANAGEMENT STUDIES, VOL. 28, NO. 1, PP. 73, 1991.

JOHNSON, J. L., LEE, R. P., SAINI, A. AND GROHMANN,. B. (2003), “MARKET-FOCUSED STRATEGIC FLEXIBILITY: CONCEPTUAL ADVANCES AND AN INTEGRATIVE MODEL”, JOURNAL OF THE ACADEMY OF MARKETING SCIENCE, 31(1), p.74-89.

K. CLARK, “COMPETING THROUGH MANUFACTURING AND THE NEW MANUFACTURING PARADIGM: IS MANUFACTURING STRATEGY PASSÉ,” PRODUCTION AND OPERATIONS MANAGEMENT, VOL. 5, NO. 1, PP. 42-58, 1996.

KOERCKEL, A., BALLARD, G. & ESPAÑA, F. 2005. CHANNEL TUNNEL RAIL LINK – A LEAN CONSTRUCTION IMPLEMENTATION CASE STUDY. ASQ WORLD CONFERENCE ON QUALITY AND IMPROVEMENT PROCEEDINGS 59, 111–120.