

## **The Influence of Strategic Flexibility on the Achievement of Strategic Objectives: an Empirical Study on the Jordanian Manufacturing Companies**

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### **ABSTRACT**

This study aimed at investigating the influence of strategic flexibility dimensions (market flexibility, new product flexibility, and expansion flexibility) on the achievement of strategic objectives. To address this objective, a cross-sectional survey employing a questionnaire method of data collection was adopted. General Directors, Human Resource Managers, Operations or Production Managers, Finance Managers, and Marketing Managers in the Jordanian Manufacturing Companies classified in Amman Stock Exchange Market were targeted by this study. A total of 225 usable responses were received representing a response rate of 62.5%. For the purpose of data analysis, the research utilized descriptive and advanced statistics using multiple regression analysis. The results of data analysis indicated significant impact of strategic flexibility dimensions (market flexibility, new product flexibility, and expansion flexibility) on the achievement of strategic objectives. The study raises some implications for managers and consultants such as encouraging them to use the several dimensions of strategic flexibility in planning, setting, and achieving the strategic objectives. The study also proposes several directions for future research such as conducting more empirical studies about: the role of the intervening variables – i.e. company size, organizational level, industry type – on the relationship between strategic flexibility and strategic objectives.

**Keywords:** Flexibility, New product flexibility, Expansion flexibility, Strategic objectives, Operations strategy.

### **INTRODUCTION**

Flexibility plays a major role in planning operations strategy, in that it gives an organization the ability to introduce new products, adjust capacity rapidly, and customize products. It also enables organizations to respond effectively to changing circumstances, particularly when dealing with the turbulent environment which is characterized by rapid changes such as short and uncertain product life cycles, innovative process technologies, and customized products. In addition, flexibility is a main component of operations strategy, that is, it is a quick response to change production volume, change product mix, customize product and introduce new products. It is a strategic weapon that gives organizations the ability to respond effectively to

changing circumstances (Mandelbaum, 1978), and it is a multi-dimensional concept (Sethi and Sethi, 1990) which can be used for coping with different types of uncertainty. Uncertainty emerges from two perspectives: marketing function and manufacturing function (Cheng et al., 1997 and Narian et al., 2000).

#### **Research Questions**

The present study is concerned with answering the following questions:

1. To what extent do Jordanian manufacturing companies rely on strategic flexibility as a competitive priority that should be considered when setting and planning their strategic objectives?
2. To what extent do the following dimensions of strategic flexibility (market flexibility, expansion flexibility, and new product flexibility) positively affect the achievement of strategic objectives in the Jordanian manufacturing companies?

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### Research Objectives

Considering the research questions mentioned above, we can summarize the research objectives as follows:

1. To determine the extent to which Jordanian manufacturing companies deal with the dimensions of strategic flexibility when planning their strategic objectives.
2. To examine the influence of the following dimensions of strategic flexibility (market flexibility, expansion flexibility, and new product flexibility) on the achievement of strategic objectives in the Jordanian manufacturing companies.
3. To provide a better understanding for the link between strategic flexibility and strategic objectives.

### Theoretical Framework and Previous Studies Flexibility

Flexibility is known to be a complex process since there is no full agreement about its concept and definition. For this reason, Sethi and Sethi (1990) considered it as a complex multidimensional concept, which is hard to capture. Furthermore, Upton (1994) pointed out that flexibility has been an elusive quality in manufacturing and operations. The term is used for many purposes, each of which characterizes a different quality or capability of a system. Therefore, the variation in classifications of flexibility refers to its different dimensions, functions and uses, since each dimension of flexibility has a main job to do (Awwad, 2004).

Mandelbaum (1978) classified flexibility into two forms. *The first* is action flexibility (the capacity for taking new action to meet new circumstances). *The second* is state flexibility (the capacity to continue functioning effectively despite changes in the environment). Slack (1987) differentiated between range and response flexibility. Range flexibility is the total envelope of capability or range of states which the production system or resource is capable of achieving, whereas response flexibility, is the ease (in terms of cost, time, or both) with which changes can be made within the capability envelope. Sethi and Sethi (1990) named eleven types of flexibility grouped into three categories: *Basic flexibilities* (machine, material handling,

operation); *system flexibilities* (process, routing, product, volume, expansion); and *aggregate flexibilities* (program, production, market).

More dimensions of flexibility are defined, identified, and classified in the work presented by Narasimhan and Das (2000). They reviewed the literature on flexibility and supported the idea that flexibility is a multi-dimensional concept. They divided flexibility into three levels, each level has its dimensions as follows:

1. *Operational flexibilities (Machine /shop level): This level consists of the following dimensions:*

- Equipment flexibility: the ability of a machine to switch among different types of operations without prohibitive effort.
- Material flexibility: the ability of equipment to handle variations in key dimensional and metallurgical properties of inputs.
- Routing flexibility (can derive from equipment flexibility or from duplicated facilities): the ability to produce a part by alternate routes (or paths) through the system. Alternate routes may use different machines, different operations, and different sequences of operations (Kara et al., 2002).
- Material handling system (can support routing flexibility): the ability of a materials handling system to move material through the plant effectively.
- Program flexibility: the ability of equipment to run unattended for long periods of time.

2. *Tactical flexibilities (Plant level): This level consists of the following dimensions:*

- Mix flexibility: the ability of a manufacturing system to switch between different products in the product mix.
- Volume flexibility: the ability of a manufacturing system to vary aggregate production volume economically.
- Modification flexibility: the ability of the manufacturing process to customize products through minor design modifications.

3. *Strategic flexibilities (Firm level): This level consists of two dimensions:*

- New product flexibility: the ability of the manufacturing system to introduce and manufacture new parts and products.

- Market/ delivery flexibility: the ability of the manufacturing system to respond to or influence market changes.

In summary, the literature review on flexibility characterizes strategic flexibility as a buffer to increased

environmental variability or solely as an adaptive response to environmental uncertainty (Bernardes and Hanna, 2009). However, the researcher has reviewed many empirical works on flexibility which ultimately helped him in developing the model of the present study. Table 1 shows the major finding resulted from previous empirical works related to flexibility.

**Table (1): results of selected empirical studies on flexibility**

<u>Author(s)/ researcher(s)</u>	<b>Finding, results, and conclusions</b>
Gupta and Somers(1996)	<ul style="list-style-type: none"> <li>• Business strategy has direct effects on the adoption of manufacturing flexibility dimensions.</li> <li>• Manufacturing flexibility dimensions have direct effects on an organization's growth (financial) performance.</li> <li>• Business strategy indirectly affects an organization's growth (financial) performance through its effect on manufacturing flexibility dimensions.</li> <li>• Manufacturing flexibility would play a mediating role between business strategy and the organizational performance of firms</li> </ul>
Braglia and Petroni (2000)	<ul style="list-style-type: none"> <li>• Firms look at manufacturing flexibility as an important competitive tool.</li> <li>• Product flexibility is widely acknowledged as an important performance factor in all industries.</li> </ul>
Das (2001)	<ul style="list-style-type: none"> <li>• New product flexibility has a positive influence on new product introduction time, customization, responsiveness, and performance.</li> <li>• Companies competing on innovation and customization should focus on developing new product flexibility, whereas mix flexibility would be important to companies competing on delivery and cost.</li> <li>• Mix flexibility can facilitate the development of modification flexibility. Similarly, modification flexibility can facilitate the development of new product flexibility.</li> </ul>
Zhang et al. (2002)	<ul style="list-style-type: none"> <li>• Volume flexibility and mix flexibility have significant, positive, and direct impacts on customer satisfaction.</li> <li>• Mix flexibility seems to have a greater impact on customer satisfaction than volume flexibility.</li> </ul>
Awwad (2004)	<ul style="list-style-type: none"> <li>• Flexibility has a positive impact on adoption of excessive <i>demand</i> strategies required to deal with changes in the product life cycle.</li> <li>• Flexibility has a positive impact on adoption of excessive <i>capacity</i> strategies required to deal with changes in the product life cycle.</li> </ul>

<b><u>Author(s)/ researcher(s)</u></b>	<b>Finding, results, and conclusions</b>
Zhang et al. (2005)	<ul style="list-style-type: none"> <li>• Strong, positive, and direct relationships were found between flexible logistics competence and capability, and between flexible logistics capability and customer satisfaction.</li> <li>• Physical distribution flexibility and demand management flexibility have significant, positive, and direct impacts on the customer satisfaction.</li> </ul>
Boyle (2006)	<ul style="list-style-type: none"> <li>• Manufacturing flexibility should be implemented using a three-stage approach, labeled: (1) identifying required flexibility (i.e. identifying and justifying the flexibility types, measurements and tools needed to achieve the required manufacturing flexibility) (2) achieving required flexibility (i.e. acquiring and implementing the organizational and technological tools needed to achieve the required manufacturing flexibility) and (3) managing required flexibility (i.e. monitoring and changing the required flexibility types and levels, in light of changing uncertainty and competitive, manufacturing and marketing strategies).</li> </ul>
Jack and Powers (2006)	<ul style="list-style-type: none"> <li>• The desired levels of volume flexibility have a positive impact on organizational capabilities that, in turn, positively influence how internal sources of volume flexibility are leveraged.</li> <li>• Volume flexible has a positive influence on customer-related performance that in turn, positively impacts financial and market share performance.</li> </ul>
Chang et al. (2007)	<ul style="list-style-type: none"> <li>• Autonomy, innovativeness, risk-taking and proactiveness have significant positive effects on new product flexibility.</li> <li>• Autonomy, innovativeness, and competitive aggressiveness improve product mix flexibility.</li> <li>• Innovativeness, proactiveness, and competitive aggressiveness determine volume flexibility.</li> </ul>
Hutchison, and Das (2007)	<ul style="list-style-type: none"> <li>• Manufacturing flexibility can provide a competitive advantage if there is a proper fit between the exogenous variables such as the competitive environment, strategy, organizational attributes, and technology.</li> <li>• There is a link between manufacturing flexibility and firm performance.</li> </ul>
Salvador et al. (2007)	<ul style="list-style-type: none"> <li>• To some extent, volume flexibility and mix flexibility may be achieved synergistically, as initiatives such as component standardization or component-process interface standardization would improve both volume flexibility and mix flexibility.</li> </ul>
Tachizawa and Thomsen (2007)	<ul style="list-style-type: none"> <li>• firms need supply flexibility for a number of important reasons (manufacturing schedule fluctuations, JIT purchasing, manufacturer slack capacity, low level of parts commonality, demand volatility, demand seasonality and forecast accuracy), and that companies increase this type of flexibility by implementing two main strategies: “improved supplier responsiveness” and “flexible sourcing”.</li> <li>• The results also suggest that the supply flexibility strategy selected depends on the type of uncertainty (mix, volume or delivery).</li> </ul>
Boyle and Scherrer-Rathje (2009)	<ul style="list-style-type: none"> <li>• The following best practices ensure manufacturing flexibility: incorporating the role of manufacturing flexibility into the manufacturing strategy; identifying the major potential sources of uncertainty faced by the manufacturing department; and identifying the general capability of the manufacturing department to address these potential sources of uncertainty.</li> <li>• The results also indicate a growing preference to reducing sources of uncertainty, in addition to responding to it, as demonstrated by the use of lean tools and practices.</li> </ul>

<u>Author(s)/ researcher(s)</u>	<b>Finding, results, and conclusions</b>
Braunscheideland Suresh ( 2009)	<ul style="list-style-type: none"> <li>• Internal integration, external integration with key suppliers and customers, and external flexibility are shown to have significant positive impact on the firm’s supply chain agility.</li> <li>• Market and learning orientations are posited to affect the organizational practices of internal integration, external integration with key suppliers and customers, and external flexibility, and eventually impact the firm’s supply chain agility.</li> </ul>
Hallgren and Olhager (2009)	<ul style="list-style-type: none"> <li>• Plants exhibiting high levels of flexibility generally perform better than those showing low levels of flexibility, on all four operational performance measures: cost, conformance quality, on-time delivery, and delivery speed.</li> <li>• The volume flexible plants generally perform better than mix flexible plants, but the difference is only significant for on-time delivery.</li> <li>• Volume flexibility seems to be the key ingredient in high flexibility plants, but for delivery speed it seems to be more important to be both volume and mix flexible, since the high flexibility plants perform significantly better than the plants that are only volume flexible.</li> </ul>
Zhang et al. (2009)	<ul style="list-style-type: none"> <li>• Product concept flexibility enables firms to fully explore various product definitions and ideas. Product prototype flexibility allows firms to gather customers’ feedback and investigate design feasibility. The results indicate that firms with high product concept flexibility are more likely to benefit from prototype flexibility than firms with low product concept flexibility, and that product concept flexibility and product prototype flexibility act independently and additively.</li> </ul>

**Organizational Objectives**

It is clearly known that a strategic plan contains objectives and a statement of the means by which they are to be achieved. In other words, objectives are statements or targets of what management wants to achieve. Therefore, they provide the basis for developing a roadmap for organizational activity as well as guidance for establishing the metrics to measure progress (Ransom and Lober, 1999). Bennet (1999, p. 26) distinguished between objectives and goals and shows that objectives are quantifiable and time-related, but goals general open-ended statements of desired outcomes without quantification or specification of the periods in which they are to be achieved. An objective is a defined, measurable result which is to be achieved within a stated time. Therefore, objectives must be clearly defined, measurable, and have a time scale (Naylor, 1996). Examples of quantifiable objectives are sales and market share increases, rate of returns on investments and capital employed growth of total assets, capacity utilization levels, etc. goals might include:

concern for employee welfare, being the technological leader in the field, quality consciousness, being environmentally friendly, and contributing to the welfare of society as a whole. In summary objectives serve organizations through (Naylor, 1996):

- Providing managers with clear targets which they can work towards.
- Deciding priorities by focusing on the desired ends and results.
- Building commitment through encouraging employees to commit themselves to the ends of the organization.
- Serving as measuring rods against which choices can be made.
- Serving as measuring rods against which performance is appraised.
- Influencing motivation as the clear and achievable objectives can offer a sense of personal achievement to the individual.

However, objective setting is the basis of accountability concept. John and Harding (1989) argued

that the term accountability is that one should be held accountable for the results of one's actions. Therefore, objectives support the principle of accountability in that they represent the desired ends and outcomes in consistency with strategic vision and business mission. Hence, accountable employees must know what is expected, what is being achieved, and they must have the knowledge, authority and means that sufficiently influence the operations for which they are being held accountable (John and Harding, 1989). According to Bennett (1999), objectives can be strategic, tactical, or operational. Examples on strategic objectives include:

- Maximizing the overall rate of return on capital employed within the business;
- Increasing shareholders' earnings per share to a certain level;
- Becoming the market leader in a particular field;
- Reduced the firm's dependence on borrowed capital;
- Improving industrial relations within the enterprise;
- Higher level of customer satisfaction than rivals;
- Higher product quality than rivals;
- Growth in revenue;
- Superior customer service; and
- Wider geographic coverage than rivals.

In the work done by Drago (1998), the author argues that organizations usually struggle for achieving the following objectives (profitability, growth, market share, social responsibility, employee welfare, quality and service, multinational enterprise, research and development, diversification, efficiency, financial stability, resource conservation, management development, and consolidation). The work investigates the link between stakeholder influence and environmental sector volatility on organizational objectives. The general research question addressed is "How important is the stakeholder environment and volatility of various environmental sectors to the establishment of specific organizational objectives?". In

addition, the study provides greater insight into the specific relationships that exist between these aspects of the environment and individual objectives. The study has shown the importance of stakeholder influence and environmental sector volatility on the determination of organizational objectives. Results suggest that both segments of the environment are important contributors to the adoption of objectives. Considering the above argument, it could be stated that corporate goals include profitability, sales and earnings growth, market share, and resource acquisition. Other goals, such as innovation, customer satisfaction, employee productivity, and employee development, are also considered (Ransom and Lober, 1999).

## **RESEARCH METHODOLOGY**

### **Research Model**

After the literature was reviewed, the gaps were identified and the suggested directions for future research in the previous work were considered. For example, Narian et al. (2000) emphasize that the flexibility theory is still in its infancy and there is a need for more empirical investigations to help structure the theory. This research is concerned with investigating the extent to which Jordanian manufacturing companies can benefit from linking strategic flexibility to strategic objectives. Therefore, the rationale for linking strategic flexibility to strategic objectives is the fact that flexible manufacturing systems aim to meet organizational objectives at the lowest rate of cost. In this context, Lim (1987) lists two groups of objectives for flexible manufacturing system:

1. Strategic objectives such as: customer demand, maintaining competitive advantage, increase in capacity, technology update, new products, and development of labor/management
2. Operational objectives such as: reduction in work-in-progress or inventory or both, reduction in lead time, improving quality, improving machine utilization, reduction in (overall) costs, raised output of productivity, and reduction in defects or scrap.

Therefore, the focus of this research is on the positivistic paradigm (quantitative research philosophy). The research model depicted in figure 1 delineates the anticipated relationships between (market flexibility, expansion flexibility, and new product flexibility) and the achievement of strategic objectives. In other words,

the research seeks to predict the causal relationships between strategic flexibility and achievement of strategic objectives. Thus, the quantitative approach was adopted to address these causal relationships in consistency with the aforementioned research questions.

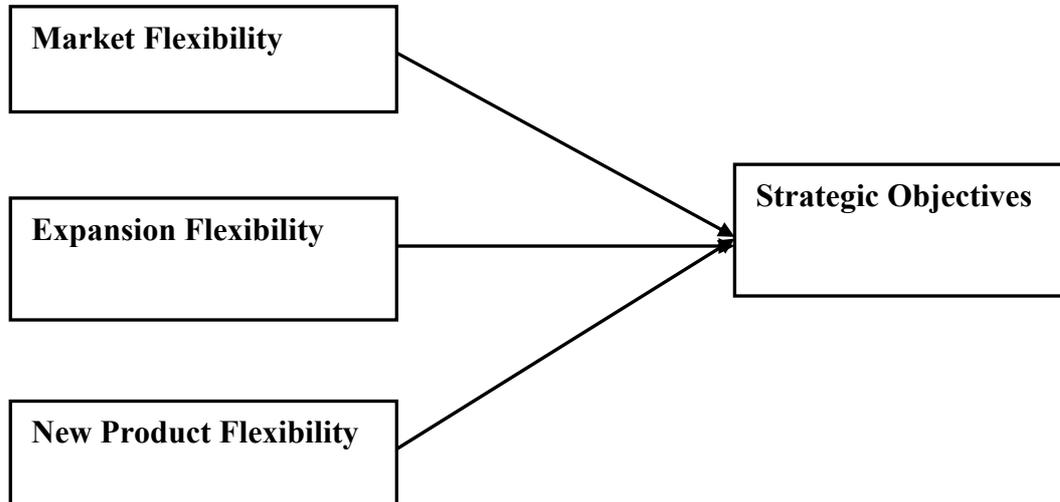


Figure (1): Research model

#### Operational definitions of the research variables

##### Independent variables

Considering the research objectives and questions, we need to make it clear that strategic flexibility dimensions will be the independent variables of this research. The operational definition of the research variable is as follows:

##### New product flexibility

- The ability of a manufacturing system to introduce and manufacture new parts and products (Das, 2001).
- The ability to create new products quickly (Kara et al, 2002).

##### Market flexibility

- Is the ease with which the manufacturing system can adapt to changing market environment. It allows the firm to respond to changes without seriously affecting the business and to enable the firm to

outmaneuver its less flexible competitors in exploiting new business opportunities (Gupta and Somers, 1996).

- The ability of the manufacturing system to respond to or influence market changes (Das, 2001).

##### Expansion flexibility:

- Expansion flexibility of a manufacturing system is the ease with which its capacity and capability can be increased when needed (Sethi and Sethi, 1990).
- It is the extent of overall effort needed to increase the capacity and capability of a manufacturing system when required. This flexibility may help shorten implementation time and reduce cost for new products, variation of existing products, or added capacity (Gupta and Somers, 1996).
- It is the capability of building a system and expanding it as easily and modularly as needed (Braglia and Petroni, 2000).

**Dependent variable: Strategic objectives:** They represent a managerial commitment to achieving specific performance targets within a specific time frame – they are a call for results than connect directly to the company's strategic vision and core values (Thompson and Strickland, 2003).

**The main hypothesis:** *The dimensions of strategic flexibility have a positive impact on the achievement of strategic objectives.* This main hypothesis is divided into three-sub-hypotheses:

**H1:** Market flexibility has a positive impact on the achievement of strategic objectives.

**H2:** New product flexibility has a positive impact on the achievement of strategic objectives.

**H3:** Expansion flexibility has a positive impact on the achievement of strategic objectives.

#### **Research Population and Sample**

Industrial sector is targeted by this study because it is more relevant to reflect the constructs of this research. According to statistics published by the ministry of industry and trade on the website (<http://www.mit.gov.jo/tabid/476/Realities%20of%20Industrial%20Sector%20in%20Jordan.aspx>), industry in Jordan is divided into two main types:

1. Manufacturing (converting) sector: it includes leather and footwear manufacturing, chemical industry, plastic industry, IT industry, furniture industry, food industry, packaging industry, engineering products manufacturing sector, etc. This industry contributes about 18% of Jordanian Gross Domestic Product (GDP).

2. Mining sector: it contributes to about 2% of Jordanian Gross Domestic Product.

Industry in Jordan is at the dawn of a new era. The integration of the country in the World Trade Organization, the ratification of the US Jordan Free Trade Agreement and of the Euro- med program, is the starting point of Jordan's industry introduction to the global economy (<http://www.1stjordan.net/content/editouk/industry.html>). This indeed stresses the need to motivate manufacturing companies in Jordan to pay more attention to competitive priorities such as quality, flexibility and agility to improve the achievement of

modernization, development, organizational effectiveness, competitiveness and to respond effectively to local, regional and global changes.

The data of interest in this study are responses from executives with titles of General Directors, Human Resource Managers, Operations or Production Managers, Finance Managers, and Marketing Managers. Jordanian manufacturing companies that are classified as public shareholding companies at Amman Stock Exchange Market were chosen as the targeted population for this research because the industrial sector is more relevant and clearly reflects the constructs of this research since its variables are related to manufacturing rather than to services. The entire population, which consisted of 91 industrial companies that are classified at Amman Stock Exchange Market as industrial shareholding companies according to its report for the year 2007, was targeted as the sample. The decision was made to adopt the individual distribution to administer the questionnaire. The questionnaire was accompanied by a covering letter explaining the research objectives. The participants were asked to complete the questionnaires, which were picked up later. The main reason for choosing the entire population is to ensure that the sample is representative and not biased.

The main survey consisted of 360 questionnaires. 72 manufacturing companies participated in the research survey out of 91. Each of the 72 responding firms was delivered five questionnaires to be given for its General Director, Human Resource Manager, Operations or Production Manager, Finance Manager, and Marketing Manager. The usable and completed questionnaires were 225. The completed questionnaires were collected from executive with title of General Director (n = 31), Human Resource Manager (n = 48), Operations or Production Manager (n = 47), Finance Manger (n= 45) and Marketing Manager (n = 54). These usable responses represented a response rate of 62.5%. The responding firms cover a wide range of manufacturing activities including electronics, engineering products, electric, chemical, textiles, leathers, and clothing, glass and ceramic, engineering and constructions, mining and

extraction, food and beverages, paper and cartoon, and pharmaceutical and medical products.

**Data Collection Methods and Measurement of the Research Constructs**

A positivistic methodology is adopted because of the need for quantitative data to satisfy the objectives of the research and the need for a large sample to carry out the data analysis. In addition, there is a need to examine the anticipated relationships included in the research model depicted in Figure 1.

Data collection consisted of a questionnaire designed to test the model and a delivery and collection questionnaire method was used in distributing and collecting the questionnaires to ensure a high response rate and to take the advantages of personal contact since this method enhances respondent participation. The questionnaire format was highly structured where all of its questions were fixed-response alternative questions that required the respondents to select from responses

which are located by using five point Likert scales. The respondents, therefore, were asked to indicate the degree of agreement or disagreement with each statement included in the questionnaire. All of the measurement scales used in this research were based on existing research. Assuring the validity and reliability measures requires supported literature to validate the measurement scales used for operationalising the research constructs. Strategic flexibility dimensions constructs (independent variables) and strategic objectives construct (dependent variable) were measured using the measurement scales and indexes included in the previous work. Minor amendments were done based on the constructive feedback received during the pilot study stage. Table 2 shows the research constructs with supported literature for their measurements. A sample of questions determined for measuring the research constructs is given in Appendix A.

**Table (2): Supported literature for measurement scales**

<b>New product flexibility</b>	<b>Independent</b>	<b>Sethi and sethi (1990), Zhang and Sharifi (2000), Das (2001) Kara et al. (2002), Chang et al. (2003), Koste et al. (2004).</b>
Market flexibility	Independent	Sethi and Sethi (1990), Zhang and Sharifi (2000)
Expansion flexibility	Independent	Sethi and Sethi (1990), Gupta and Somers (1996)
Strategic objectives	Dependent	Bennett (1999)

**Data Analysis and Discussion**

**Reliability and Validity**

A reliability test was carried out using Cronbach’s alpha, which measures the internal consistency of a construct. The recommended minimum acceptable limit of reliability “alpha” for this measure is 0.60 (Sekaran.,

1992). The results can be seen in Table 3 for all  $\alpha$  – values constructs. The Table shows that all the constructs have passed the reliability test where all  $\alpha$  – values have exceeded the recommended minimum value of Cronbach’s alpha.

**Table 3: Reliability analysis of the research constructs**

<b>Construct</b>	<b>Construct type</b>	<b><math>\alpha</math> – value</b>
New product flexibility	Independent	<b>.942</b>
Expansion flexibility	Independent	<b>.835</b>
Market flexibility	Independent	<b>.868</b>
Strategic objectives	Dependent	<b>.887</b>

In an attempt to ensure that the criteria of questionnaire construction and pre-testing were met, time and effort were devoted towards design, layout, and wording of the questionnaire used in this research. As a result, the survey instrument was pre-tested with executives and academic experts who were asked to review the questionnaire for readability, ambiguity, completeness, and to evaluate whether individual items appeared to be appropriate measures of their respective constructs. (Dillman, 1978). This process has led to

several minor changes, which were made prior to generating the final version of questionnaire.

#### **Preliminary Data Analysis and Descriptive Analysis**

Measures of descriptive statistics were used to examine the characteristics of the research sample and to determine the relative importance for each of the strategic flexibility dimensions in achieving strategic objectives. Table 4 shows the means, standard deviations, values of skewness and kurtosis for the research constructs.

**Table 4: Measure of descriptive statistics of the research constructs**

<b>Construct</b>	<b>Construct type</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Skewness</b>	<b>Kurtosis</b>
Expansion flexibility	Independent	3.56	.94	-.790	.114
New product flexibility	Independent	3.45	.80	-.661	.111
Market flexibility	Independent	3.35	.90	-.694	.070
Strategic objectives	Dependent	3.42	.51	-.367	.540

As shown in Table 4, the respondents agreed on the use of strategic flexibility dimensions in achieving strategic objectives. The dependent variable (strategic objectives construct is weighted with an average of 3.42. This result gives the indication that manufacturing companies in Jordan are growing well and continuing to achieve their strategic objectives. However, it was noted that the average of this variable is less than 5 because the strategic objective are long-term ones and can be achieved in parallel with implementing corporate strategy at the whole company level and functional strategies related to organizational units in the company. In addition, it could be concluded that meeting organizational objectives in Jordan industry is in a good progress since the mean of this construct (which is equal to 3.42) is more than the average scale score (which is equal to 3).

Concerning the independent variables, expansion flexibility was ranked as the most important type of strategic flexibility with an average of 3.56. The next frequent dimension of flexibility was new product flexibility which was ranked in the second class with an average of 3.45. Market flexibility was ranked in the last

class with an average of 3.35. This result leads to support the argument that a specific type of flexibility is necessary for other types or groups of flexibilities. This in line with debates presented in the previous work. Zhang et al. (2002), for instance, found that each of machine flexibility, labor flexibility, material handling flexibility, and routing flexibility has a *significant* impact on both volume and mix flexibility. In the same vein, Awwad (2004) found significant relationships amongst different types of flexibility such as product, volume, labor, new product, process and expansion flexibility. However, the importance of strategic flexibility should be emphasized due to the following:

- Business environments are changing rapidly due to shorter product life cycle, growth of globalization phenomenon, high concerns with product customization strategy.
- Fast and dramatic changes in the marketplace such as customer expectations, competition,
- Strategic flexibility is emerging as a key competitive weapon in business today's environment, characterized by short product life cycles and increasing product variety, and

- Innovative new products and technologies place more emphasis on the need of strategic flexibility.

**Hypothesis Testing and Results**

The hypotheses of this research are aimed at investigating and examining the relationships between strategic flexibility dimensions and strategic objectives. More specifically, the rationale for developing the research hypotheses is the fact that flexibility is a multi-dimensional construct which positively affects organizational performance (Gupta and Somers, 1996). However, organizational performance is inevitably linked to strategic objectives. Therefore, it is expected that strategic flexibility helps in achieving strategic objectives.

Multiple regression analysis was conducted to test the research hypotheses. Multiple regression identifies how much of the variance in the dependent variable will be explained when a set of variables is able to predict a particular outcome. Using multiple regression analysis is subject to normality of the data. Therefore, the values of skewness and kurtosis (measures of distribution) for each variable are reported in Table 4 in order to check the research variables for assumptions of normality. In general a skewness/kurtosis value greater than one indicates a distribution that differs significantly from a normal symmetric distribution (Hair *et al.*, 1998). Skewness and kurtosis values within the range of -1 to +1 indicate an acceptable range while values falling outside the range of -1 to +1 indicate a substantial departure from normal distribution (Hair *et al.*, 1998). Reviewing the descriptive statistics presented in Table 4 shows that skewness and kurtosis values for all variables

fall within the acceptable range and this means that the data is normally distributed.

Multicollinearity between the three independent variables was checked using the collinearity statistics: Tolerance and Variance Inflation Factor (VIF). Tolerance is the amount of variance in an independent variable that is not explained by the other independent variables. VIF measures how much the variance of the regression coefficient is inflated by multicollinearity (Hair *et al.*, 2003). The minimum acceptable cutoff value for tolerance is typically .10. The maximum acceptable cutoff value for the VIF is 10. In other words, to indicate no problem with multicollinearity tolerance value should not be less than 0.10 while VIF value should not be more than 10. Looking at the information for the regression model summarized in Table 6, and considering the above rules, the results haven't shown any problem with multicollinearity since the tolerance values and the VIF values for the all independent variables are ranging within the acceptable limits of the collinearity statistics (Tolerance, VIF).

The results of data analysis and hypothesis testing are summarized in Tables 5 and 6. As seen in Table 5, the results emerged from the multiple regression analysis revealed that the coefficient of determination  $R^2$  which predicts the relationship between the independent variables (expansion flexibility, new product flexibility, and market flexibility) and the dependent variable (strategic objectives construct) is equal to 0.504. This indication shows that 50.4% of the total variance in the dependent variable (strategic objective construct) is accounted for by the independent variables (expansion flexibility, new product flexibility, and market flexibility).

**Table (5): Model summary and ANOVA**

Model summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.710	.504	.497	.7086	
ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
1   Regression	112.586	3	37.529	74.732	.000

Model summary						
Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	
	Residual	110.981	221	.502		
	Total	223.567	224			

### Acceptance and/or Rejection of the Research Hypotheses

As indicated in Table 5, the results of F-ratio show that the regression model is significant at  $P < 0.001$ . F-ratio is 74.732. Therefore, we can conclude that the regression model predicts strategic objectives significantly well. In other words, strategic flexibility dimensions (independent variables: expansion flexibility, new product flexibility, and market flexibility) have the ability to predict the outcome variable (dependent variables: strategic objectives). The results of multiple regression analysis presented in Tables 5 and 6 have led to accept the main hypothesis mentioned earlier. Concerning the results of the three sub-hypotheses testing, the results of multiple regression summarized in Table 6 support the acceptance of the all sub-hypotheses. More specifically, the results indicated significant relationships between each of (expansion flexibility, new product flexibility, and market flexibility) and the dependent variable (strategic objectives).

The above results can be justified due to the fact that strategic objectives are long term ones, they need to use all flexibility dimensions and incorporate them in operations strategy of a firm. In general, it could be concluded that the following reasons place a greater emphasis on linking strategic flexibility dimensions to strategic objectives:

- In most cases, customer's exit from a market is clearly the dominant response to dissatisfaction (Foretell and Wernerfelt, 1987).
- Customers switch to different brand products or services or stop using a particular product or reduce the consumption of the product or service (Karakaya, 2000).
- Customers have significant power or influence in the determination of customer lead time (customer lead time refers to the elapsed time from the time an order is placed to delivery to the customer) (Oke, 2003).
- The changing customer preference and intense competition have made the environment more uncertain resulting in frequent changes in demand patterns (Pramod and Garg, 2006).
- With flexibility, manufacturing firms are able to produce superior-quality, customer-oriented products at a low cost and with a faster response to dynamically changing market conditions (Wahab et al., 2008).
- The last decade's technology industry has faced a turbulent and hyper-competitive environment created by multiple factors: information technologies, innovation, demanding customers, and market globalization. This pressure has forced firms to develop new managerial practices (operational, organizational and strategic) to determine and sustain a competitive advantage (Verdu'-Jover et al., 2008).

**Table 6: Summary of the research sub-hypotheses (H1-H3) and their results**

Hypothesis	Beta	t-value	Sig	Tolerance	VIF	Comment
<b>H1:</b> Market flexibility has a positive influence on the achievement of strategic objectives	.115	2.167	.031	.798	1.254	Accept
<b>H2:</b> New product flexibility has a positive influence on the achievement of strategic objectives	.383	7.066	.000	.764	1.310	Accept
<b>H3:</b> Expansion flexibility has a positive influence on the achievement of strategic objectives	.391	7.290	.000	.781	1.280	Accept

### **SUMMARY of the MAIN FINDINGS**

The overall results of the empirical investigation have supported the research model presented in Figure 1. The results collectively indicate that, as expected from theory, strong relationships exist between strategic flexibility and strategic objectives. However, the results lead us to think that strategic flexibility dimensions can act as a strategic weapon in the arsenal of any manufacturing firm in order to meet its objectives. In other words, the results place an emphasis on the importance of strategic flexibility dimensions in meeting the strategic objectives. Therefore, managers need to close or reduce the gaps between planned and actual outcomes through the link between strategic flexibility dimensions and strategic objectives. In addition, organizations need to deal with different types of flexibility (such as market flexibility, new product flexibility, and expansion flexibility) because they usually experience different levels of uncertainty that affects organizational functions and units within organizations (i.e. operations, marketing, engineering and designing, human resource). Therefore, it could be concluded that enumerating the amount of changes facing organizations provides a basis for linking strategic objectives to strategic flexibility dimensions.

### **MANAGERIAL IMPLICATIONS**

Utilizing the findings of this research can help managers make sense of business environment changes that require a firm to be flexible in order to respond effectively and efficiently to these changes. In other words, strategic flexibility dimensions facilitate the planning of operations strategy and manufacturing strategy to enhance the competitive advantage of a firm. To put the findings of this study into a Jordanian manufacturing context, it could be concluded that Jordanian manufacturing companies need to match strategic objectives with strategic flexibility dimensions in order to have the ability to:

1. Cope with changes in business environment, particularly; the changes affecting the achievement of organizational objectives.

2. Consider flexibility when planning, implementing, and controlling the operations strategy of a firm. This notion is consistent with the work done by Chang et al. (2007) where the results of their work confirm that competitive aggressiveness is an effective strategy for firms to enhance product mix and volume flexibility. Firms with an aggressive orientation are better able to provide various options for different markets and adjust the level of production according to client requirements, which allows them to maintain a highly competitive position. More specifically, their work provided evidence that entrepreneurial activities (i.e. innovativeness, proactiveness, autonomy, competitive aggressiveness) can enhance manufacturing flexibility as a strategy for coping with environmental uncertainty which in turn can stimulate a firm's capability to develop new products, offer different product options, and adjust production levels as needed.

3. Identify a list of business practices, policies, and success factors that lead to achieving the organizational objectives.

In summary, the findings of this research have the following practical implications for managers:

- Managers are encouraged to use several dimensions of strategic flexibility in planning, setting, and achieving the strategic objectives.
- Managers need to analyze the effect of strategic flexibility on achieving organizational performance, for example, there is a need for determining the effect of expansion flexibility on profitability, market share, financial stability, and quality.
- Organizational objectives can be achieved and carried out based on different dimensions of strategic flexibility. For example, expansion and growth objectives are affected by expansion flexibility, which gives manufacturing companies the ability to match the fluctuations of demand with available capacity.

### **LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH**

It is well considered that the strength of any research project lies in the recognition of its limitations. Several

limitations in this study should be noted. The study has not taken into consideration the effect of the moderating and intervening variables (*such as company size, business unit, organizational structure, industry type, etc.*) on the relationships between strategic flexibility dimensions and strategic objectives. In addition, the results of this study apply only to the Jordanian manufacturing companies classified in Amman Stock Exchange Market as public industrial shareholding companies. Thus, these results may not be generalisable to small manufacturing companies. Also, there was a lack of local and regional empirical studies previously conducted in the fields of this study on Jordan or Arab business environment. The above limitations should be viewed as opportunities for future research. This study has made a significant contribution, as it is one of the first attempts to empirically test the impact

of strategic flexibility dimensions on strategic objectives. The following directions are suggested for further research:

- Conducting empirical studies about the need for flexibility at strategic, operational, and tactical levels in a firm.
- Examining the role of strategic flexibility in planning the business strategy of a firm.
- Investigating the role of the intervening and moderating variables (i.e. company size, organizational level, industry type, etc) on the relationship between strategic flexibility dimensions and organizational objectives.
- Conducting empirical studies on the relationship between other dimensions of flexibility (i.e. labor flexibility, process flexibility, machine flexibility, product flexibility, and material handling flexibility) and organizational performance of a firm.

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