

# **Improvisation-Performance Link and the Moderating Effects: A Case of Malaysia Technology-Based Companies**

**Darwina Arshad**

School of Business Management, College of Business,  
Universiti Utara Malaysia, Malaysia

## **Abstract.**

This research aims to examine the relationship between organisational improvisation and firm performance as well as to identify the effect of environmental turbulence on improvisation-performance relationship. Given the lack of studies on these relationships in the previous literature, there is significant contribution to the theories as well as for managerial practices. 128 responses from top management of technology-based companies in Malaysia were used as a sample in this study. The finding of the direct association between organisational improvisation and firm performance implies that improvisation provide the enhancement of firm performance as a whole. In testing moderating effects on the improvisation–performance link, the strength and type of relationship between improvisation and firm performance did change when moderated by environmental turbulence. The research findings identified both technological and competitive turbulence moderate the relationship between organisational improvisation and firm performance. Technological turbulence shows a negative moderating effect; meanwhile the competitive turbulence demonstrates a positive moderating effect on the improvisation–performance link.

**Keywords:** organisational improvisation, firm performance, environmental turbulence

## **1. Introduction**

Identifying the foundations of improvisation is vital for organisations as it serves to provide faster decision-making, especially when the organisation faces a turbulent external environment; and ultimately it may lead to promote positive outcomes for the organisation to survive and prosper (Kamoche et al. 2001; Akgun and Lynn, 2002; Vera and Crossan, 2005; Leybourne and Sadler-Smith, 2006). However, prior research has paid considerable attention on the centrality of improvisation in individual and group outcomes (Kamoche et al., 2003) to the detriment of focus on organisational outcomes (firm performance). No study has sought to trace and prove the association between organisational improvisation and firm performance as a whole, although much previous research tend to assume theoretically that improvisation may lead to superior performance through other possible contingent factors (Crossan et al., 2005; Hmieleski and Corbett, 2008). Given the deficiency of empirical evidence and general lack of consensus on whether improvising is positive for improving firm performance, this emphasis deals with the need on empirical investigation of the relationship between improvisation and firm performance.

In recent times, much attention has been focused on the issue of environmental turbulence in the improvisation literature. The impact of environmental turbulence on organisational improvisation has empirically been established by few researchers (i.e. Moorman and Miner, 1998b; Akgun and Lynn, 2002; Cunha et al., 2003, Vera and Crossan, 2005; Cunha and Cunha, 2006b; and Akgun et al., 2007). With regards to the effect of environmental turbulence, firms have to think and decide on the best approach of either planning or improvisational way in gaining greatest business outcome. Firms may face such changes occurring in the environment which are associated with new technologies, the preferences of customers and competitive intensity (Jaworski and Kohli, 1993). The changes in the environment can be either high or low turbulent.

The impact of turbulent environment on planning or improvisation actions is a significant topic which is currently discussed by scholars. In the computer industry, Eisenhardt and Tabrizi (1995) found that “extensive planning simply wastes time, especially in high-velocity industries such as

computers” (Eisenhardt & Tabrizi, 1995: 106); and fast strategic decision-makers consider the planning process as a “futile” exercise once the environment is shifting unpredictably (Eisenhardt, 1989). These incidents suggest that improvisational actions are critically important in creating better performance especially when organisations are faced with turbulent environment. Nevertheless, how far the statement on environmental turbulence affects the improvisational effectiveness is still ambiguous. Therefore this research aims to examine the environmental turbulence as a moderating effect on the relationship between improvisation and firm performance.

## 2. Literature Review and Hypotheses

Improvisation is defined as an action taken in real time situations where it involves a high degree of spontaneity, creativity and intuitive insight by individuals, groups or the whole organisation (Arshad, 2011). It can be considered a tool to developing strategy that helps executives identify key decisions that are needed to create more shareholder value (Mankins and Steele, 2006). This shareholder value can be a desirable strategic outcome for the organisations. According to Srivastava *et al.* (1999), organisations can create customer value through the management activities such as products or services development management, supply chain management and customer relationship management which have the potential benefits of accelerating and enhancing cash flows, reducing risk, creating firm image. This signifies that the shareholder value should not only contribute by the internal outcome (*e.g.* long term profits, sales growth and financial resources) but it also noteworthy to highlight on external outcomes (*e.g.* the perspective and standpoint of customers toward firm).

Firm performance and organisational improvisation relationship has currently been noticed lacking in empirical research. Previous research such as Moorman and Miner (1998b), Akgun and Lynn (2002) and Vera and Crossan (2005) examine new product development to determine the effectiveness of organisational improvisation. Other empirical studies, for instance by Souchon and Hughes (2007), reveal that export performance is a positive outcome of export improvisation with the moderating effect of export coordination; meanwhile Hmieleski and Corbett’s (2006) study the link between entrepreneurial improvisational behaviour and venture performance. According to Hmieleski and Corbett (2006), there is no direct relationship between entrepreneur improvisational behaviour and new venture performance.

The investigation of organisational improvisation outcomes is a necessity as it can provide a guideline for the organisations to measure their success or failure. As improvisation is supposedly to confer benefits of rapid adaptation and response to opportunities, competitors, markets and customers (*cf.* Crossan *et al.*, 2005) it would appear that hypothetically, positive performance benefits would accrue (notwithstanding the negative potential for biased learning and opportunity traps). It is hypothesised then that:

*Hypothesis 1:* The greater the organisational improvisation, the stronger the firm performance.

Most previous researchers tend to assume that improvisation may lead to superior performance through the benefits of environmental turbulence (Eisenhardt and Tabrizi, 1995; Moorman and Miner, 1998b; Akgun and Lynn, 2002; Hmieleski and Ensley, 2004). Environmental turbulence can be considered a situation where the management of a firm is facing a state of flux and an unpredictable business environment, particularly when it has relatively little information about its external environment (Stacey, 1993). In particular, environmental turbulence has been viewed by theorists and practitioners as a source of uncertainty (Greenley, 1995; Ottesen and Grønhaug, 2002 and 2004) and “*it is often thought of as discrete, salient and unpredictable events in the environment*” (Ottesen and Grønhaug, 2004:956). Environmental turbulence can consist of many factors, but most scholars especially in market orientation literatures suggest that the primary elements of environmental turbulence comprise of market turbulence, technological turbulence and competitive intensity (Kohli and Jaworski, 1990; Narver and Slater, 1990; Greenley, 1995; Ottesen and Grønhaug, 2004; Shoham *et al.*, 2005). Market turbulence refers to “*...changes in the composition of customers and their*

*preferences*” and technological turbulence refers to changes rapidly and swiftly in “...*the entire process of transforming inputs to outputs and the delivery of those outputs to the end customer*” (Kohli and Jaworski, 1990:14). Competitive intensity is related to the presence of multiple choices for customers (Kohli and Jaworski, 1990). In the conditions of competitive turbulence, competitors commonly move in and out of markets and rapidly shift their strategies. Under turbulent environments, organisations that are able to be a market leader may have to have the ability to make a continuous innovation, establish customer networks, and share responsibility for new strategy throughout the firm (Chakravarthy, 1997). They may also need to poise the firm's capabilities for leveraging, strengthening, and diversifying its distinct assets or skills (Chakravarthy, 1997).

In past research environmental turbulence has primarily been studied in terms of its potential moderating effect on the market orientation and performance relationship (*e.g.* Jaworski and Kohli, 1993; Slater and Narver, 1994, Greenley, 1995) and on the planning and performance relationship (*e.g.* Fredrickson, 1984; Atuahene-Gima and Li, 2004; Atuahene-Gima and Murray, 2004). But recently, environmental turbulence has received attention in the improvisation literature and a few scholars have found that environmental turbulence can give a significant effect on improvisational activities within the organisation. Akgun and Lynn (2002), for example in their study revealed that for turbulent markets and technologies, improvisation is positively associated with speed-to-market. This means that changing customer preferences, exponential technological developments, increase in competitive demand and readily available information from markets and technologies can force organisations to create new product in a speedy pace (Akgun and Lynn, 2002).

As yet, no empirical evidence traces the moderating effect of technological, market and competitive turbulence on the improvisation-performance relationship. Therefore, this study comes out with three specific hypotheses. The hypotheses are as follows:

*Hypothesis 2:* The stronger the technological turbulence, the stronger the relationship between organisational improvisation and firm performance.

*Hypothesis 3:* The stronger the market turbulence, the stronger the relationship between organisational improvisation and firm performance.

*Hypothesis 4:* The stronger the competitive turbulence, the stronger the relationship between organisational improvisation and firm performance.

### **3. Analyses and Results**

The unit of analysis for this study is the top management of the firm (nominated subordinate such as CEO, COO, Executive Directors, Managing Directors and Senior Managers) who participate in the strategic management process and firm decision-making in technology-based companies in Malaysia. A total of all usable questionnaires were 128 responses from technology-based companies in Malaysia. It is importantly significant for this research to focus on high technology firms because many of these firms are progressively faced with on-going challenge of competition, technological and market demand (high turbulent environment) (Morgan *et al.*, 2000; Doran and Gunn, 2002; Morgan and Strong, 2003) which require constant change and innovation (Eisenhardt, 1989); and hence the tendency for organisational improvisation in their business process is likely to be necessary.

Seven-point scales were used in the questionnaire. Alpha coefficients of all factors are greater than the accepted 0.7 threshold. All scales were examined with exploratory factor analysis using SPSS 16.0 to summarise the structure of a set variables and to purify measures of items used. The KMO and Bartlett's test of sphericity of sampling adequacy of each variable is greater than 0.5, therefore the sampling is assumed to be adequate for further analysis. A hierarchical regression analysis was used to test these four hypotheses. The details are as Table 1 below.

**TABLE 1: REGRESSION ANALYSIS FOR HYPOTHESIS 1 THROUGH TO 4**

Variable	Effect of Improvisation on Firm Performance by Moderating Condition		
	Model 1	Model 2	Model 3
Improvisation	0.306***	0.270***	0.286***
<i>Moderating Factor</i>			
Technological Turbulence		0.010	-0.024
Market Turbulence		0.205**	0.231**
Competitive Turbulence		-0.158**	-0.194**
Improvisation x Technological Turbulence			-0.157*
Improvisation x Market Turbulence			0.017
Improvisation x Competitive Turbulence			0.215**
<i>Summary statistics</i>			
R <sup>2</sup>	0.094	0.134	0.179
Adjusted R <sup>2</sup>	0.086	0.106	0.131
F	13.013	4.747	3.741
P	0.000	0.001	0.001

Notes: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Table 1 presents the results from the three regression models. Model 1 represents the relationship between organisational improvisation and firm performance; Model 2 indicates the relationship between organisational improvisation and the external environment factors (technological turbulence, market turbulence and competitive turbulence); and Model 3 represents the external environmental factors as a moderating effect on the relationship between organisational improvisation and firm performance. By looking at each model as a whole, all models (Model 1, 2 and 3) have significant correlations ( $p < 0.01$ ), however when examined individually the results are mixed.

In Model 1, the result reveals that a total of 9.4% of the variance in firm performance is explained by organisational improvisation; with a significant F-value of 13.013 ( $p < 0.001$ ). This result thus shows **Hypothesis 1** is supported. In Model 2, the result shows the total variance explained by the model as a whole is 13.4%, ( $F = 4.747$ ;  $p < 0.001$ ). However, only market turbulence and competitive turbulence show a significant relationship (as shown in Model 2 of Table 1; while technological turbulence becomes non-significant ( $\beta = 0.010$ ;  $p > 0.1$ ). Lastly, in Model 3, the result represents 17.9% of the total variance explained by the model ( $F = 3.741$ ). As can be seen in Model 3, the interaction of organisational improvisation and technological turbulence on firm performance is negative and significant, thus **Hypothesis 2** is refuted. It was also found that competitive turbulence has a positive effect on the relationship between organisational improvisation and firm performance, thus **Hypothesis 4** is supported. However, the effect of market turbulence on the linkage between organisational improvisation and firm performance is non-significant, thus **Hypothesis 3** is not supported.

#### 4. Discussion and Conclusions

Explicitly, the finding of the direct association between improvisation and firm performance is the first study to contribute knowledge in this regard and provides interesting implications for theory as well as implications for practitioners. This result can help organisations to redefine their business process by considering improvising processes that leads to superior performance. In the case of Malaysia high technology-based companies, the potential achievement of firm profitability, competitive advantage and market standing are an effect of good implementation of improvisational process within organisation. Due to the nature of the companies, they are faced with turbulent environments and these high technology companies need to remain competitive and execute improvisational activities within their organisations in order to sustain and enhance their business performance.

Collectively, the result of this study indicates that environmental turbulence has a significant moderating effect on the improvisation–performance relationship. This result, however, differs for each element of environmental turbulence, but nonetheless implies that organisations may not be able to follow the usual planning processes of analysing the market to identify opportunities and then taking the time to develop new products and strategic options to capitalise on such opportunities. Once the environment wherein an organisation operates experiences a large number of changes and highly turbulent competitive conditions, organisations, such as high technology-based companies in Malaysia, should then be encouraged to consider implementing improvisation in order to address these conditions and enhance its firm performance. Organisations need to be more committed and creative under turbulent conditions, even if it means sacrificing some of its existing resources in order to implement improvisation and be more competitive. In this case, the improvisational approach can give organisations the necessary edge and ability to identify significant linkages that better meet the emerging customer needs, technologies, and competitive situation (Zahra, 1997; Ottesen and Grønhaug, 2004; Akgun *et al.*, 2007) and consequently increase firm performance.

Examining the three forms of turbulence individually, only two of the three predicted moderators (technological and competitive turbulence) show a significant moderating effect on the improvisation–performance relationship. This result (*Hypothesis 3*) exemplifies that the greater or the lesser changes in customers’ needs and preferences does not affect the significant relationship between improvisation and firm performance of high technology-based companies in Malaysia.

Technological turbulence, on the other hand, has shown a negative moderating effect between improvisation–performance relationships (thus refuting *Hypothesis 2*). This result suggests that when an organisation is faced with technological turbulence, managers may need to improvise less in the way that they conduct their activities in order to cope with technological turbulence as improvisation has negative performance connotations under conditions of high technological turbulence. Or put another way, the more turbulent the technological environment, the stronger the negative relationship between improvisation and performance. This result supports Moorman and Miner’s (1998b) study, which revealed that the improvisation—cost efficiency relationship become weaker and more negative when technological turbulence is high. According to Jaworski and Kohli (1993), technological turbulence is the changing pace of product and process technologies used to transform inputs into outputs. Improvisation of product and process technologies requires high investment by the company and can consequently diminishes firm performance. One example to represent this scenario is Kodak Corp, a company synonymous with film. However, with the increasing popularity of digital cameras, the company improvised its product line by producing its own digital camera. Due to the time pressure and in coping with technological turbulence, sales turnover diminished (Ketchen *et al.*, 2007). This scenario bears resemblance to the situation of high technology-based firms in Malaysia. Most Malaysia high technology-based companies require high investment (*e.g.* to buy new sophisticated equipment or machines) to dynamically cope with the technological turbulence. In the short run, potential consequences of these new technological changes such as the employees change resistance, employees’ learning period and so forth could be harm to firm performance and potential degradation to competitive advantages over time.

With regards to the relationship between improvisation, competitive turbulence and firm performance, this study contributes new knowledge to the improvisation and management literatures. In examining competitive turbulence as a moderator of the improvisation–performance relationship, the findings (*Hypothesis 4*) provide empirical evidence that this moderating effect is significant and positive, thereby supporting extant literatures, which suggest that the increased speed of competition might enable organisations to develop an improvisational competency (Mintzberg and McHugh. 1985; Brown and Eisenhardt, 1995; Eisenhardt and Tabrizi, 1995; Cunha *et al.*, 2003; and, Cunha and Cunha, 2006b), that is, the organisations often respond to such situations by improvising rather than responding through plans (Moorman and Miner, 1998b) and over time this can lead to the development of a competence in improvising, which in itself may become a form of competitive advantage. Whilst harsh competitive conditions are often seen as a bad situation to be in, higher levels

of performance can be realised through addressing the environmental conditions through organisational improvisation.

Under competitive turbulence, competitors commonly move in and out of markets to rapidly shift their strategies (Kohli and Jaworski, 1990; 1993; Narver and Slater, 1990; Greenley, 1995). The organisation is then required to strengthen its position within the industry by using strategies to rival those of its competitors. In the case of high technology-based companies in Malaysia, this implies that improvisation is a key factor to increase their firm performance and supports the studies by Moorman and Miner (1998b), Akgun and Lynn (2002) and Vera and Crossan (2005). More specifically when the organisations face highly competitive environments then improvisation becomes even more important for performance, and thus supports the contentions of Cunha and Cunha (2006b).

It can also be expanded upon here that environment conditions must play a role in determining whether or not the firm should seek to improvise. As indicated earlier, in case of low or high market turbulence the decision to improvise does not have much bearing on performance. However, when technological turbulence exists it is preferable to improvise only when conditions are relatively benign as otherwise improvisation harms performance. This is likely related to the need to properly assess and exploit technological changes and innovations in a planned manner such that the firm is making optimum use of the situation or making the optimum response to the situation. Improvising itself can be costly depending on the actions taken and taking such risky actions in addressing technological changes would appear suboptimal. Finally, in relation to competitive circumstances, it is clear that improvisation has greater performance benefits under turbulent conditions and once again, we should question whether improvisation is of much value in benign competitive conditions. Managers must then proceed with caution when improvising in the light of specific environmental conditions.

## 5. References

- Akgün, A.E. and Lynn, G.S. (2002). New product development team improvisation and speed-to-market: an extended model. *European Journal of Innovation Management*, 5(3): 117-129.
- Akgün, A.E., Byrne, J.C., Lynn, C.L. and Keskin, H. (2007). New product development in turbulent environments: Impact of improvisation and unlearning on new product performance. *Journal of Engineering and Technology Management*, 24(3): 203-230.
- Akgün, A.E., Byrne, J.C., Lynn, C.L. and Keskin, H. (2007). New product development in turbulent environments: Impact of improvisation and unlearning on new product performance. *Journal of Engineering and Technology Management*, 24(3): 203-230.
- Arshad, D. (2011.). Understanding Organizational Improvisation: Foundations and Performance Implications. *PhD Theses Loughborough University, Business School*. Available at <http://hdl.handle.net/2134/8115>.
- Atuahene-Gima, K. and Li, H (2004). Strategic decision comprehensiveness and new product development outcomes in new technology ventures. *Academy of Management Journal*, 47(4): 583-597.
- Atuahene-Gima, K. and Murray, J.Y. (2004). Antecedents and outcomes of marketing strategy comprehensiveness. *Journal of Marketing*, 68(October): 33-46.
- Brown, S.L. and Eisenhardt, K.M. (1995). Product development: Past research presents findings, and future directions. *Academy of Management Review*, 20(2): 343-378.
- Crossan, M., Cunha, M. P., Vera, D., and Cunha, J. (2005). Time and organizational improvisation. *Academy of Management Review*, 30(1): 129-145.

- Cunha, M.P. and Cunha, J.V. (2006). Towards a complexity theory of strategy. *Management Decision*, 44(7): 839-850.
- Cunha, M.P., Kamoche, K. and Cunha, J.V., (2003). Organizational improvisation and leadership: A field study in two computer-mediated settings. *International Studies of Management and Organization*, 33(1): 34-57.
- Eisenhardt, K.M. (1989). Making fast strategic decision in high-velocity organization. *Academy of Management Journal*, 32(3): 543-576.
- Eisenhardt, K.M. and Tabrizi, B.N. (1995). Accelerating adaptive processes: product innovation in a global computer industry. *Administrative Science Quarterly*, 40(1): 84-110.
- Fredrickson, J.W., Mitchell, T.R. (1984). Strategic decision processes: Comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal*, 27(2): 399-423.
- Greenley, G.E. (1995). Market orientation and company performance: empirical evidence from UK companies. *British Journal of Management*, 6(March): 1-13.
- Hmieleski, K.M. and Corbett, A.C. (2006). Proclivity for improvisation as a predictor of entrepreneurial intentions. *Journal of Small Business Management*, 44(1): 45-63.
- Hmieleski, K.M. and Ensley, M.D. (2004). An investigation of improvisation as a strategy for exploiting dynamic opportunities. In W. D. Bygrave et al. (Eds.), *Frontiers of Entrepreneurship Research*. Babson Park, MA: BabsonCollege.
- Jaworski, B. J. and Kohli, A. K. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing*, 57(July): 53-70.
- Kamoche, K. and Cunha, M.P. (1998). From jazz improvisation to product innovation. In Kamoche, K. Cunha, M.P. and Cunha, J.V. (2002). *Organizational Improvisation*. London: Routledge.
- Kamoche, K., Cunha, M.P. and Cunha, J.V. (2003). Towards a theory of organizational improvisation: Looking beyond jazz metaphor. *Journal of Management Studies*, 40(8): 2023-2051.
- Ketchen, D.J. Ireland, R.D. and Snow, C.C. (2007). Strategic entrepreneurship, collaborative innovation, and wealth creation. *Strategic Entrepreneurship Journal*, 1(34): 371-385.
- Kohli, A. K. and Jaworski, B. J. (1990). Market Orientation: The construct, research propositions and management implications. *Journal of Marketing*, 32(April): 1-18.
- Leybourne, S. and Sadler-Smith, E. (2006). The role of intuition and improvisation in project management. *International Journal of Project Management*, 24(6): 483-492.
- Mankins, M.C. and Steele, R. (2006). Stop making plans start making decisions. *Harvard Business Review*, 84(1): 76-87.
- Mintzberg, H. and McHugh, A. (1985). Strategy formation in an adhocracy. *Administrative Science Quarterly*, 30(2): 160-197.
- Moorman, C. and Miner, A.S. (1998). The convergence between planning and execution: Improvisation in new product development. *Journal of Marketing*, 62(3): 1-20.
- Narver J.C. and Slater S.F. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54(4): 20-35.

- Ottesen, G.G. and Grønhaug, K. (2004). Exploring the dynamics market orientation in turbulent environments: A case study. *European Journal of Marketing*, 38(8): 956-973.
- Souchon, A.L. and Hughes, P. (2007). Improvising export decisions: A contingency theory perspective. *International and Cross-cultural Marketing*, Track 8.
- Srivastava, R., Shervani, T. and L. Fahey (1999). Marketing, business processes, and shareholder value: an organizational embedded view of marketing activities and the discipline of marketing. *Journal of Marketing*, 63(Special Issue): 168 – 179.
- Stacey, R. (1993). Strategy as order emerging from chaos. *Long Range Planning*, 26(1): 10-17.
- Vera, D. and Crossan, M. (2005). Improvisation and innovative performance in teams. *Organization Science*, 16(3): 203-224.
- Zahra, S.A., Neubaum, D.O., and Huse, M. (1997). The effect of the environment on export performance among telecommunications new ventures. *Entrepreneurship Theory and Practice*, 22(1): 25-46.