High performance manufacturing adapting practices in new entrepreneurship trends of development countries

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Abstract
Actually, the new trends of entrepreneurship are creating globalized business that requires of High performance manufacturing practices application to positioned and compete in global markets. The adaptability of these practices in new business allows performance improvement, lower cost and grows up research, innovation and develops capital.

Keywords: High Performance Manufacturing, New Entrepreneurship Trends, Performance Improvement

HIGH PERFORMANCE MANUFACTURING PRACTICES

The term "high performance manufacturing" is derived of "world class manufacturing" that was first used by Hayes and Wheelwright´s in 1984 to describe organization which achieved a global competitive advantage through use of their manufacturing capabilities as a strategic weapon (Flynn and Schroeder, 1997) .This authors considered such first high performance manufacturing, among others, internal training institutes, train potential manager, apprenticeship programs, rotate managers through various functions, long-term commitment to quality, strong attention to product design, invest in proprietary equipment, continuous improvement in small increment, etc. (see table 1) (B. B. Flynn et al., 1999).

The perspective that Hayes and Wheelwright´s focused in analysis of the practices implemented by Japanese and German Firms in comparison of US firms. They found that exist the next situations; 1) Neglected workforce skills and capabilities, 2) Management technical competence lacking, 3) Practice competing through quality, 4) Importance of workforce participation, 5) Rebuilding manufacturing engineering and 6) Incremental improvement approaches. Finally, they stated that world class competitors pursue continuous improvement in small increments (B.B. Flynn et al, 1999). Also, the terms "High performance manufacturing" test their first idea, an initial research group from the University of Minnesota and Iowa State University who conducted the round one of data collection of this project. They proposed the HPM model, that consisting in six practices areas: 1) Manufacturing strategy, 2) Total quality management, 3) just-in-time, 4) Human resource, 5) Information system, 6) Technology

management. It's important mentioned that this model was based on close observations of what Japanese, German and the best U.S. manufacturing were doing (Schroeder and Flynn, 2001).

Schroeder and Flynn demonstrated that overlapping circles that involves all practices should be linked together, and should be guided by manufacturing strategy to link the plant to its external environment. The external environment it´s composed of social, political, economics and national forces that affecting the performance of the firms.

Table 1- Summary of Hayes and Wheelwright´s practices

Dimension	Rationale	Practices
Workforce skills and capabilities	U.S. firms have neglected development of workforce skills and capabilities; this should not be left to the schools	· Apprenticeship programs · Cooperative arrangements with vocational technical institutes · Internal training institutes · Extensive advanced training and retraining beyond entry level, focusing on skills, work habits and motivation
Management technical competence	U.S. firms experience technical weakness among their managers	· Ensure a significant number of managers have engineering or technical degrees · Train potential managers, early in their careers, in a variety of technologies important to the firm · Rotate managers through various functions, to broaden their experience
Competing through quality	U.S. firms need to focus on what is important to customers	· Seek to align products and processes to meet needs that are important to customers · Long-term commitment to quality · Strong attention to product design · Involvement of all functions in product design and quality improvement
Workforce participation	Real participation is more than simply putting employees into teams	· Develop a culture of trust between workers in various departments and between workers and management · Routine, close contact between management and workers · Develop participation policies to ensure that 'We're all in this together'
Rebuilding manufacturing engineering	Unique capabilities of equipment can't be copied	· Invest in proprietary equipment · Bolster ability to perform sophisticated maintenance, process upgrades and continuous improvement of existing equipment
Incremental improvement approaches	Win the race by creating a constantly escalating standard	· Continuous improvement in small increments · Continually adapt to changes in customer needs

Source: (B. B. Flynn et al., 1999)

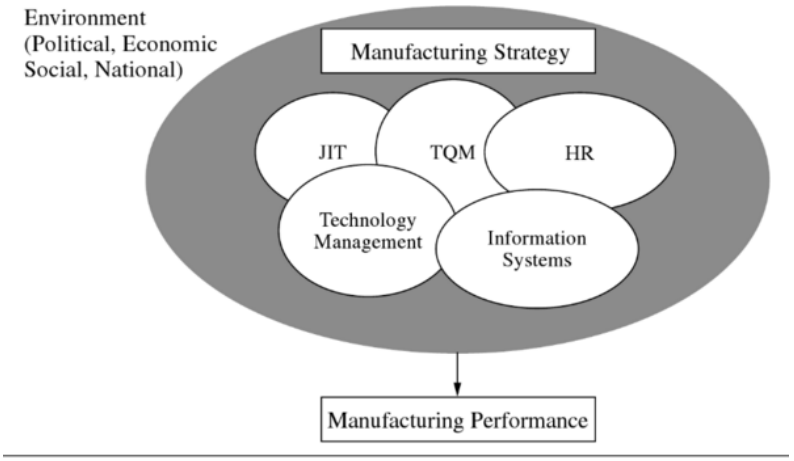

Figure 1-High Performance Manufacturing (HPM) model. (Schroeder and Flynn, 2001)

The model study the constant change present in the firm's environment and the requirements of adaptation that are necessary to had high performance. Also, it´s important highlight that all the practices are linked together over time, in this meaning the practices tend to reinforce each other and provide synergy.
Actually, the most know in the words class manufacturing practices are (Acevedo, 2014):

1. Make-to-order/JIT Manufacturing
2. Small lot sizes
3. Families of parts
4. Doing it right the first time
5. Cellular manufacturing
6. Poka-yoke
7. 5 – S
8. 6 – Sigma
9. Total Quality Management (TQM)
10. Total preventive maintenance (TPM)
11. Quick changeover/Single Minute Exchange of Dies (SMED)
12. Zero Defects
13. Just-in-time (JIT)
14. High employee involvement
15. Cross functional teams
16. Multi-skilled employees
17. Visual signaling
18. Statistical process control (SPC)
19. Lead-Time Reduction through Streamlined Flows of Information and Products;
20. Policy Deployment, HR Management and Best Practice for Staff Motivation;
21. Continuous Improvement of Customer Service
22. Lean Thinking;
23. Attractive Quality Creation;
24. Levelled Production System;
25. Variable-Product Variable-Quantity Production to meet Demand Fluctuation;
26. Synchronized Production System (from order to delivery);

Even though, production practices are standard for any industry, but their applicability and implementation requirements is not available to any organization, limiting them to world class corporations (Swamidass, 2000). Nevertheless, globalization and competitiveness requires industries to select world standards in their processes to compete in world markets At this point there are many limited industries, that even by having good quality products; they are unable to compete in world markets because of their manufacturing standards. The implementation of these manufacturing standards is not only about to consider new changes in shop floor processes, it is

actually needed to take in control a series of preceding activities such as management of raw materials, equipment and tools, quality control, maintenance, planning, sufficient financial resources, modern technological systems, training resources, organizational restructuring, shiftless time for implementation, work philosophies, to enroll the organization to practices of this type (Schonberger, 1986).

NEW ENTREPRENEURSHIP TRENDS

Entrepreneurship is defined as a process of value creation and appropriation by entrepreneurs in an uncertain environment (Mishra and Zachary, 2015). Mishra and Zachary (2014) argues that entrepreneurship two stage of venture, the first about venture formulation and the second, venture monetization. In other hand, Coase (1937) posited that the entrepreneur is central to the company's formation (Coase R. H., 1937). At the same time, the entrepreneur brings coordination of the resources within more efficiently the operations of the firms. Kizner´ (1973) focused his analysis on entrepreneur opportunities has a market equilibrium ((Mishra and Zachary , 2014). Modern theorist as Shane and Venkatraman (2000) argues that entrepreneurs are new ways of service, material, markets, needs and firms model to satisfy to population being profitable and exploitation opportunities.

Actually, the entrepreneurship it is conditioned for two important reason; one of them is the opportunity and the second is the necessity that you have and want to satisfy when you start an entrepreneurship. The entrepreneurship is fast emerging as a megatrend, such a key drivers of economic grow, helping to expand the economies, and introduce more new capital for R&D (Entrepreneur middle east, 2015). Now days, the global entrepreneurship landscape is encouraging, according to the Organization for Economic Cooperation and Development, in some development countries reach a SMEs on average contribute around 50% or more to the GDP, 60% local workforce employees, created up to 70% of new job opportunities and account for about 30% of exports (Barkawi, 2015). In contrast to the above, in Latin America the entrepreneurship it is lacking of innovation elements, and the export participation its minimum (Lederman et. al, 2014).

In addition, Bruce (2015) although it is difficult make predictions about new entrepreneurship trends few business will ever achieve the $1 billion valuation that distinguishes a "unicorn," but many have failed trying, thrust into the running with support from optimistic venture capital. Speculation about the survival of unicorns-in-the-making abounded this year, supported by provocative statements from within the venture community and the much-discussed valuation write-downs from major players. And the second way will be related to grow slow will displace fail fast, the U.S. Federal Reserves announced an increase in interest rate for the first time in nearly decade (Bruce, 2015). All this trends turn around some sectors as: 1) Oilseed and Grain Farming, 2) Building Finishing Contractors, 3) Offices of Real Estate Agents and Brokers, 4) Architectural, Engineering, and Related Services, 5) Management, Scientific, and Technical Consulting Services, 6) Computer Systems Design and Related Services, 7) Other Fabricated Metal Product Manufacturing, 8) Utility System Construction, 9) Specialty Food Stores and 10) Foundation, Structure and Building Exterior Contractors. Moreover, the Global entrepreneurship monitor present five takeaways to apply in recent year in small business to being more competitiveness; 1) entrepreneurship intent, 2) entrepreneurship culture, 3) By the numbers, 4) entrepreneurship drivers and 5) business exits, all this thing at the same time with knowledge of big data, asynchronous and synchronous, BYOD and mobile device management (Jones, 2015)

DESIGN / METHODOLOGY / APPROACH

The research is a descriptive study, with transversal approach. The study intent to analyze entrepreneurship advance in function to applied the High performance manufacturing practices in their operations. Of the literature review we establish the contribution and theatrical framework about the topics. The review of the literature such as; Flynn B. (1999), Schroeder R. (1997), Mishra and Zachary (2014), Barkawi, W. (2015), Bruce, R. (2015), Coase R. H. (1937), Lederman et. al. (2014) among others. The aim of the research analyze how the high performance manufacturing can be use in the new trends of entrepreneurship.

RESULTS: PRESENTATION AND DISCUSSION OF THE EXPECTED OR ACHIEVED RESULTS

The result of this research rest in the articulation between high performance manufacturing practices designed to biggest companies, in function of developing entrepreneurship. The entrepreneurship being growing around the world, this cause for the economic trends, innovations needs, new spin off, or new needed that want satisfy. However, the SME´s no always can applied the high performance manufacturing, and it's more difficult to applied in development countries because are design for organization with a formal structure.

The result show us that entrepreneurship in development countries are characterized for needed to improvement in:

1. Human capital generation ***linkage with high performance practices related with Human Resources***
2. Infrastructure and logistic improvement ***linkage with high performance manufacturing related with Just-in-time, technology management and information system***
3. Competitive increase ***linkage with high performance manufacturing related with Total quality management***
4. Improvement of contractual environment ***related with the interrelation of the Human resources practices***

Added to that, the globalize economies they are demanding to the entrepreneur adapt their business model to international standard to being competitive around the world. Actually the innovation prime of the SME´s increase along the time in major proportional than the companies that are considered as biggest in the region.

Other result, reveal that the entrepreneurship more frequently in development countries are; entrepreneurship by need, this sustained through the economic dynamic and the highs rate of unemployment existent in Latin America. At the same time, the social entrepreneurship with the aim to generate more inclusion in genre, cultural, and behavior population and generate more economic reactivation of forgotten sectors.

To linkage the high performance manufacturing practices with the entrepreneurship in developing countries its necessary know the only the best performance companies can compete in international markets, but also, exist a latent demand for products manufactured by the entrepreneurs, and they can't export because isn´t have an international standard that permit being more competitive to regional and international levels. In this meaning, it intends use the eight

elements of High performance manufacturing model to adapt to entrepreneur of development countries, to do this, it is proposed to implement it in two ways. The first way is for entrepreneurship focus in services, and the second way is about manufacturing entrepreneurship like a show in figure 1. It highlights that this is a first draft of what could be a future model extended

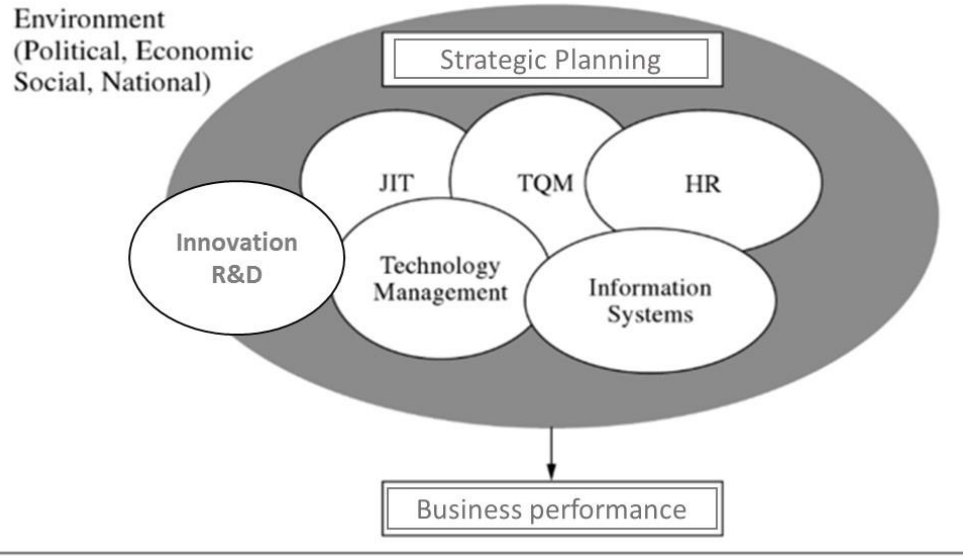

Figure 2-High Performance Manufacturing (HPM) model adapting to entrepreneurship focus in service. Adapted from (Schroeder and Flynn, 2001)

The figure 2, show the interrelation that has to exist to involve the entrepreneurship focus in service with the high performance manufacturing practices. The methodology of implementation of this practices, have to considerer the entrepreneurship size and their local market participation. To improvement in innovation, and R&D it will be necessary appeal to foreign cooperation investment by technical and financial aid. A strategic planning based in competitiveness approach will make more competitive and increase substantial the entrepreneurship performance.

Finally, of the review of Hayes and Wheelwright practices and contrast with the practices developed by entrepreneur, all the high performance manufacturing practices can be applied as long as contextualized their application. Also, before the application its necessary the separation done for category of entrepreneurship. The entrepreneur must have the ability to identify which aspects of the High performance manufacturing can adapt to your business model and thus exploit its use. Another important issue is that the research highlights the area of services, due to the type of innovation evidenced ventures lacking in developing countries. In other hand, test performed in entrepreneurship sector found that when a SME´s have a control through JIT, HR, TQM, Technology management, information system known in real time the firms operations and can take decision to improvement the performance of the companies, focusing on improving of cost reduction, and evidencing investment returns to investment in R&D. As a future research regarding the application parameters present in entrepreneurship to consolidate

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