

## Promoting FDI-related Technology Spillover in Nigeria's Manufacturing Sector: Active-firms Targeted Policy Approach

A Y Dutse<sup>1</sup>, A A Okwoli<sup>2</sup> and A K kurfi<sup>3</sup>

<sup>1</sup>School of Management Technology, Abubakar Tafawa-Balewa University, Bauchi-Nigeria

<sup>2</sup>Department of Accountancy University of Jos – Nigeria

<sup>3</sup> Department of Management Sciences, Bayero University Kano - Nigeria

**Abstract :** The inability to achieve appreciable level of productivity in the Nigerian manufacturing has generated questions on the effectiveness of current FDI policy approach in facilitating effective spillover. An attempt is made in this article to depart from the earlier FDI policy perspective that considers technology as a public good that can normally be transferred to the host economy. Accordingly it is argued here that empirical evidences exist which indicate that significant technology spillover is most likely to occur among subsidiary firms that are technologically active as well as indigenous firms with absorptive capability while those that are not active are unlikely to do so. In providing a new approach, a policy priority framework for targeting technologically active firms is recommended which basically involve creating favourable condition for knowledge exchange, promoting selected technologies & products, supporting technological capabilities of active indigenous firms, and improvement of technical education of potential workforce. This is will encourage MNCs to transfer more valuable technologies to subsidiaries in Nigeria and also increase domestic firms' ability to absorb superior technology from MNCs.

**Keywords:** FDI Spillover, Nigeria's Manufacturing, Policy framework

### 1. Introduction

The national quest for scientific and technological know-how through FDI which is required for achieving sustainable development and ultimately the Millennium Development Goals (MDGs) has gathered momentum in recent years. Nigeria, after decades of restricting FDI like other developing countries (Marin, 2008), is now falling over to attract external investors, and spending large sums of money to attract foreign companies. Yauri (2006) reports that FDI-related foreign economic policies received most significant attention of the Nigerian government in the last decade and a half, which resulted in signing six (6) Bilateral Investment Treaties (BITs) and eleven (11) Double Taxation Treaties (DTTs) aimed at encouraging the inflow of FDI. On similar development, ODI (1997) reports Nigeria as the second largest recipient of FDI among low-income countries like India, Bangladesh, Vietnam, and other countries of African region.

This over-enthusiasm to attract FDI, in some cases has resulted in bilateral treaties being badly negotiated, excessive incentives offered and environmental standards lowered (Ikiara, 2003 and Babatunde, 2010). Explanations for the justification of these efforts, however, have been offered by many authours for instance (Oman, 2000) and (Marin & Giuliani, 2008) explain that Multinational Companies (MNCs) are thought to bring not just employment and capital, but also new skills and technological knowledge for domestic firms. Such benefits are supposed to leak out from MNC subsidiaries to domestic firms thus

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<sup>1</sup> Corresponding Authour: adutse@yahoo.com. Currently a research student at IIUM, Jalan Gombak, Kuala Lumpur, Malaysia

generating spillover effects. It is this conviction has made the government of Nigeria to set up policies that prescribe the attraction of FDI and integration of related spillover to traditional knowledge and procedures in the productive sector of the economy in all ramifications (UNCTAD, 2009).

In doing so, Nigerian government laid much emphasis on manufacturing sector because it is envisaged that the modernization of the sector requires a deliberate and sustained application and combination of suitable technology, management techniques and other resources to move the economy from the traditional low level of productivity to a more automated and efficient system of mass production of goods and services (Malik, Teal and Baptist, 2006). Unfortunately, in spite of these efforts and the recorded increase in FDI inflows, the performance of the sector leaves much to be desired as general output, capacity utilization and sector contribution to GDP are still comparatively low. It is in view of the above development, that this article is developed with the main objective of proposing a policy priority framework which puts technologically *active* MNCs subsidiaries and indigenous manufacturing firms at the centre stage of policy decisions. In doing so the article starts by summarising related research evidences that provide basis for and support the need for policy priority review and went on to briefly examine the Nigeria's economic status in the global context. It further explores the trend of FDI inflows to Nigeria, the manufacturing productivity challenge and the need for policy priority realignment. It concludes by offering a policy framework that can be adopted by Nigeria's economic planners which could be adopted for achieving meaningful and effective technology spillover among the manufacturing firms. It should be noted that the emphasis of this article is basically on Nigeria – a low income developing economy- and thus reviewed the findings of empirical research, policy documents and other official reports covering low income and developing economies.

## **2. Summary of Research Evidence that Justify the need for Policy Change**

The evidence and extent of FDI-related technology spillovers in the host economies of developing countries is an important area of research in the international economics and management literature. The general belief (Ikiara, 2003; Marin, 2006; Dutse, 2008 and UNCTAD 2009) is that MNC subsidiaries bring in new technologies, skills, marketing expertise and novel management techniques from their parents into host countries, these knowledge resources may 'leak' to indigenous companies through various channels. This could be through the integration of the local market with the international operators, labour mobility between subsidiaries and indigenous firms resulting in knowledge spillover, learning from the demonstration of new technologies represented in foreign subsidiaries and when indigenous firms receive technical assistance. UNCTAD (2005) emphasize that FDI-led Technology spillovers can play a significant role in the productivity growth of indigenous enterprises in a host economy. Lichtenberg & De la Potterie (1996), Xu (2000), Pradhan (2006), Sun (2010) agree.

Recently, however, a growing number of empirical studies have emerged in literature discuss with somewhat contradictory conclusions. For instance as (Ghali and Rezgui 2008) explain, that the outcome of the studies are significant in some cases and insignificant in some for instance, the earlier studies of (Blomström & Persson, 1983) and (Blomström 1986) covering developing and low income economies, have confirmed the presence of positive spillover using cross sectional data. However, as can be seen in the summaries of (Görg and Greenaway, 2001) and (Ozturk, 2007), the work of (Haddad & Harrison, 1993) on Morocco using panel datasets, shows weak and insignificant spillover effects while (Saltz, 1992; Kokko, Tansini and Zejan, 1996; Aitken & Harrison, 1999; and Kathuria, 2000 on India) found significantly negative effects. Recently the works of (Marin and Bell, 2006; Pradhan, 2006; Sasidharan, 2006; Marin and Giuliani, 2008), have presented conclusions of several in-depth studies that attempt to provide some level of explanations for the contradictory findings on spillover effects. To provide logic to the debate Marin (2008) in one of her prolific writings on FDI-related spillover, offers a novel pattern of opinion suggesting that experts should be questioning the main assumptions underlying the models used by the researchers. She explains that "*what matters much more is what subsidiaries actually do once they have been established or acquired – namely whether they are entrepreneurial and innovative enough to contribute to the host economy in a constructive way. P: 25*". Accordingly this should be the key issue in research and policy priority decisions on how government of Nigeria can promote the accumulation of technological assets and capacities by MNC' subsidiaries in the host economy and also strengthen the absorptive capabilities of

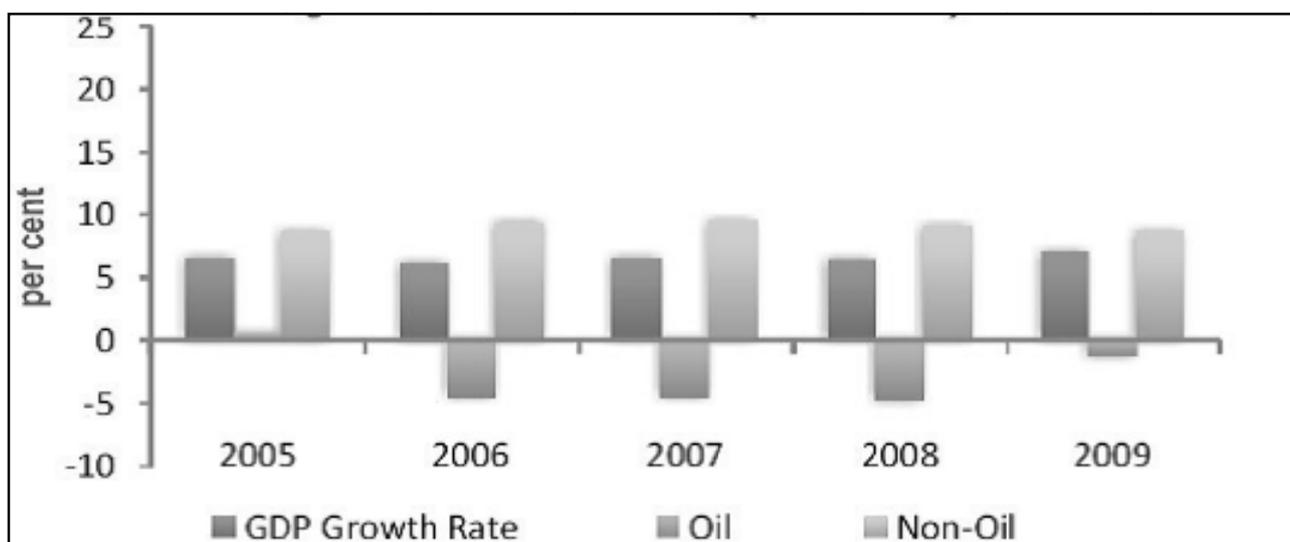
indigenous firms to serve as the main drivers of FDI-related spillover effects particularly within manufacturing sector of the economy.

### 3. Nigerian Economy in the Global Context

Goldman Sachs (2007) has projected that Nigeria could be among the 20 largest economies in the world by 2025 provided the growth and investment potentials in energy, infrastructure, urbanisation, human capital and technology are promoted. Presently the country has a population size of over 150 million people (2% of the world's total population) comprising of young people serving as large consumer and labour market. Accordingly, IMF (2010) and CBN (2009) records shows that the Real Gross Domestic Product (GDP) in Nigeria grew by 7.69% in 2010, higher than the growth rate of 7.45% recorded in the corresponding period of 2009. IMF (2010) projects a growth rate of 7.3 percent in 2011. The 2010 growth rate is the highest since 2008, see Figure 1.

In terms of real sector contributions, Oil industry nominal GDP accounted for 32.51%, while non-oil sectors nominal GDP contributed 67.49%. Further analysis of the breakdown of GDP to oil and non-oil sectors shows that the Nigerian economy is dominated by non-oil sector, having contributed up to 84.30%, while the oil sector contributed only 15.70% to output in 2010.

Figure 1: Nigeria's GDP Growth Rate (2005 – 2009)



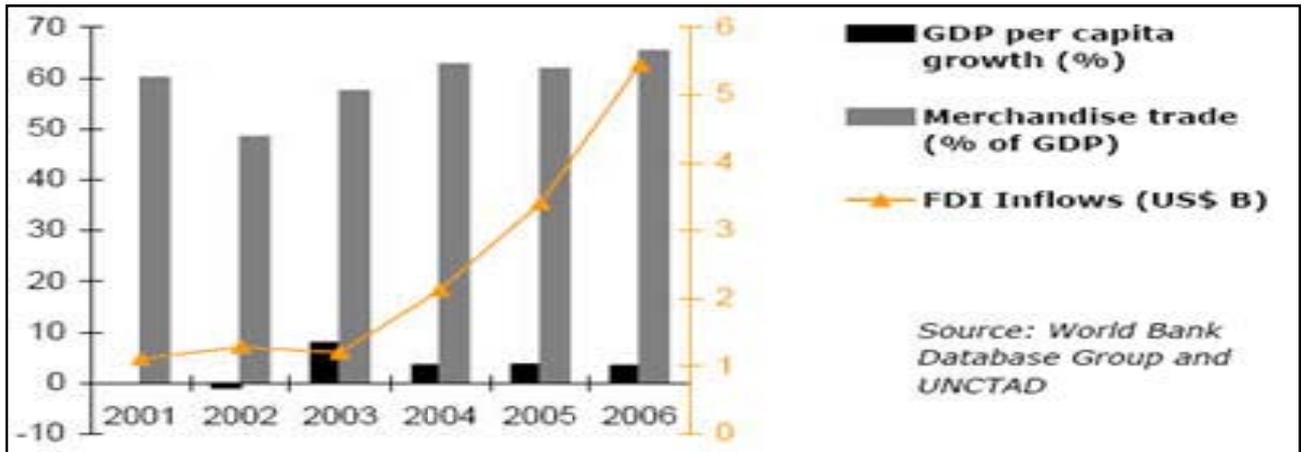
Source: Central Bank of Nigeria annual report 2009

In terms of sectoral growth rate, the Telecommunication & Post sector recorded the highest real GDP growth rate of 33.74%, followed by Hotel & Restaurant: 12.10%; Building & Construction: 12.00%; Solid Minerals: 11.85%; Wholesale & Retail Trade: 11.40%; Business & Other Services: 10.65%; Real Estate: 10.48%; Manufacturing: 7.31%; Agriculture: 5.84%; Finance & Insurance: 4.33%; Crude Petroleum & Natural Gas: 3.96% and Others: 4.57%. Per capita income has continued to rise with growth rate of 7.0% and estimated rate of 7.3 in 2011. It is opined by Malik, Teal and Baptist (2006) and ADB (2010) that if Nigeria can succeed in strategic transformation of its manufacturing sector as suggested by many experts and recent policy initiatives, growth rate may reach 2diggits in the next five years. This would put Nigeria's growth rate ahead of two other emerging markets, Brazil and Russia, and slightly behind India and China.

### 4. FDI Trend in Nigeria

UNCTAD (2009) records show that beginning from the 1970s the value of FDI flow in to the Nigerian economy was \$205; in 1975 it has risen to \$470, by 1989 it has reached \$1Billion and has continued to grow with positive impact on the economy. During the period between 1970 and 1990, Nigeria became the principal destination of FDI inflows to Africa recording more than 30% and by 2007 accounting for more 70% of all the flows in to the Economic Community of West African countries. Presently, Nigeria's absolute FDI stock stands at \$63 billion, being second only to South Africa in the continent.

Figure 2: FDI inflows to Nigeria & GDP Growth



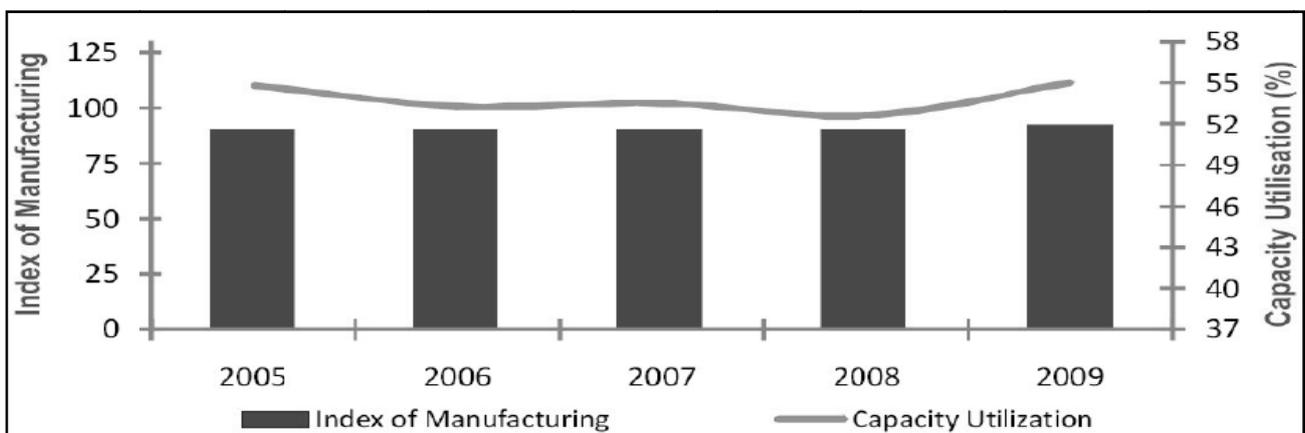
On similar aspect, the Central Bank of Nigeria (2009) reports that FDI inflows continue to increase steadily for instance, in 2006 and 2007 it increased by 21% (i.e. from N624.5billion to N759.4). As expected the global financial crisis caused a decline of 39.4% amounting to N460.2billion but subsequently in 2009, increased by 24.4% amounting to N572.5billion. Figure 2 shows the steady growth of FDI flows to Nigeria.

## 5. Development in Manufacturing and the Need for Policy Realignment

Current reports on Nigeria’s manufacturing suggest that the sector is still trailing behind other sectors in terms of productivity. The year 2009 has brought some optimism by the growth recorded as shown in Figure 3. The index of manufacturing production rose by 1.3% above the level and capacity utilization showed slight improvement from 54.7% in 2008 to 55% in 2009.

This development has been attributed to some policy initiatives aimed at promoting increase the performance of some firms within the subsector. The policy initiatives include among others:- Granting of licences for importation of quality raw materials for industrial use, Provision of Capital Allowance Incentives for incurring excess capital expenditure, Granting of input loan my the Ministry of Commerce and Industry in collaboration with the Central bank of Nigeria and commercial banks, Provision of 2-3 years duty free period for importation of machinery, equipment and spare parts during the phases of plant building and commencement of production, Removal of restrictions on the importation of high valued raw materials for production and Provision of tax reduction incentive on investment in system conversion by manufacturing firms (CBN, 2009).

Figure: 3 Index of Manufacturing Production and Capacity Utilization

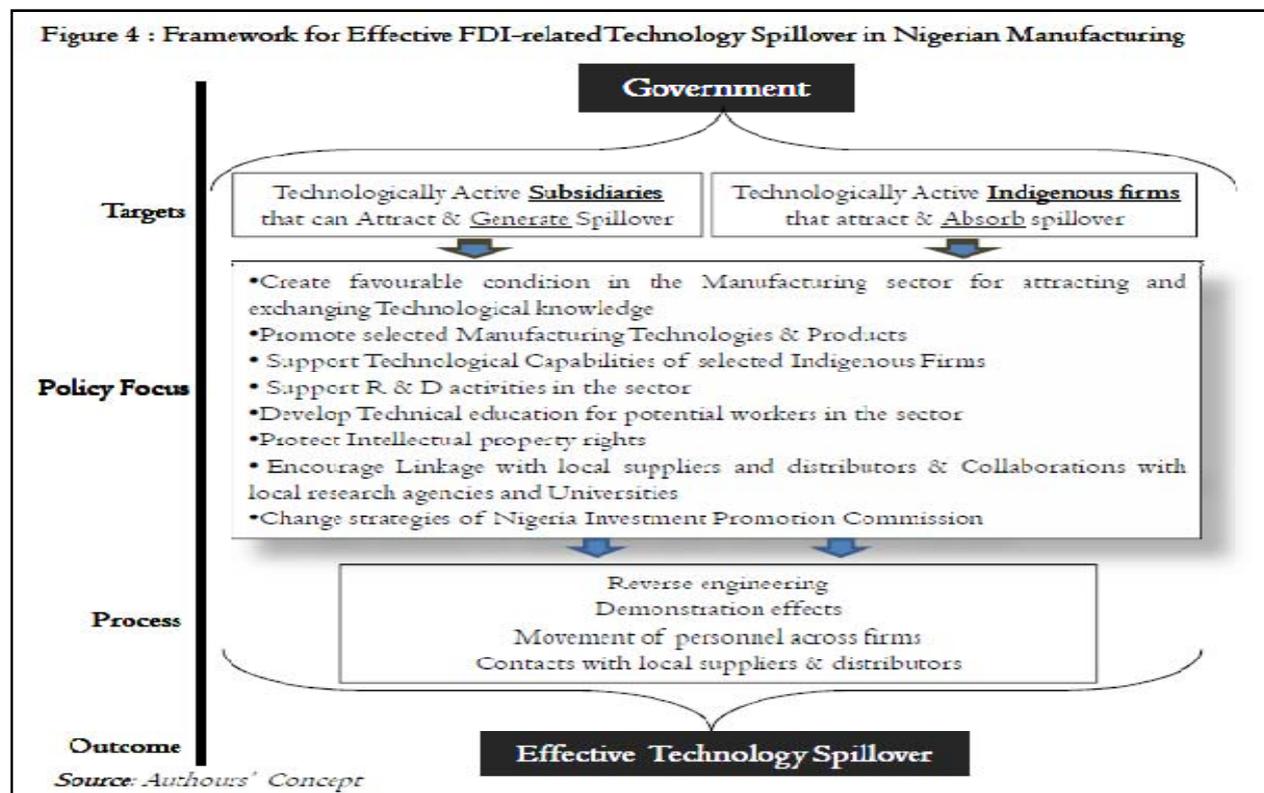


Source: Central Bank of Nigeria annual report, 2009

The important point here is that significant changes are yet to be recorded therefore, justifying the need for policy realignment potentially to help in building up indigenous manufacturing technological capacity in the country.

## 6. Targeting the Technologically Active Firms

Alongside above mentioned policy changes, there is the need, as suggested by the newly emerged research results (Mowery and Oxley, 1995) and (Lall and Narula, 2004) to focus on subsidiaries as points of reference for adapting their global to local strategies and host country policies. This focus is to be extended to indigenous firms that are active and have the absorptive capability to absorb the knowledge that may spillover from the technologically active firms.



As indicated earlier, it has further been argued that only those firms that are technologically active in the sector, i.e. which invest and engage resources in the development of their own technological capability by means of research & development, use of highly skilled personnel, acquisition of licensed technologies, providing quality training to their workers and engaging in innovative activities, are more likely to generate and absorb spillovers (Todo and Miyamoto, 2002). This is because they are more likely to have more valuable knowledge to spread through demonstration effects or contacts with Nigerian local suppliers and distributors, or the movement of personnel or linkages with universities, science & technology research agencies etc. While on the other hand, technological passive firms e.g. those that invest less in technological knowledge will have less valuable knowledge to transmit to indigenous firms in the sector and thus, unlikely to generate positive spillover effects. Therefore, the strategic focus for government as shown in Figure 4, is to identify the technologically active firms as the targets and develop policy priorities that can ensure the process of effective technology transfer and spillover (Chuang and Lin, 1999 and Marin, 2008) by: -

- **Creating favourable condition for Knowledge exchange**

Nigeria's Ministry of science and technology should facilitate coordination among R&D programs by bringing together firms that work in similar areas for better monitoring and evaluation systems.

- **Focus on selected manufacturing technologies and products**

Indigenous firms targeted as active should be supported to acquire vital technology through technology licensing, technology transfer agreement, reverse engineering and adaptation to build their own capabilities. This can be facilitated more by establishing Technology Trackers in leading countries (USA, China, Germany, India, and Japan) to track development of technology in key segments.

- **Support technological capabilities of Indigenous firms**

Investments policies should seek to promote technology -based partnerships between foreign and local enterprises with the view of developing Nigeria's as global outsourcing and subcontracting base. Alongside

government should sustain the current promotion of entrepreneurship development programs in the university system for goal directed promotion of business ideas and entrepreneurial skills.

- **Intensively support R&D**

Government should restructure public R&D institutes and laboratories to become more demand-driven and services oriented, and also make the resource allocation more performance driven. R&D agencies and centres should be encouraged to acquire international accreditation for granting product certification. They should also be encouraged to effective technological extension services in order to help Nigerian indigenous firms improve their manufacturing and design capabilities. Government can also subsidise R&D activities of the indigenous firms because of their weakness in such area.

- **Improve technical education base**

Reorient interest for existing higher technical education towards core engineering profession through the review of outdated curriculum, New curriculum should adopt interdisciplinary approach and increasing relevance to industrial application. Active firms would strive to attract and retain the best engineering talents.

- **Promote Linkage and Protect Intellectual Property Rights**

Policy priorities of government should also seek to promote strong linkages between active subsidiaries, technologically capable local firms, local supplies and distributors. It should also emphasize on international cooperation between R&D institutes and Universities and also build linkages for technology development and technology transfer. Attention should be paid in intellectual property protection regime for such firms.

## 7. Conclusion

Many studies provide evidence of the existence of spillover effects, suggesting that FDI can act as a vehicle through which new ideas, technologies, and working practices can be transferred to domestic firms. However, some case studies and empirical research find little evidence of a spillover effect arising from FDI inflow. This mixed empirical evidence suggests that spillover benefits cannot be taken for granted, but rather, research needs to identify conditions under which spillovers actually occur. Consequently, recent research works used rigorous analysis to prove that the subsidiaries' technological behaviour and in some cases local firms' technological capabilities have a significant bearing on the magnitude of spillover effects. It is on this basis that this article recommends to Nigerian government a policy approach that is designed not only to attract better technological resources but also to promote innovativeness and entrepreneurial drive among the technologically active firms in the manufacturing sector. The recommended framework basically involve creating favourable condition for knowledge exchange, promoting selected technologies & products, supporting technological capabilities of active indigenous firms, and improvement of technical education of potential workforce. This is will encourage MNCs to transfer more valuable technologies to subsidiaries in Nigeria and also increase domestic firms' ability to absorb superior technology from them.

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