

## CIO – Corporate innovation online Innovation management best practices

### Re-thinking NAFTA and the capacity for innovation. Two similar countries and an outlier. What to do?

#### Trade is good for all parties' longer term. Collateral damage is the problem, negatively impacting smaller centres across the U.S. and Canada

*A perspective on innovation and its status in three countries*

June 3, 2017

#### Summary

Two countries so much alike while the third, Mexico, is from a different world. Natural partners and an outlier, Mexico, make for a difficult trade agreement.

Since NAFTA was signed into law in 1994 Mexico has had over 30 years to successfully address its major problems in corruption and crime – and to take advantage of ‘trickle down’ economics - but has not done so. Trade partners need to take note.

As NAFTA represents a powerful example of how trade can lead to economic prosperity and improve peoples lives, the NAFTA trading bloc should be optimized and not aborted. Its impacts, especially on smaller one-industry towns, have so far not been well handled managed.

Innovation will continue to impact jobs perhaps even more so than over the 32 years of operating under the Act. Job retraining, re-employment, education and mobility are needed to mitigate consequences.

Innovation, which relies on strategic investments being made by both the public and private sectors, is constrained during times of political and economic uncertainty. The WEF<sup>1</sup> provides some insights into the status of innovation in all three countries.



#### Contents

**Economic overview.** *Responding to the changes brought about by the NAFTA agreement is the main issue*

**The WEF's perspective on innovativeness.** *The U.S. is highly ranked, Canada is 24<sup>th</sup> and Mexico has a big challenge.*

- The Pillars
- Problematic factors

**Delegation.** *A key characteristic of innovation management best practices*

**Trading partners need more than trade.** *It is time for Mexico to address crime and corruption*

**Small, single industry towns are most impacted** *U.S. and Canadian towns are impacted negatively while economically-diverse cities can absorb the impact.*

**Driving forces of innovation and employment in the future.** *The content of 'manufacturing jobs' is about to change drastically due to innovation (AI, big data and IT)*

<sup>1</sup> World Economic Forum, Competitiveness Report, 2016-2017

## CIO – Corporate innovation online

### Innovation management best practices

#### Economic overview

*Responding to the changes brought about by the NAFTA agreement is the main issue*

NAFTA came into effect on January 1, 1994, 33 years ago. While there have been disputes on trade arrangements over the years, the Act has been seen by most to have met its objectives; i.e. more trade and investment amongst the three partners to the agreement.

The Act is a classic example of international economics at work; reduce trade barriers, specialize in what one does best, encourage trade, and everybody is better off over the longer term. All of this has happened except for the ‘better off’ part. Jobs have been gained and lost and it is the unevenness of the latter that has not been well managed.

As with any complex problem, the fix is not in throwing the whole arrangement out the door but rather identifying the

	United States	Mexico	Canada	Totals
GDP as % of world	15.81	1.96	1.44	19.21
GDP per capital \$	55,805.5	9,009.3	43,332	
Population in millions	321.6	127	35.8	484.4

root causes of the problems which have surfaced due to the Act.

To this extent, the manner of handling the repercussions of NAFTA are similar to any other trade arrangement among nations or even among regions. How to handle the impacts or outcomes of any trade arrangement is the challenge.

This perspective is not about the agricultural, automotive nor soft-wood lumber issues, it is about the state of innovation in the three countries and a need to focus on improving the climate for innovation in all three countries but particularly in Mexico.

Innovation is a major issue in the U.S., Canada and Mexico. Manufacturing jobs, the current centre of attention, have moved to Mexico – although not exclusively - because of cheaper labor and that might be the end of story. Now, with the improvement in the quality of manufacturing coming out of Mexico, there is even more competition on the horizon.

The shift to ‘smart manufacturing’ however, represents an even greater opportunity for the U.S. and Canadian manufacturers and perhaps a threat to Mexico’s booming automotive sector. As robots, with the innards of AI, take over simple jobs, the challenge now is to get into the business of making the robots that make the cars and other manufactured products. Traditional routine jobs are slowly, some would say quickly, vanishing.

## CIO – Corporate innovation online

### Innovation management best practices

#### The WEF's perspective on innovativeness

*The U.S. is highly ranked, Canada is 24<sup>th</sup> and Mexico has a big challenge.*

#### The Pillars

Each year the WEF<sup>2</sup> reports on its assessment of global competitiveness by ranking, for 2016-2017 this comprises 138 countries. Overall, the U.S. ranks 3<sup>rd</sup> in the world, Canada 15<sup>th</sup> and Mexico 51<sup>st</sup>. Only two countries stand ahead of the U.S.; Switzerland and Singapore. America is great by this standard!

CIO<sup>3</sup>'s interest is mainly in those rankings which relate to innovation and innovation management practices. The **12<sup>th</sup> pillar** in this comprehensive and user-friendly report is entitled 'innovation' and comprises seven factors.

12th pillar: Innovation <i>Overall rank in 12th pillar<sup>4</sup>; out of 138 countries</i>	U.S. 4th	Mexico 55th	Canada 24th
Capacity for innovation	2	67	26
Quality of scientific research institutions	5	44	17
Company spending on R&D	2	76	29
University-industry collaboration in R&D	4	52	23
Gov't procurement of advanced tech. products	11	88	67
Availability of scientists and engineers	2	55	6
PCT patents applications/million pop.	10	60	19

The U.S. ranks fourth behind three smaller countries<sup>5</sup>. Canada's ranking has fallen over the past decade or so and now ranks 24<sup>th</sup>. In all other categories, the U.S. outranks its NAFTA partners by significant margins.

The areas identified as a priority for the U.S, at least as indicated by this analysis, would be to increase its level of patent applications (intellectual property issues) and, to increase its government procurement of advanced tech. products. The standing in the latter category is almost unbelievable given the extent of military and other spending on technical innovation. Other than these two factors, the U.S. is viewed as highly competitive.

**The 9<sup>th</sup> pillar** of the study, which has to do with 'technological readiness' shows a low rating for the U.S. at 14<sup>th</sup>, below thirteen other nations but well above both Canada which is ranked at 21<sup>st</sup> and Mexico at 73<sup>rd</sup>. Technological readiness is a broad category which covers the availability of latest technologies, firm-level absorption of technology, internet users, band width availability and

<sup>2</sup> World Economic Forum

<sup>3</sup> Corporate innovation online

<sup>4</sup> Switzerland, Israel and Finland

## CIO – Corporate innovation online

### Innovation management best practices

the use of same. Of the thirteen countries ranking above the U.S., nine are from Europe, in this case, including the U.K. and Ireland. Hong Kong, Iceland, Singapore and New Zealand rank higher than the U.S. Pervasive access to the internet and the shift to mobile networks falls short within the NAFTA group.

The **9th pillar**, ‘technological readiness’, comes as a shock more to the U.S. than in Canada. Canada has a well-recognized oligarchy in the telecommunications industry but competition should be thriving in the U.S. While competition thrives in the U.S., the pervasive use of IT has yet to take hold – at least when compared to thirteen other countries.

The **11th pillar** addresses ‘business sophistication’ where the U.S is fourth, Canada 24<sup>th</sup> and Mexico at the 45<sup>th</sup> slot. U.S rankings for all nine factors which go into this pillar are much better than either Canada and Mexico.

An examination of the **12th pillar** provides further insight into what should be done.

- The quality of scientific research institutions, while very good in the U.S. is not so good in Canada and lags dramatically in Mexico.
  - Company spending on R&D, a perennial problem in Canada, is even worse in Mexico.
  - University-industry collaboration is lacking in both Canada and Mexico.
  - Government procurement of high tech. products is minimal in Canada and almost non-existent in Mexico.
  - Scientists and engineers abound in the U.S. and Canada but numbers seem minimal in Mexico.
- These five areas identify some of the priorities which should be on the table as one examines enhancements or modifications to the NAFTA.

#### Problematic factors.

Perhaps more telling than the ‘pillars’ noted above are those factors which impact competitiveness and are referred to in the report as the ‘most problematic factors for doing business’. There are striking contrasts between the countries for the top seven factors for each country.

U.S.	Canada	Mexico
Tax rates	Insufficient capacity to innovate	Corruption
Tax regulations	Inefficient government bureaucracy	Crime and theft
Inefficient government bureaucracy	Access to financing	Inefficient government bureaucracy
Restrictive labor regulations	Tax rates	Tax rates
Inadequately educated work force	Tax regulations	Tax regulations
Poor work ethic in national labor force	Inadequate supply of infrastructure	Access to financing
Insufficient capacity to innovate	Inadequately educated work force	Inadequate supply of infrastructure

## CIO – Corporate innovation online

### Innovation management best practices

The list while not complete – only the top seven are listed for each country – does make the point that tax rates and regulations are a common problem as is ‘inefficient government bureaucracy’ and an ‘inadequately educated work force’.

Probing further into the reference to an inadequately educated workforce, it would appear that the ‘quantity of education matters much less to international competitiveness than does the ‘quality of education’.

Perhaps what is more enlightening is that the most significant component is neither quantity nor quality but rather the on-the-job training provided by companies. The Nordic countries rank high on this list with Singapore being the not-from-Europe entry and in third spot. The U.S. ranking is 14<sup>th</sup>, Japan is 17<sup>th</sup> and Canada in 22<sup>nd</sup>. On-the-job training, long a characteristic of European – and historically in the U.K. – companies with apprenticeship-type programs appears to be a differentiating factor.

On-the job training may well be the turning point for these economies. The private sector usually is more flexible and motivated to make changes than is the education system since they are much closer to the micro economic and technological trends underway and can move more quickly to adapt their workers to changing conditions. A focus by governments at all levels on this type of training might well provide dividends long term and mitigate collateral damage caused by shifting trade arrangements.

Ranking the U.S. as fourth in the area of ‘business sophistication’ will come as a surprise to American management. More surprising is that the fourth ranking is behind Switzerland, Japan and Germany. America, the birth place of the MBA degree and education for business, has clearly not kept pace with international competition – if one is to believe the ranking.

For all three countries, the top seven ‘problematic areas’ set out include an ‘inefficient government bureaucracy’; a stated priority for the incoming regime in the U.S. but less so in Canada. Both the U.S. and Canada apparently have a problem with their ‘insufficient capacity to innovate’, which rating for the U.S. is difficult to believe. For Canada, there are currently hopeful more recent signs.

Both Canada and the U.S. have an ‘inadequately educated workforce’. For Mexico, one is sure the same comment applies but the even greater issues are ‘corruption’ and ‘crime and theft’. Mexico has more basic issues to address than just focussing on educating their workforce. The U.S. and Canada, with the same problem could do well to both address the workforce issue with the objective of creating a NA-wide well-educated work force.

Tax rates;

- the United States has, on paper, the highest tax rate of the three countries at 38.9%, but this may be about to change under Trump’s yet-to-be-approved tax plan. Corporate Tax Rate in the United States averaged 39.21 percent from 2000 until 2016, reaching an all-time high of 39.30 percent in 2001 and a record low of 38.90 percent in 2016
- Canada is at 26.5% and Canada averaged 38.79 percent from 1981 until 2016, reaching an all-time high of 50.90 percent in 1981 and a record low of 26.10 percent in 2012

**Building, sustaining and articulating innovation management best practices**

## CIO – Corporate innovation online

### Innovation management best practices

- Mexico at 30%<sup>6</sup> in, in Mexico averaged 34.43 percent from 1981 until 2016, reaching an all-time high of 42.00 percent in 1982 and a record low of 28.00 percent in 2007.

These comparisons may change swiftly if the currently-tabled new tax legislation in the U.S. is implemented. Mexico and Canada will attempt to follow suit in order to remain competitive.

### Delegation

*A key characteristic of innovation management best practices*

Interestingly, the final factor has to do with one of the ‘best practices’ of innovation management; the ‘willingness to delegate’<sup>7</sup>. Under this factor, the U.S. ranks 9<sup>th</sup>, Canada 11<sup>th</sup> and Mexico at 67<sup>th</sup>.

By this criterion, Mexico has a long way to go to have the appropriate best practices for managing (and encouraging) innovation.



The lack of willingness to delegate is a measure of not just the desire to ‘delegate’ but pervades several other measures of ‘best practices’ for innovation management such as; decentralization, lack of a hierarchy, and willingness of management to use project teams which have authority.

Most importantly, the willingness to delegate is a proxy for trust in an organization. One delegates if there is trust. The rating is therefore a bell weather of broader management problems which can inhibit innovation.

The Nordic countries score high on the ‘willingness to delegate’; on top is Denmark followed by Norway, Sweden and Finland in the top 5 with the Netherlands coming in third. Qatar is 7<sup>th</sup> and Switzerland is eighth. It is significant, and probably related, that the Nordic countries also score high on the quality of education and the provision of on-the-job training.

### Insights into innovation management

- In Mexico, delegation – a key to best practices in innovation management – is rated very low. Nordic countries score high. Canada is 11<sup>th</sup>, the U.S. is 9<sup>th</sup> and Mexico is 67<sup>th</sup>.
- More so than either the quantity or quality of education, it is the on-the-job training provided by employers that correlates with a higher ranking.

European countries rank high, The U.S. is at 14<sup>th</sup>, Canada 22<sup>nd</sup>, and Mexico much lower.

<sup>6</sup> Trading Economics. January 2017

<sup>7</sup> For more information on this factor and its importance to innovation management best practices, please visit the web site; [www.corporateinnovationonline.com](http://www.corporateinnovationonline.com)

## CIO – Corporate innovation online

### Innovation management best practices

#### Trading partners need more than trade

*It is time for Mexico to address crime and corruption*

The U.S. and to a lesser extent Canada, are so far ahead of Mexico in terms of economic development and even the manner of managing innovation that, on first reading, one could question any attempt to bring the U.S. along with Canada into a trade agreement with Mexico.

While the U.S. and Canada share similar economies and ratings, Mexico does not. The overall rankings clearly indicate the current and close trade relationship, technology transfer, and state of economic development between Canada and the U.S. Both countries have also lost jobs to Mexico and have been similarly impacted.

Mexico, however, is geographically within NA, and has a population of 127 million persons, four times the size of Canada and is on the border with the U.S. NAFTA was conceived after the The Canada-United States Automotive Products Agreement, known as the Auto Pact, signed in 1965, had cemented the trade relations between the two countries in the auto industry and led to the belief that the two countries could work together to fashion a more competitive auto industry. Canada and the U.S. have had 50 years to integrate their automotive industry and have done so remarkably well.

The auto-pact was abolished in 2001 but NAFTA had already superseded the early trade arrangement. Now Mexico, by all reports, has improved the quality of its manufactured goods, is very much a part of this integrated community; an illustration of what trade agreements can bring about. While trade in the automotive sector has flourished since NAFTA, Mexico has been the largest beneficiary for jobs due largely to the much lower cost of labour but also its accessibility.

According to Wikipedia, and this is correct, pre-NAFTA Canada had been substantially impacted by the Auto Pact.

*The jobs created by the new market conditions under the pact were almost exclusively [blue collar](#); administration, research and development remained in the United States. This transfer of control of Canadian auto making operations to their US parent corporations substantially reduced the autonomy of the Canadian operations with respect to vehicle and component specification, design, and sourcing; manufacturing and production, branding and marketing, and corporate policy.*

Canada was severely crippled on these fronts under the original trade arrangements as its research and development and sophisticated manufacturing and early-stage design jobs were decimated. Currently, it is the jobs such as assembly line labor which remained in Canada with the big 'three' and this is the part of the supply chain which likely will be most impacted by new robotics and other advanced manufacturing technologies. However, Canadian parts and sub-assembly manufacturers have benefited and may thrive.

It is precisely these jobs that the auto industry in Canada is desperately seeking to get back so that, for example, the innards of autonomous vehicles will be designed and developed in Canada. Renegotiation should open up the full play book!

## CIO – Corporate innovation online

### Innovation management best practices

On the plus side, at least over the next four years, the focus of the U.S. will, as recently announced, be to reduce corporate tax but more importantly reduce the complexity and increasing the fairness of tax regulations. The U.S. is likely to provide the lead in this area and should do so. Canada and Mexico will necessarily follow to remain competitive.

#### **Small, single industry towns are most impacted**

*U.S. and Canadian towns are impacted negatively while economically-diverse cities can absorb the impact.*

A recent article<sup>8</sup> provides a close look at the impact of NAFTA in smaller towns and the consequences for job loss. In small town America, the town of Celina, Texas, was devastated by the loss of its major employer, the OshKosh clothing company as jobs were shifted to Silao in 1996, two years after the signing of NAFTA. Unfortunately for Silao, the story does not end there as, several years later, the company moved its manufacturing facility to Asia and the impact on Silao could be disastrous for the community.

Across Canada, the impact through the heartland of manufacturing in Ontario, and into Quebec and the Maritimes, job loss due to company restructuring or shifts due to labor cost has continued apace for the last several decades.

The problems of unemployment are exacerbated as younger members of the work force move to larger urban centres offering a variety of, what some would believe, more attractive life styles. Nashville is experiencing ‘an economic resurgence’ according to the writer. Toronto is on the road to becoming a world city because of its diverse economy but many outlying communities have suffered job losses.

OshKosh was a garment manufacturing company with characteristically a high labor content making the company vulnerable to competitor’s actions seeking cost reduction by moving facilities off shore. When this happens, unemployed workers are supposed to move to a centre where there is employment, but, according to this story, people have remained and have ‘grown dependent on government benefits’.

Pittsburgh and Hamilton (in Canada), are both examples of diverse economies which have come back from a significant decline in the NA steel industry but this has occurred over a period of two to three decades. Both are good examples of recovery but suggest no real solution for smaller less-diverse towns.

When mining companies decide to close a mine or other resource-based enterprise, pressures are brought to bear to return the site to its original pristine condition. The policy is often known from the time of original investment. Is there a difference between the treatment of mining companies and those of manufacturing companies?

#### **Mitigation of collateral damage**

- When mining companies shut down operations, a ‘return to original state’ is required. Why not a similar arrangement for manufacturing companies?
- On-the-job training provided by companies, perhaps with some support from various levels of government could help.

---

<sup>8</sup> Globe and Mail. May 27, 2017. The Great NAFTA Divide, Joanna Slater

## CIO – Corporate innovation online

### Innovation management best practices

Should there be more of a ‘tax’ or charge required from companies which abandon their employment obligations? Many organizations would have received substantial sums at the outset in terms of tax forgiveness, funds for training, and development ‘loans’ from municipal, provincial or federal bodies.

#### Driving forces of innovation and employment in the future

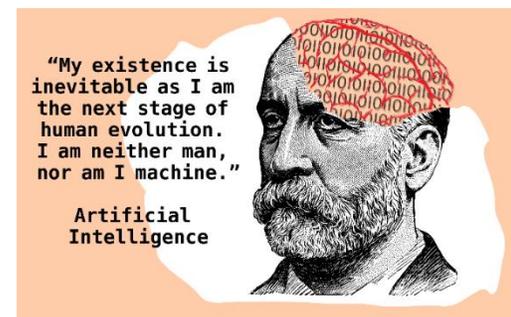
*The content of ‘manufacturing jobs’ is about to change dramatically due to innovation (AI, big data and IT)*

Cheap labor, globally has been the driving force for shifting the location of manufacturing facilities. It is clear from the above analysis that there are areas in which innovation can be improved in all three countries. The job disruptions which have taken place will continue apace if not at an even faster rate. Having greater industry and services diversity is one of the answers to such drastic impacts.

AI, robotics, brain simulation, neuro sciences all have implications for how we work and make a living and the future impact will be profound. Most of these new sciences are just starting to have their impact and the picture for the work – employment - cannot be ignored.

Much has been already being written about the impact of AI, just to take a few examples<sup>9</sup>,

- ‘universal language translation for free,
- self driving cars (impacting cab drivers and delivery services),
- self0-driving fleets (displacing truck drivers),
- health care (medical community particularly general practitioners),
- finance (brokers and financial advisors replaced by intelligent – one hopes - robots),
- agriculture (laborious tasks in farming),
- aerospace manufacturing (manufacturing jobs in Ontario and Quebec replaced by robots as in the auto industry),
- weapons development and the use combat troops (minimal need for boots on the ground).



Each one of these occupations and others will see a decline in employment. AI’s impact is only one of the developing sciences which will drastically alter the way in which people work. This is the challenge facing the three countries.

Employment increases will take place in those industries making use of AI, robotics, drones, management of big-data, etc. Significant re-training will e required to respond to these impacts.

On-the-job training, as noted earlier, should be the most important component of managing the transition and the source of this is private-sector companies themselves. Community colleges, trade schools and universities will require program adjustments to train for new vocations and lessen the negative impact of innovation.

<sup>9</sup> AI is the future, and Canada must seize it. Globe and Mail, January 7<sup>th</sup>, 2017

# **CIO – Corporate innovation online Innovation management best practices**