Recent Issues in Skills and Competencies Development in the Canadian Transportation Sector

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Abstract

This paper analyses challenges and opportunities emerging from recent studies on skills and competencies in the Canadian transportation sector. It also briefly presents a transportation sector industry profile using the 2001 Canadian population census in support of some of the findings.

Human resources strategies need to be developed to keep people in the transportation industry, as it appears that several occupations falling into the industry will be facing possible shortages as a result of the ageing demographic profile. Meanwhile, women, visible minorities, immigrants and persons with disabilities are underrepresented in the industry, currently facing a visible liability deficit. Training is another important issue for the sector. In fact, the retiring cohort is highly skilled and productive. The newly attracted people need to be trained to reach productivity levels of the retiring cohort. Retaining the attracted people is also an important issue. The behaviour of the new generation of workers entering in the industry is different from the retiring one: the older cohort had a culture of a job for life while the younger one is perceived as being more mobile. There is a consensus among the stakeholders and other organizations working in the transportation sector on the need to have more central forums where they can act collectively instead of handling the problems in isolation. This could be the role of a potential Sector Council[1] for the entire industry.

Finally, innovation and skills development has been identified as one of the major challenges to be addressed by the transportation sector in the years to come. In fact, the competitiveness of the sector relies on the capacity of the private and the public sector to be continuously innovative including, *inter alia*, by ensuring an adequate supply of skilled employees and continuously updating their skills.

Key Words: Transportation sector, skills and competencies, shortages, education, recruitment, training, attraction, retention.

Introduction

In *Straight Ahead: A Vision for Transportation in Canada*, Transport Canada (the Canadian federal transportation department) reaffirmed that it would work in part through competition to create an efficient transportation system in order to promote economic prosperity and a sustainable quality of life. One of the Department's strategies to make the transportation sector more competitive, and pursue public policy objectives related to safety, security, the environment, accessibility and urban congestion, is to rely on innovation. While there is no unanimity on the meaning of '*innovation*', most definitions include the notion of applying new technologies and ideas for commercial or public policy purposes[2]. In this regard, innovation and

skills development has been identified as one of the major challenges to be addressed by the transportation sector in the years to come. In fact, the competitiveness of the sector relies on the capacity of the firms and the public sector to be continuously innovative including, *inter alia*, by ensuring an adequate supply of skilled employees and continuously updating their skills.

In this paper, we analyze challenges and opportunities that have emerged from recent studies dealing with skills and competencies in the Canadian transportation sector. We also briefly present a transportation sector industry profile using the 2001 Canadian population census to support some of the findings.

The first part of this article deals with a literature review of recent studies on skills and competencies development in the Canadian transportation sector. In the second part of the paper, we present a profile of the labour force in the Canadian transportation sector using the 2001 census. In the third part, we analyze issues emerging from various skills and competencies studies in relation to the portrayed profile and identify problems and potential solutions.

Review of the recent literature on skills and competencies in the Canadian transportation sector

Stakeholders and governments have been interested in skills and competencies development for a long time, but recent apprehensions about potential skill shortages in the Canadian economy have exacerbated the phenomenon. In this regard, several stakeholders, associations and governmental organizations conducted studies related to skills and competencies in order to understand the trends in the sector.

Skill shortages

The ageing demographic profile of the transportation sector has recently raised concerns about potential skill shortages in the industry. This was underlined in several studies including a Human Resources Development Canada (HRDC, another Canadian federal department) sponsored one[3] that examined both general industry workforce data and disaggregated data by occupation in the rail industry. The study concluded that the rail industry could find itself moving from a surplus of skilled labour a decade ago to a position of significant shortages over the next ten years. To alleviate this, the industry has agreed on the imperative of recruiting and retaining a new generation of employees. The study also stressed the need for improvements in the quality of jobs; attractive pay and benefits; increased public awareness of the contribution of the railway industry to sustainable economic growth; and more effective labour-management relationships and improved working conditions.

The shortage of skilled workers has also been expected in the aviation sector as outlined in a national review of the forty-five key recommendations identified in the 2001 Human Resource Study of Commercial Pilots in Canada sponsored by the Canadian Aviation Maintenance Council (CAMC) and the Air Transport Association of Canada (ATAC). When the original Commercial Pilot's sector study was produced (before the events of September 11/01 and the ensuing industry restructuring), there were strong signs that the demand for pilots was growing at a faster pace than the supply leading to expectations of a shortage on a short-term basis. At the same time, there were some concerns about long terms problems related to new technologies requiring new pilot skills, regulatory changes and the harmonization of licensing

requirements and significant increases in pilot proficiency. One of the recommendations from the study was the need for the creation of a sector council to act as a vehicle for industry actions.

Education and training

As key inputs to the supply of skilled workers, education and training of transportation professionals have been seriously considered in all discussions relative to skills and competencies in the transportation sector.

In terms of education, universities have been identified as the main source in the supply chain for transportation training as most of the supply of professionals comes from civil engineering graduates (Haas, Falkner and Tighe 2002). In fact, these authors identified a series of issues and problems regarding training and education of Transportation professionals during the Transportation Association of Canada's (TAC) *Transportation Education and Training Workshop* in Ottawa in April 2002. They noted that over the past decade, universities have substantially provided less transportation professionals. In addition, they pointed out a marked ageing of senior professionals and the lack of a clear training investment policy by the public sector suggests that this will continue. Moreover, transportation education at the university level is considered far underrepresented in terms of the proportion of civil engineering professors, research funding and number of graduate students.

Training needs of the Canadian transportation sector have been thoroughly examined in a study of the training capacity of Canada's transportation sector: *the study of professional and technical transportation training needs in Canada*[4]. The study examined the state of professional and technical transportation training in Canada. It focused primarily on post-secondary institutions through surveys and interviews. Some technically specific training such as for truck drivers and pilots were also surveyed to determine trends in these areas. The baseline data for this inventory was provided by the Research and Traffic Group's 2000 *Inventory of Professional Training in Transportation* to see how the academic trends for transportation have changed in the past few years. The updated 2003 inventory continued to concentrate on centres and foci of post-graduate training and research in transportation. It also identified specialist programs at the university undergraduate and community college/CÉGEP[5] levels. Private sector courses offered to industry professionals and internal training programs offered by transport operators were also noted.

The importance of training was also underlined in an inventory of truck drivers' training schools across Canada as part of the study entitled "Canada's Driving Force" sponsored by the Canadian Trucking Human resources Council (CTHRC). This inventory was expected to help the industry and governments to develop policies and programs to improve drivers' recruitment, training and retention in the industry. The study concluded that there is no standardization in many aspects of training. Several surveyed schools were not using up-to-date technology in their courses. Furthermore, the study noted wide variability in success in licensing drivers. The very high rate of failure observed in some provinces is intriguing. In Manitoba, a high proportion of trainees don't pass the licensing test the first time around. This leads to questions such as whether the practical and/or theoretical exams are too difficult as compared to other provinces or the trainees do not have the necessary skills to pass the tests. There is no uniform accreditation approach to dealing with truck drivers' training in Canada. The study estimated that more than

half of the truck drivers' training schools surveyed fell outside any licensing or registration process.

More generally, a diagnostic analysis, review and assessment of the human capital development needs of the trucking industry appeared in a study undertaken by the Canadian Trucking Human Resources Council (CTHRC) on behalf of the trucking industry and with the collaboration HRDC[6]. More specifically, this study prepared an inventory and review of training and assistance programs available to prospective drivers and employers. It also identified the most applicable programs as well as the major program deficiencies. Education and training is a provincial responsibility in Canada. However, HRDC has entered into several labour market agreements with provinces and territories. Under those agreements, the federal government can either transfer funds to provinces and territories or be co-manager of training programs. Under the transfer agreements the provinces and territories deliver the programs, while under the co-management agreements HRDC delivers the programs in cooperation with the provinces and territories. While the programs and delivery systems vary somewhat from province to province, the available programs generally fall within the following categories: federally funded skills development programs, student loans, and other social assistance recipient programs.

Attraction and retention

Recruitment, training, and retention problems in the Canadian transportation sector were painstakingly examined during the Symposium on Transport Skills organized by HRDC and Transport Canada on December 3rd, 2003 in Toronto. The purpose of the Symposium was to examine strategies to address challenges in recruiting, retraining and training employees; to share best practices; and to explore joint initiatives between inter-modal and intra-modal transportation sector partners. A general consensus emerged that the transportation sector will be experiencing skills problems in the longer term because of the massive retirement of skilled workers, as the baby boomers start to retire, and that the incoming younger cohort would not be large enough to offset this loss. To overcome the potential shortage in the Canadian economy, the Symposium suggested strategies focused in particular on tapping into those segments of the Canadian population that have been underrepresented in the transportation sector due to historical and/or sociological factors, in particular, women (who are underrepresented in the transportation sector), native Canadians (the only segment of the Canadian population that has an important proportion of young people), immigrants (a selective and relevant immigration policy can offset the expected shortage), and persons with disabilities (who suffer from discrimination and can provide productive services).

In the specific case of the air transportation, a comprehensive review of the original recommendations of the Commercial Pilot's Sector Study and industry–validated recommendations and priorities through focus groups consisting of industry, flight training units and colleges was produced by Sypher-Mueller International Inc.[7]7 on behalf of CAMC and ATAC. More specifically, the follow-up report assessed whether the industry is still experiencing the problems identified in the 2001 report. It also assessed the urgency of the need for renewal of commercial pilots, and what problems should be addressed, as well as what issues remain outstanding. While there is no expected shortfall over the next five years, the study has reported that the operators have been experiencing difficulties to attracting the required skill profile and experienced pilots. About a quarter of them even changed the hiring criteria to attract more pilots.

Most of the surveyed operators reported that they provide in-house training while only a small proportion used affiliated flight-training units.

Demographic profile of the transportation sector

Using the 2001 Canadian population census[8], we profiled the Canadian transportation sector in terms of labour force characteristics. We found that the sector has an ageing labour force, a low feminine representation, a fair representation of visible minorities and native Canadians people, a poorly educated labour force, possible massive retirements in certain professions and, possible transportation specific training needs.

The age distribution of the labour force in the Canadian transportation sector is an important factor making it different from other sectors of the Canadian economy. In fact, 34% of the labour force is aged 51 years and over in this industry. Moreover, those aged 56 years and over represent 12.4% of the total labour force, while the average in the Canadian economy is10.1%.

In terms of feminine representation, the industry is far different from the remainder of the economy. Women represent only 21.4% of the total labour force of the industry while the average in the economy is 46.7%. The lowest feminine representation is observed in the rail transportation industry where women constitute only 10.8% of the total labour force. Visible minorities and native Canadians people are well represented in the industry as compared to the economy. In fact, the transportation sector is close to national averages in terms of these designated groups: 10.4% of visible minorities as compared to 12.6% as the national average and 2.7% for native Canadians people as compared to 2.5% for the national average.

The transportation sector has a lower educated labour force compared to other sectors in the Canadian economy. More than half (60.9%) of its labour force has no education or only attained the high school level, while the national average in this case is 47.7%. At the university or tertiary level the picture is even worse: the national average is 2.6 times greater than the transportation sector one.

Several occupations in the sector are under pressure in terms of potential shortages as a result of an ageing population. Among these occupations are bus drivers, truck drivers and taxi drivers that have 22.3, 13.2, and 18.1% respectively of their labour force aged 56 years and older. These rates are higher than the national average, which is 12.4%.

Most of the observations from the profile corroborate issues identified in other studies dealing with skills and competencies in the Canadian transportation sector.

Analysis of emerging issues on skills and competencies in the Canadian transportation sector

Based on the preceding literature review and sector profile, the following major themes have emerged in terms of skills and competencies in the Canadian transportation sector:

- Expected skill shortages not only for the transportation sector but also for the entire economy in the medium and long term;

- A growing need to attract people while addressing the image problem experienced by the industry;
- A need to train the attracted people to meet the levels of productivity of the current labour force in the sector; and
- A need to retain the attracted and trained people in the industry.

Expected skill shortages

The demographic profile of the transportation sector labour force clearly identifies labour pressures and shortages that are likely to be expected in the coming years. The baby boomers are moving into the older age category and will be living the labour force in greater numbers.

In addition to the pressures arising from anticipated retirements, they will also be increased competition for the available pool of talents. This means that the transportation sector will need to be more aggressive to attract and retain its workforce in this new context. Also, the demand for transportation services is expected to grow overall, while past labour productivity gains, (e substantial in the sector overall over the last two decades), might not be as significant in the future and hence might not provide the same level of sector performance. All these factors will combine to exacerbate the pressures that will result from the anticipated retirements.

Of course, these pressures will not apply equally nor be felt at the same time for all the occupations in the transportation sector. Furthermore, the extent of the pressures that will be effectively felt will in part depend on the actions to be taken by the actors in the industry and by government to alleviate anticipated shortfalls. Labour market mechanisms will also play a role in adjusting demand and supply conditions and general economic conditions can turn around rapidly (e.g. September 11) and change the short-term perspective on the labour market.

At the same time, when considering the fundamental demographic forces at play in Canada (ageing workforce, low birth rate) and the characteristics of the transportation industry (an older labour force and faster growth rate than the rest of the economy, significant rationalization over the last two decades that cannot be easily replicated in the future), it becomes clear that attention and energy needs to be devoted to addressing anticipated pressures and shortfalls.

Attracting workers to the transportation sector

There is a strong consensus among transportation stakeholders that the industry has an image problem. The perception of the sector by the population and the potential workers is biased because there is a lack of information available to the public about transportation. Furthermore, students are not exposed to the field in their young age as transportation is rarely taught in elementary and high schools as compared to other subject areas.

The low representation of certain segments of the population in the transportation sector is another important issue impacting on the ability of the sector to attract the required workforce. Women in particular, but also visible minorities, skilled employees and young people are underrepresented in the industry. This can be the consequence of psychological or union barriers present in the sector or the lack of attractiveness to certain groups of the positions available in the

industry. For instance, it has been argued that the physical demanding aspect of some transportation jobs or the need to be absent from home for extended periods can help explain why women — who continue to shoulder a larger share of family responsibilities — are underrepresented in certain positions. In the same way, firms' and/or minorities' cultural barriers have been used to explain the under-representation of minorities.

In the case of the young and skilled workers, the poor perception of the transportation sector, the lack of training and carrier path, and the perceived low quality of life are possible causes explaining the low attractiveness of the industry. The lack of equipment for persons with disabilities and of daycare services are other factors that can help explain why the transportation sector remains poorly representatives of other categories of workers.

Finally, it is acknowledged that certain categories of employees will make up for an increasing share of the future labour force, in particular immigrants and natives, and that accordingly the industry will need to increase its capacity to attract these categories of employees.

The following potential solutions have been advanced to address the attraction problems that the industry will face:

- Provide more endowment funds, scholarships and bursaries to encourage students to take transportation oriented courses and programs;
- Hold transportation specific career fairs; Make special efforts to attract skilled immigrants, women and natives;
- Use various transportation sector association websites, television ads, media, etc. to distribute and promote information on the transportation sector;
- Provide transportation information to parents and students (elementary and high schools);
- Work to improve the image of the sector;
- Develop career/ education pathways, linking high schools, post-secondary schools and industry;
- Increase the use of coop and internship programs;
- Provide cultural training/diversity awareness programs;
- Review and change the collective agreements in order to attract new employees; and
- Create a workforce planning and comprehensive human resource needs assessment through a central forum: Transportation Council or Sector Council.

Training the attracted workers

It has been indicated across studies that there is a lack of leadership and vision in transportation for human resource policy and practices. Transportation companies do not consider training a high priority. It is considered as a cost, not as an investment. Moreover, the companies prefer to hire and recruit new people instead of retraining existing employees. There is also a lack of information at the company level about the availability of training programs. At the governmental level, there is not enough effort to fast track immigrant's skills certification.

The institutions providing transportation related training and education were responsive to the industry, rather than proactive. This is the result of a lack of dialogue between trainers and the

industry. There is also a lack of industry standards for training and education certification. The institutions have difficult time keeping up with changes in the industry. There is insufficient federal government involvement and support.

In addition to the above problems, there is a lack of knowledge about transportation training/education availability. The lack of knowledge about the transportation industry is another factor that exacerbates the problem. This is possible due to the fact that courses are not in place at the high school level to interest youth. Most youth are encouraged to go to university or colleges.

The training and education institutions point out the lack of funding as a major problem with training. Even within the companies, there is insufficient financial support for employees taking private development training.

To address the training problems, the stakeholders have identified the following possible solutions:

- Sectoral Partnership involving all sectors of transportation with the collaboration of Human Resources Development Canada;
- The provision of incentives for employers that encourages training and retraining;
- Harmonization of skills and training regulations across Canada;
- Develop detailed occupational profiles and build programs based on the findings;
- Improve the marketing of the existing training programs;
- Develop a transportation career fair to inform and educate youth, in particular girls, about transportation;
- Combine high school curriculum with trade training; and
- Encourage industry and government to fund institutions.

Retaining the attracted and trained workers

One of the common strategies in the transportation sector was to hire less educated people and to provide them with in-house training. These so trained people stayed in the industry for life. However, it is no longer the norm for individuals to stay with the same company or industry for life as a consequence of, inter alia, 7/24 operations; inconsistency of scheduled work; not guaranteed hours; long time to get into the union; little or no retraining; advancement takes too long and some other inflexible rules in the unions such as seniority first.

Within the industry, there were a lot of closures, downsizing and restructuring. People have been laid off and are not returning. This is partly due to the lack of retraining. Retraining people to occupy diverse functions help them to be able to return not only in the same industry but also in other occupations when they are laid off for a technological reason for example.

There are trained people but the industry is not hiring them because they are not pursuing a transportation career. The industry is not tracking trained people to ensure hiring. The government is not funding to help the industry to get meaningful employment.

To cope with the retention problems, potential solutions advanced include:

- Better scheduling workload and organization of work, in particular scheduling crews on a more predictable basis;
- Removing barriers (review policies) that prevent people from accessing other opportunities in the industry. In certain sectors of the transportation industry, the employees were trained in-house for specific tasks and it is therefore difficult for them to change jobs, as their skills are too specific;
- Using efficiently the government programs that are currently available;
- Tracking government policy on funding training; and
- Slower transitions to retirement through a gradual reduction in work hours. This will provide orderly succession of both corporate memory and necessary skills in the workplace.

Educational and training institutions

An important part of training in transportation is conducted within programs at the university undergraduate and community college/CÉGEP levels. In addition, private sector institutions offer courses to industry. Transport operators also offer training in-house.

Universities appear to be at the academic, research and professional end of the supply chain of transportation training. Most of the supply comes from civil engineering graduates. Over the past decade, this source has substantially decreased. There is a marked ageing of senior professionals and the lack of a clear training investment policy by the public sector. The trend observed suggests that this will continue. The quasi-total absence of succession planning in the public and private sectors and universities will exacerbate the observed trend.

According to various stakeholders in the industry, there is a need to support the transportation Education Foundation as proposed by the Transportation Association of Canada in its 2001 Business Plan. Moreover, a centrally managed and maintained database of training and educational facilities that could be distributed to various stakeholders involved in transportation training and education would be another way to keep the sector informed about where to seek for training when needed.

Other strategies aimed at promoting transportation education include:

- Alliances of public and private organizations (partnerships) to promote and support transportation;
- Showcasing of major achievements to create awareness and recruit new talent; and
- Establishing an alliance of Canadian transportation professors, to strengthen their role in research, education and training.

Research and innovation

Although it is important to focus on education and training as a means to supply the workforce that the transportation industry will require in the years to come, this issue has also important implications for the innovation capacity of the sector, more specifically for the capacity of the workforce to contribute to the production of new and improved goods and services and/or processes in the sector.

The innovation capacity of the transportation industry depends on the continued inflow of new ideas originating from highly skilled employees and researchers emerging from colleges and universities. Unfortunately, as depicted in the studies examined, transportation seems to be underrepresented in Canadian universities by any measure including the level of research funding, positions in civil engineering faculties, and number of graduate students. This limits the capacity of the sector to be innovative as compared to other sectors.

To overcome the problems related to the innovation capacity of the transportation sector, among the many solutions advanced is to invest in research and development, in chairs and professorships supported by endowments, and in the National Science and Engineering Research Council. These require both public and private funds. As well, sustaining long-standing scholarship programs, including the Transportation Association of Canada and the Canadian Institute of Transportation Engineers scholarships, showcasing major achievements to create awareness, and recruiting new talents, would be beneficial to achieving this objective.

Conclusions

This paper has provided an analysis of emerging issues in the area of skills and competencies development in the Canadian transportation sector. It appears that several sectors of the industry are facing common problems and challenges.

Possible shortages are expected to be felt as a result of the ageing demographic profile of the transportation sector. As in the rest of the economy, there are strong signs of upcoming pressures and shortages, as the ageing baby boomers will be retiring in the next years.

Women, visible minorities, immigrants and persons with disabilities are under represented in the industry. These groups constitute a potential source of persons to be used to alleviate the pressures.

Labour market pressures will be felt throughout the economy and as a result, the transportation sector will need to be more aggressive and competitive when recruiting the workers of tomorrow. However, the current image of the industry sector will be a liability if nothing is done to change it. Activities proposed to attract people to the sector include fairs, ads, funding of training and education institutions, etc.

Training appears to be a very important issue for the sector. The retiring cohort is highly skilled and productive. There is a need to train the attracted people to allow them to reach the productivity level of the retiring cohort. Several strategies have been proposed in this regard among the studies reviewed.

In terms of retention, it has been observed that there is a change in the behaviour of the entering generation as compared to the retiring one. The older cohort had a culture of a job for life while the younger one is perceived as being more mobile. There is a need to develop human resources strategies to keep people in the industry.

There is a need to fund innovation capacity given its importance in allowing the workforce to contribute to the production of new and improved goods and services and/or processes.

Finally, there is a consensus among stakeholders and other organizations working in the transportation sector on the need to have more central forums where they can act collectively instead of handling the problems and challenges they are facing in isolation. This could be the role of potential a Sector Council for the entire industry. A sector council would provide the required framework to deal with human resources issues and share a commitment to identify and act on skills needs that are most important to the sector.

About the Author

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[1] Sector Council: Permanent organization that brings together representatives with different perspectives from key stakeholders groups in an industrial sector to deal with human resources issues and share a commitment to identify and act on skills needs that are most important to a given sector including defining human resources issues; recruiting and retaining workers; anticipating skills shortages...

[2] The Oslo Manual defines innovation as including any new concept, product or process, whether major or minor, and any new market. It also includes inputs other than research activities as such, including intramural activities related to design and market studies, and outside acquisitions of technology.

[3] Railway Association of Canada. 2002. *Canadian Railway Industry Human Resources Study 2002*. Ottawa: Peartree Solutions Inc.

[4] Transport Canada. 2003. *Study of Professional and Technical Transportation Training in Canada*. Ottawa: HDP Group Inc.

[5] CÉGEP stands for *Collège d'Enseignement Général et Professionnel*. It is the Quebec Province equivalent of community colleges in other Canadian provinces.

[6] Canadian Trucking Human Resources Council. 2003. *Review of Driver Training and Employment Assistance Programs*. Ottawa.

[7] Canadian Commercial Pilot Industry and The Canadian Aviation Maintenance Council. 2003. *Follow-up to the Human Resource Study of Commercial Pilots in Canada: Review of Recommendations*. Ottawa: Sypher: Mueller International Inc.

[8] The data set used for the profile was obtained from Statistics Canada as a special request from the Statistics Canada Census Division by Transport Canada