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Impact of Technological Changes on Army Materiel Management Technicians

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Impact of Technological Changes on Army Materiel Management Technicians

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Impact of Technological Changes on Army Materiel Management Technicians

AIM

1. This service paper will analyze the shortfalls in the implementation of the Defence Resource Information System (DRMIS) and the resulting considerations for the training and employment of Materiel Management Technicians (MM Techs) in the Service Battalions (Svc Bn) of the Canadian Army (CA) as additional technological advancements are integrated.

INTRODUCTION

2. The CA must be "agile, scalable and responsive" to fulfill the missions the Government of Canada (GoC) may call the CA to perform.[1] Therefore, the CA relies on accurate information on resource holdings and locations. The Supply Company (Sup Coy) in the Service Battalion (Svc Bn) is responsible for the second line supply to the Brigade (Bde). All new MM Techs allocated to the CA are posted to the Svc Bn(s) from the Qualification Level 3 (QL3) course, and the Svc Bn then force generates (FG) MM Techs both to be employed in first-line units and on operations; hence the training success at this level is crucial.

3. In 2010, the Canadian Armed Forces (CAF) acquired DRMIS, an Enterprise Resource Planning (ERP) software. DRMIS was a significant technological change for the CAF with the promise to improve material management and provide situational awareness at all levels to enable decision-making.[2] However, the implementation encountered several barriers and shortfalls that have limited the CA's ability to use the technology to its full potential. Furthermore, it has resulted in MM Techs having poor DRMIS technical skills, which led to significant material management shortfalls**.** The barriers to implementing DRMIS include inefficiencies in the software design, cultural resistance to change, high operational tempo, and insufficient on-the-job training.

4. There are projects to resolve some of the DRMIS' technical shortfalls and provide further advancements to the logistics community. However, these additional advancements will not resolve all the barriers that the DRMIS implementation has faced to date. Further analysis is required to prevent similar roadblocks to using new technology effectively. Acquiring technology is only the first step, and it will fall short of expectations if the culture, training, and resources do not support the potential of the CA's people and technology. The CA will not realize the future land operating environment (FLOE) of "total asset visibility and access to real-time consumption data (that) will allow reduced holdings and predictive replenishment"[3] without significant improvement of the CA's technical skills.

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[1] Department of National Defence. *Strong, Secure, Engaged: Canada's Defence Policy*. (Ottawa: Department of National Defence, 2017), 36.

[2] "Defence Resource Management Information System." Last Accessed 13 January 2022. https://drmis-sigrd.mil.ca/en/index.aspx.

[3] Kaduck, Anthony, Ron Bell, Peter Gizewski, and Department of National Defence. *Close Engagement: Land Power in an Age of Uncertainty: Evolving Adaptive Dispersed Operations*. (Ottawa: Department of National Defence, 2019), 20.

DISCUSSION

5. MM Techs' poor DRMIS skills have tactical, operational and strategic impacts. At the tactical level, inadequate skills impact several of the critical tasks of a Sup Coy, such as providing in-transit visibility and asset visibility, providing technical advice on supply matters, arranging for amenities, and exercising local procurement.[4] At the operational level, the Svc Bn holds different days of supply (DOS) for each commodity based on usage, for example, 15 DOS of repair parts. The Svc Bn receives replenishment through the theatre third line element that holds another defined DOS.[5] However, due to DRMIS skills, there lacks the ability by MM Techs to pull and understand data on consumption to contribute to the creation of resource scalings, which is an operational/strategic level task.[6] The Auditor General of Canada conducted a study in 2019 with the primary finding that "the military supply chain delivers late 50% of the time," with one of the primary reasons being poor stock management and forecasting.[7] Finally, insufficient DRMIS skills lead to material deficiencies, which the government closely monitors and criticizes. The Report on the Standing Committee on Public Accounts from 2003-2018 has consistently called on the CAF to improve material accountability.[8]

6. Solving the barriers in the short term will be challenging, as the solutions must fit within the current resource context of the CA. First, the CA will not be gaining additional military personnel outside the allocations from Strong, Secured, and Engaged (SSE). Second, any trades with significant vacancies will continue to be under-resourced, as the CAF needs substantial reconstitution after the reduced recruitment during the pandemic.[9] Thirdly, prior to the pandemic, the CAF had limited funds to hire additional public servants, and this is unlikely to increase, as the Government of Canada (GoC) will have other spending priorities through the subsequent phases of recovery.[10] Finally, there are no indications that the CAF operational tempo will decrease. As a result, the solutions must be within the CA's sphere of influence without requiring a significant increase of resources, which means looking at training and employment.

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[4] Department of National Defence. *The Service Battalion in Operations*. (Ottawa: Department of National Defence, 2017), 5-1-1/5-1-2.
[5] Ibid, 2-2-1, 2A-1
[6] Based on author's experience as G4 Ops 4 in CA, HQ participating in the planning and preparation of stores to open the theatre in Latvia for Op REASSURANCE.
[7] Office of the Auditor General of Canada. *Report 3 - Supplying the Canadian Armed Forces - National Defence*. (Ottawa: Office of the Auditor General of Canada, 2020), 4.
[8] Sorenson, Kevin. *Report of the Standing Committee on Public Accounts 2016*. (Ottawa: House of Commons, 2017), 13; Sorenson, Kevin. *Report of the Standing Committee on Public Accounts 2017*. (Ottawa: House of Commons, 2018), 15; Sorenson, Kevin. *Report of the Standing Committee on Public Accounts 2018*. (Ottawa: House of Commons, 2018), 8.
[9] Berthiaume, Lee. *"Canada's Military Lacking Thousands of Troops as COVID-19 Hits Recruitment, Training."* Global News, 15 February, 2021. https://globalnews.ca/news/7641131/caf-military-short-troops-coronavirus/.
[10]Scherer, Steve and Fergal Smith. "*Trudeau Government's Fiscal Update Coming Dec. 14, Will be 'limited in Scope'."* Global News, 2 December, 2021. https://globalnews.ca/news/8420282/canada-economy-trudeau-fiscal-update/.

7. The first barrier that affects MM Techs' DRMIS skills is the software. There is a consensus that the system is not intuitive. For example, pulling reports requires an understanding of the system language and naming conventions, and then the reports require significant data manipulation and translation to find the information relevant to the query. DRMIS has modules for all logistics management functions, but in 2010, the CAF only contracted to replace the supply and finance systems. The fleet, ammunition, movement, and administration systems are all in different software, meaning answering a resource management question may require pulling and aggregating information from multiple platforms. The Modernization & Integration of Sustainment and Logistics (MISL) initiative launched in 2019 will provide interfaces to simplify pulling reports and move all systems into DRMIS.[11] There is also a project for automated identification technology (AIT) to include barcoding and radio frequency identification, which will reduce manual processing time and improve asset visibility.[12] However, these projects may face cultural resistance and insufficient on-the-job training to be used to their full potential if other measures are not included.

8. The second barrier to effective DRMIS skillsets is the cultural resistance to change. DRMIS replaced the legacy supply system, the Materiel Inventory Management System (MIMS). Having used MIMS for 20-30 years, Senior MM Techs were able to dictate to junior MM Techs how to resolve material management issues and request paper records or reports to investigate discrepancies. Most senior MM Techs attempted to continue to operate based on this premise.[13] There was likely fear or resistance to learning a new, more complex system. Paired with this, the Logistics community attempted to make the new software function in accordance with the processes from MIMS instead of adapting processes to the new system, again a resistance to change. The overall result was a generation of supply leaders who did not understand materiel management issues in DRMIS and had to rely on junior MM Techs with limited knowledge and experience to find and resolve problems. After 12 years, this cultural resistance to embrace new technology is still pervasive. Anecdotally, in 2018 in Sup Coy, 1 Svc Bn, only one out of nine Sgts and WOs had an active DRMIS log-in or the skillset to pull basic data.[14] There needs to be a change management plan to address the cultural resistance that accompanies the implementation of new technology.

9. Thirdly, the lack of time for on-the-job training due to the high operational training schedule is the most significant barrier to MM Techs using DRMIS to its full potential. MM Techs at the Pte rank receive an introduction to DRMIS on their QL3 training, consisting of a basic explanation of supply processes in a classroom setting.[15]

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[11] Department of National Defence. *MISL Newsletter September 2021*. (Ottawa: Department of National Defence, 2021).
[12] Department of National Defence. *"Automatic Identification Technology (AIT) Project Business Case Analysis."* (Ottawa: Department of National Defence, October 2018), 7.
[13] Based on the author's experience from 2010-2022 working in 1 Svc Bn, 2 Svc Bn, and as the CA G4 Ops 4. Similar observation in all organization throughout the 12 years, suggesting not an isolated finding.
[14] Based on the author's experience from 2010-2022 working in 1 Svc Bn, 2 Svc Bn, and as the CA G4 Ops 4. The MM Techs posted to 1 Svc Bn from across the CAF, suggesting not an isolated finding.
[15] Department of National Defence. *"Supply Qualification Level 3 Training Plan."* (Ottawa: Department of National Defence, 2019)

For the CA, the expectation is that MM Techs will then learn how to use the system through experience and mentorship in the Svc Bn(s). However, the priority in the Svc Bn is to meet the training requirements for FG, meaning MM Techs spend 75% of their time learning individual soldier skills and participating in collective training events.[16] The collective training does not validate MM Techs' technical skills in DRMIS; for example, if the MM Techs can correctly submit and track a supply transaction in DRMIS or if MM Techs can ensure the system is updated correctly after losing connectivity.

10. The lack of on-the-job training continues through each readiness cycle and compounds the problem as the MM Techs advance in rank. By the time MM Techs reach the rank of MCpl, they are expected to function in DRMIS in all supply areas, which is critical for supporting units and operations when there are only a few MM Techs. The different functions of a MM Tech use different aspects of DRMIS; for example, clothing stores, major equipment and procurement have different processes. Some of these sub-specialties, like procurement, can take more than a year of focussed on-the-job training in order to achieve competency. Due to insufficient on-the-job training time, the average MM Tech does not have this expected skill level.

11. A lack of computer assets further degrades the on-the-job training deficit. For example, in Sup Coy, 1 Svc Bn, there is one computer station for every four techs, meaning a MM Tech's opportunity for on-the-job training in DRMIS is shared with four other techs. On Ex MAPLE RESOLVE (Ex MR) in 2019, the Supply Platoon (Sup Pl) had 3-4 stations for 20-30 techs. A MM Tech without connectivity is comparable to an infantry soldier without his weapon. Those without access to a computer station are employed as general duty soldiers, degrading the quality of support the Bde could be receiving.

12. Finally, exacerbating the training delta for the junior MM Techs is that the MCpl-MWOs expected to provide mentorship are chronically understrength with high levels of medical categories.[17] For example, 12-15% of MCpl/Sgt MM Tech positions in the CA are vacant, and then an additional 7-10% are on medical categories, which puts full time positions at 80% without considering deployments, leave, courses, and external tasks. The vacancies in the Svc Bn are even higher as the unit fills first-line units and deployments first. Overall, the understrength Sr MM Techs lacking technical expertise, a gruelling training schedule without technical focus and scarce computer assets diminishes on-the-job training, resulting in MM Techs with poor DRMIS skills.

13. The culmination of the above barriers results in significant material accountability problems, lack of visibility, and reduced capability in garrison, on exercises and operations. For example, in garrison, the Repair and Disposal (R&D) Warehouse in Sup Coy, 1 Svc Bn, has a history of summary investigations from 2016-2019 ordered by Bde Comds to investigate significant materiel shortfalls.[18] A MCpl in the division

[16] Author's findings as the OC Sup Coy / Base Sup Officer in 1 Svc Bn, 2018-2020.
[17] Bergeron, P. L. *"Career Manger Briefing MM Techs."* Accessed 13 January, 2022. ccpapp.mil.ca.
[18] Detail kept vague, as Summary Investigations are Protected B. The Terms of References are Protected A and were used to make the above statements. Department of National Defence. "*Edmonton Repair &*

headquarters, who had the DRMIS skills required to identify the accounting issues in the system, reduced the amount deficient in a 2018 investigation by 90%. Any MCpl-WO MM Tech in the Svc Bn should have had the skillsets to investigate and resolve these materiel errors without the division's involvement. On Ex MR 2019, a primary support shortfall was the inability to track accurately the location and status of spare part requests to repair critical equipment for the Bde. As a final example, in 2019, some Pte-Cpl MM Techs deployed on operations still not knowing how to complete their core supply function in DRMIS, placing an additional burden on the MM Techs leadership to train while supporting an operation.[19] The above examples show that there must be a balance determined between technical and soldier skills requirements. Improving MM Techs' DRMIS skills needs to be incorporated into all training activities in order to overcome these barriers.

14. The future of combat service support foresees reduced distribution layers because of automated inventory tracking technology, autonomous delivering capabilities, and precise sustainment based on accurate data.[20] The information age will lead to a combat service support (CSS) future that is also distribution-based rather than stockpile based, meaning the logistics elements remain mobile pulling and pushing stores as needed, enabled by digitization.[21] As the CA moves towards these operating concepts, there is the opportunity to rethink the employment of MM Techs in the Svc Bn. The construct of a Sup Coy operating forward in the Svc Bn may no longer be valid. Employing MM Techs forward with limited computer assets and a primary focus of survival means the MM Techs cannot exploit technology to provide the best level of support possible to the Bde. Due to COVID 19, Ex MR 21 exercised the Sup Coy in the third line area due to the strict safety measures required, providing a successful case study of a different structure and supply processes, and demonstrating that there may be better ways to operate.[22]

Disposal Section CF-152 Report of Write-Off," Dated 21 January 2016; Department of National Defence. "*Terms of Reference – Summary Investigation Repair & Disposal Discrepant Materiel Write-Off,*" Dated 7 April 2016, (Protected A); Department of National Defence. 1080-3-3446-18-019 (Adjt), "*Terms of Reference – Summary Investigation Second Line Missing CTAT Equipment – 3446-18-019,"* Dated 21 September 2018, (Protected A); Department of National Defence. 1080-3-1701-19-131 (G1 Svc), "*Terms of Reference – Summary Investigation Materiel Management Deficiencies within 1 Service Battalion-Repair & Disposal Section,"* Dated 15 February 2019, (Protected A).

[19] Based off feedback from the Company Sergeant Major, Supply Company, 1 Service Battalion, deployed on Op REASSURANCE, 2019.

[20] Kaduck, Anthony, Ron Bell, Peter Gizewski, and Department of National Defence. *Close Engagement: Land Power in an Age of Uncertainty: Evolving Adaptive Dispersed Operations*. (Ottawa: Department of National Defence, 2019), 24.

[21] Wade, Norman M. *The Combat Service Support & Deployment Smartbook: Doctrinal Guide to Combat Service Support, RSO&I and Unit Movement Operations*. (Lakeland, FL: Lightning Press, 2005), Chapter 3.

[22] Ahn, Leona. "What the COVID Said...Reflections of a Sub-Unit Commander at the Tactical Level." *Praefectus Annonae* no. Fall Edition (2021): 36.

CONCLUSION

15. Procurement of new technology is a slow process, meaning the CAF will continue to use DRMIS for the foreseeable future. The system may not be the preferred software or as intuitive as other solutions, but there is potential to significantly increase material visibility and tracking and the level of support provided to the first line units if more effort is invested in the capabilities of the MM Techs. This paper focussed on MM Techs, but a similar case could be made for Logistics Officers, and as mentioned, the incoming DRMIS upgrades will impact Mobile Support Equipment Techs, Ammunition Techs, and Traffic Techs. The CA needs to address the cultural resistance to technology and improve the on-the-job training by incorporating DRMIS skillsets into collective training and re-evaluating MM Techs' employment and the Sup Coy's structure in Svc Bn(s).

RECOMMENDATIONS

16. The first barrier to address is cultural resistance. A change model must be applied with any significant change to an organization. For example, within J.R. Golden's Change Management Process, there is the requirement first to identify stakeholders, including those who may resist or block the change. Then to develop a plan to broaden support of all those involved.[23] Through the incoming MISL initiatives, the CA logistics community has the opportunity to address cultural resistance. However, the MISL learning strategy appears to be the same approach as the initial DRMIS rollout. For example, the move of the transportation function to DRMIS will be conducted through 10% online learning, 20% peer-to-peer approach, and 70% in-context learning.[24] This learning strategy suggests that the previous cultural resistance and insufficient on-the-job training time is not considered. An in-depth analysis of the initial resistance to DRMIS needs to be completed, and a change management strategy developed.

17. Second, on-the-job training focussed on DRMIS skillsets must be improved. Training packages should be delivered through simulations centers, scenarios on exercise, and monitoring of real-life support for the training events. The Svc Bn(s) lack the expertise and resources to build the training content but a solution may exist between Assistant Deputy Minister (Materiel) experts, the CA DRMIS Center of Excellence(s), and the Canadian Manoeuvre Training Center. A CA champion to lead this effort must be identified. A CA champion should also be identified from the onset for the MISL initiatives in order to avoid similar pitfalls.

18. A third and final recommendation is to analyze MM Techs' employment and the Sup Coy's structure in the Svc Bn on training and potential operations. Technological advances offer the opportunity to re-evaluate each logistics function's tactics, techniques and procedures. Potentially, the location of MM Techs may change and allow for an

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[23] Golden, Brian. "Change - Transforming Healthcare Organizations." *Healthcare Quarterly 10*, no. Special Issue (2006): 12-14.

[24] Department of National Defence. *Modernization and Integration of Sustainment & Logistics (MISL) Learning Communique."* (Ottawa: Department of National Defence: 2018).

improved balance between technical and tactical skills to better support the army of tomorrow.

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