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The Development and Implementation of an Extended Transport Management System (ETMS)

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1. Introduction

Transport management plays an important role in the present day Sri Lankan context, particularly when the Government has made significant advancements in terms of investment in physical infrastructure in the domain of transport and logistics. Efficient management of transport and logistics systems by the relevant service providers, however, becomes an important lynch-pin for the nation to effectively realise the objectives of such large scale investment effort, namely becoming a regional transport and logistics hub. It is within this context that costly transportation, which has hit the bottom line of organizations engaged in manufacturing and logistics, has attracted attention of corporates, which look for way of minimising such costs through adoption of ICT and outsourcing to third-party service providers. This interest is mirrored by the increasing trend towards outsourcing of warehousing and distribution functions by manufacturers, importers and exporters in Sri Lanka to 3PL service providers. This, in turn, has led to an increased number of 3PL service providers focusing on transportation products and attracting an increased spectrum of customers.

The Third-Party Logistics Study Report (2015) refers to this trend also observable globally. According to this report, transportation management (execution), electronic data interchange (EDI), transportation management (planning), customer order management, visibility (order, shipment, inventory, etc.), warehouse/DC management, web portals for booking, and order tracking figure vital success factors in the global 3PL industry in providing cost-effective and advanced customised solutions. The report also states that there exists a persisting IT gap in this regard at global level, bridging which would be a strategic niche for gaining competitive edge.

This IT gap in the Sri Lankan setting is very significant, particularly in the context of the country's transport and logistics hub dream. Even though local 3PL industry comprises of many Fleet Management Systems (FMS) to track and trace vehicles on the move through web browsers, such systems have not been able to fill the gap between the transport requesters and 3PL service providers. Figure 1 below depicts this persisting IT gap.

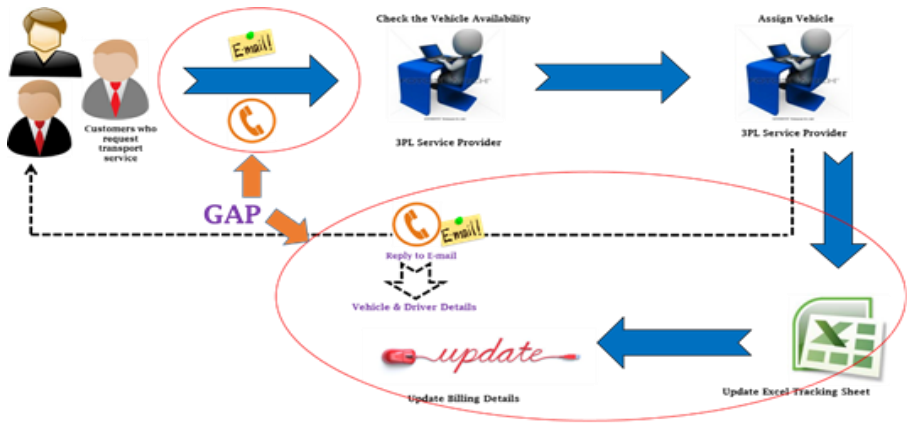

Figure 1: Previous Process of Transport Management in Third Party Logistics Industry

On the other hand, the Sri Lankan service providers face difficulties in implementing global IT trends and solutions, in view of bridging this service gap, mainly due to cost constraints. Even though, a few large firms have spent millions of dollars and purchased commercially available software products, developed for warehousing and transport management, such as SAP or Oracle Business Suit, and some have even extended such systems to 3PL service provision, the problem appears remaining largely unresolved. It is in this context that several 3PL service providers have taken initiatives to develop ICT solutions of their own for their business processes, the effort launched by Advantis 3PL plus being one such local initiatives.

This paper presents the inventive effort in view of development and implementation of an Extended Transport Management System (ETMS) undertaken in 2015 by Advantis 3PL Plus, one of the leading third party logistics service providers in Sri Lanka. It also discusses the outcomes of the research project, its benefits as well as lessons learnt for future research.

2. Materials and Methods

It was decided to develop an ETMS and implement it collaboratively with a local GPS Tracking service provider, considering the fact that reaching out for globally available products are costly and not perfectly fitting to the ground requirements of the company. A project team formed by the management of the organisation was led by a business systems analyst and it included a logistics analyst, business development experts and operational representatives. The project followed all steps

in the Software Development Life Cycle (SDLC) including detailed requirement gathering and analysis, documentation, development testing and user training. "Software-as-a-Service (SaaS)-Cloud Hosting Model" was chosen for the purpose of minimizing capital expenditure on the initiative where the software company would be paid as and when the ETMS is used.

3. Results of the Research: The Innovative Solution

By 2015, the research team completed the development of a web based (SaaS) Extended Transport Management System (ETMS) which enables transport requesters to highlight their requirements including pick-up points, delivery points, vehicle types and request time. Main functional characteristics of the newly developed ETMS are depicted in the Figure 2.

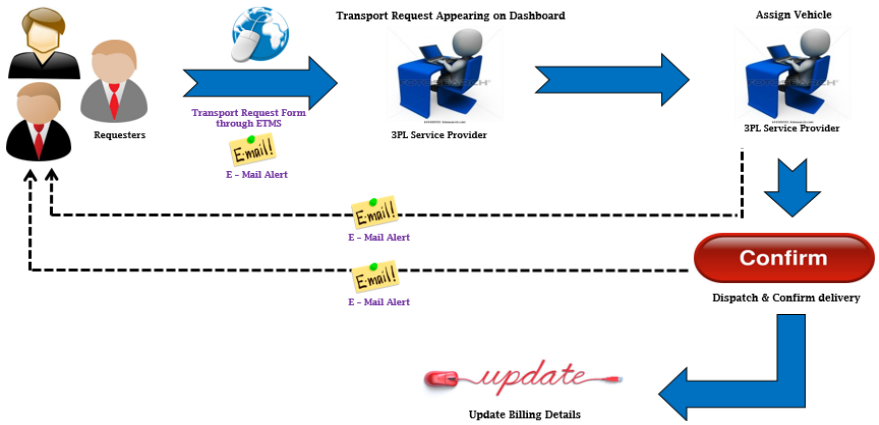

Figure 2: Process of Extended Transport Management in Third Party Logistics Industry

The system provided a dashboard of transport requests made to the transport coordinators of the 3PL service provider which would notify the details of the specific vehicles in the fleet assigned for a particular job to the client who originally made the request. The client in turn could view the vehicle allocations through the integrated Geographic Positioning System (GPS). Email alerts are sent by ETMS to defined parties specifying the status of the delivery through geo-fencing, and the system dashboard also is updated accordingly.

4. Analysis

The system was implemented in September, 2015, and the post-implementation performance was tracked for a period of 9 months. It was observed that almost all objectives set at the project initiation, including automation of communication and report-generation, elimination of manual communication used in transport

coordination within the supply chain, have been achieved. Further, the new system has enabled increased information visibility for all parties involved in the process in terms of traceability of information and accountability of cargo. A customer survey conducted revealed that they are highly satisfied with regard to the system functionality and to the extended level of information visibility. Moreover, the system now captures the cost details of each delivery and automatically producing the monthly billing report, which enhances cost efficacy and minimises payment defaults. It was also observed that this system-driven process has minimised human errors, enhancing the effectiveness and punctuality of operations and the accuracy of data and information.

5. Conclusion

The research enabled development and implementation of an ETMS, which proved that Information and Communication Technology (ICT) could play a significant role in creating and innovating more efficient and customer-friendly solutions for the 3PL industry. It has also established that the ICT industry in Sri Lanka has matured to an extent that it could develop research based inventions and innovation for the betterment of transport and logistics operations in the country, possibly helping the realisation of the nation's objective of becoming a transport and logistics hub. ETMS, however, needs continuous upgrading in phase with the evolving and ever more demanding customer requirements. Such dynamics could be suggested as seed for future research and development in this domain.

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Keywords: *3PL, Transport Management, Software as a Service (SaaS), ICT*