Simulation Development Content for Students Employability in Logistics and Transportation Field in Malaysia

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***Abstract*—Simulation is all about representing the real world which includes grasping the complex issues and solving intricate problems, and it affects student's employability rate in a way of preparing the students. Base on the market needs. This paper will look into simulation. Content development, which is all about developing, enriching and the applications of the Internet protocol in order to enrich the work-related competencies experience among graduate in the field of logistics and transportations and will focus on the real challenges' inputs to the generic workflow of the simulation content development. The study was carried out within multi-national and local manufacturing companies, third party companies (3PL) and government agency, which are selected from Peninsular Malaysia. A qualitative approach was mainly conducted to gather data in the study. It was then discovered from the study that the systems used in the process of outbound and inbound are System Application Products (SAP) and Material Requirement Planning (MRP). It was further discovered that there are only four companies using Enterprises Resources Planning (ERP) and Electronic Data Interchange (EDI) as part of the Suppliers Own Inventories (SOI) networking as a result of globalized business between one country to another. The study contributes to the body of knowledge on the enrichment of the student's employability.**

***Keywords*—** *Simulation, Student's Employability, System Application Products (SAP) and Material Requirement Planning (MRP), Electronic Data Interchange (EDI*

1. Introduction

As educational technology has improved, the effective use of simulations has greatly increased to the point where simulations should be considered a valuable, mainstream pedagogical tool. Lecturers often express the challenges involved in educating students from the millennium generation. It can be said that the teaching needs of this generation are more experientially focused. Simulations, in concert with other experiential teaching tools, allow lecturers to facilitate learning more effectively. Additionally, in this era of ongoing (some say never-ending) assessment, simulations offer a rich resource for objective measurement and comparisons. Simulation is not just another in the long line of passing fads (or short-term opportunities) in educational technology. It is, rather, a real key to helping our students understand the world. It is a way for students to acquire experience about how things and systems in the world behave and react, without actually touching them. In short, it is about interactive pretending [1]. Simulation is all about representing the real world which includes grasping the complex issues and solving intricate problems.

Malaysian companies would continually increase their capabilities in the logistics services in the near future through the implementation of activities such as warehousing management,

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inventory replenishment and order fulfillment [2]. In today's competitive business environment which many companies are strategizing to gain and share the global markets, companies are actively taking advantage of higher production and sourcing efficiency. Keys to that success are determined by the role of the logistics function in ensuring the smooth flow of materials, products and information throughout a company's supply chains [3]. Due to the ever increasing importance of the logistics and transportation industry, it has resulted in the expansion of the international trade as well as an active endorsement of the company's and business's globalisation strategy [4].

The main objective of this approach is to expose the students to the experience of working in the related fields. This is done during the period of student studying in the university. Besides reducing the time and cost of sending the students to work for a limited period of time (internship) in the industry, it adds more experience to what the students had learnt in the university. Students' employability, especially among local graduates was in the limelight for the last five years, and it will still be on years to come if no proper revolutionary initiatives introduced to transform the tertiary education delivery system in the public universities in Malaysia. Students' employability is beyond focusing on career options, or on transferable skills, but it requires a far deeper understanding and interrogation of knowledge. According to [5], students are not just disturbed about costs of study but also interested in the return on their investment. Furthermore, students' and their sponsors' are having the interest more on the employability with the industry needs. As what had been reported by UNESCO, as cited by [6], reasons for being unemployed as being mentioned by employers were attributed to a lack of generic skills and serious inadequacy in terms of work-related competencies.

The methodology of accomplishing this fact-finding research is through coming together and scheduling an interview or appointment with the industry players for clear and vivid understanding of the whole logistics and transportation business. During these processes, a generic workflow will be developed and documented. The workflow will be an integrated one that can pictures the whole industry. Then the documented process will be simulated through a system platform provider (for example, Malaysia Practice Enterprise Corporation or MyPEC and others) which will link to other business simulation process applications. As a result, students can embark in the simulation practice to achieve a hands-on experience on the reality of the industry that associates to logistics, and transportation through out their study in the university. The whole process will enhance the students' skill and not just receiving knowledge but practising and experiencing knowledge. It will also enrich students' employability experience so that they will be always ready to serve and work in the necessitating the field of logistics and transportation after graduation.

2. Objective

To establish a generic work flow with challenges inputs (opportunities and threats)

3. Literature Review

Logistics and transportation are a significant and strategic industry to developing countries like Malaysia. As the volume of trade increases, the need for efficient, integrated and optimal logistics and transportation system is essential for the movement of goods and people. Overall issues on logistics management are not extensively studied, not until after the globalisation of the business process took place [4]. Logistics and transportation effectiveness has now become essentially strategic that many companies realized to increase their positions.

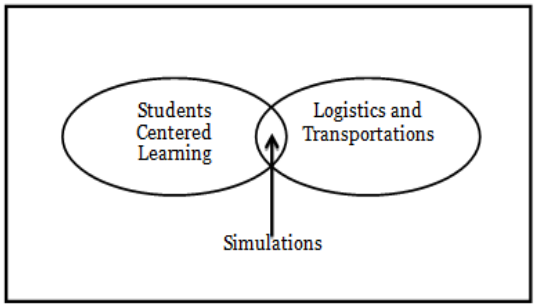
Logistics is part of Supply-Chain Management (SCM) which plans, implements and controls the proper flow of goods throughout the supply chain. Logistics stands as the transportation of goods with the use of different modes of transportation. Logistics also involves the flow of materials from different part of suppliers into an organization, its movement within the organization over diverse operations, and delivery to customers who is the purpose of logistics [7].The The flow of materials is categorized as inward or inbound logistics, the management of materials and outward or outbound logistics. Inward or inbound logistics delivers material into an organization from suppliers. Material management is the movement of materials within the organization and outward or outbound logistics is where products or materials move out from the organization to the customers.

Logistics is an essential element for any organization in today's economy. Competitive advantage against its competitors is by designing a system which delivers a much better and faster service to the customer. A good characteristic of a logistics system is its complexity; that was carefully designed, which cannot be easily duplicated ensure firm's competitiveness advantage. It is important when dealing with the flow of material the sharing of information among customers and clients. Trust from customer can be gained through sharing of information through step by step process visible to them and helps to reduce communication issues, for example, dates of delivery, shipping address, product quantity, and so on. Logistics plays a vital role in cost-effectiveness of an organization because of the incorporation between logistics and marketing. For instance, if products and services are available, high customer services can be achieved. The availability of products will depend on the strategy of delivery, i.e. from an organization to a customer and/or from suppliers to an organization. It comprises the investments into the costs of transportation through sea, land and air [8].

In the world today, employers are looking for not just technical skills but also people who are capable of handling various roles, tasks and with vast experiences. Whilst employers provide employees with opportunities and self-development in building their career will receive trainings on the job either formally or informally in organization. Some are allowed to perform different tasks due to job function's rotation and promotions. All these opportunities are expected to increase the skills and job experiences to the employees [9].

Theory of human capital proposes that investment in employee training, and education would result in higher internal mobility whilst it reduces the external mobility [10]. The theory suggests that when employees partake in training and development programs, they would be able to acquire new skills and able to perform multiple tasks. Employees are likely to be more devoted with the employer and therefore, may lowered the rate of turnover.

The proposed framework for this paper is as follows.



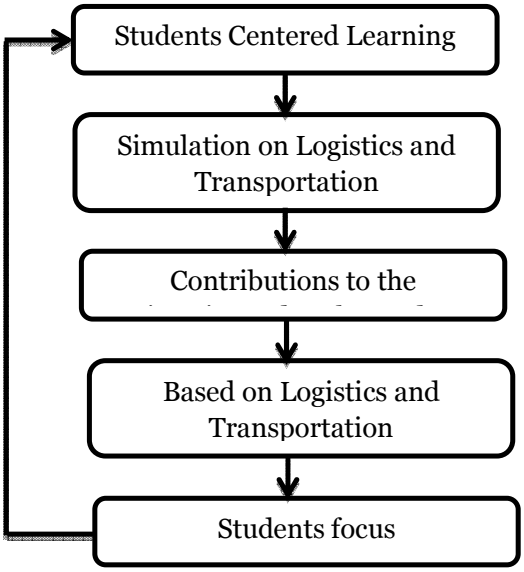
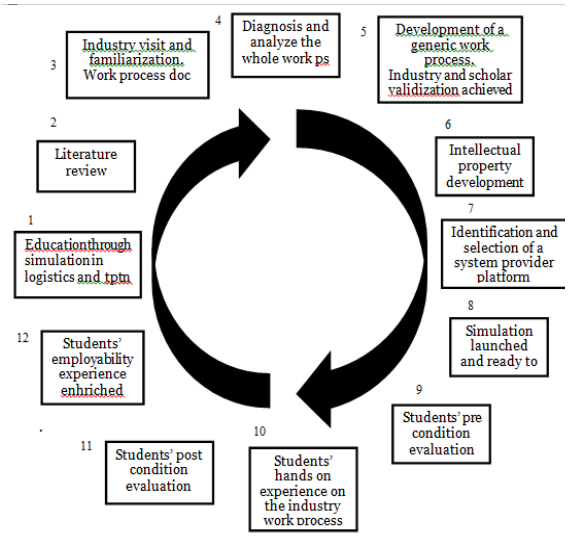


Table 1. *Simulation Loop on Teaching and Learning Process*

Detail of explanation of the propose framework is as follows:



Step 1: Education - Education through simulation in logistics and transportation is essential because it makes the students to focus up to the level of their employability after the completion of their studies.

Step 2: Literature review - Literature review helps to guide the students to gather information and opinions as to establish the problem statements. This could contribute to develop the simulation education in logistics and transportation fields.

Step 3: Industry Visit and Familiarization of Work Process and Documentation - Industry visit and familiarization of work process and documentation are important to exercise their actual learning capabilities in then logistics and transportation field.

Step 4: Diagnosis and Analysis of the Work Process – at this stage the analyses of the whole work process are done before simulation takes place.

Step 5: Development of Generic Work Process. Industry and Scholar Validation Achievement: The development of a generic work process and trial run at this stage in which the industry and scholar validation achieved.

Step 6: Intellectual Property Development: Any innovation or discovery conceived or developed using the university resources, is a partnership between the university, faculty and students who make the discoveries.

Step 7: Identification and Selection of a System Provider Platform: The identification and selection of a system provider platform will be carried out to help the simulation.

Step 8: Simulation Launch: This is the stage where the simulation software is launched and ready to apply in practice.

Step 9: Student's Pre-Condition Evaluation - Here the student's will evaluate the whole process effectively and to determine the results of the simulation performance.

Step 10: Student's Hands-On Experience on the Industry Work Process - Students' hand on experience in the industry to be tested where the experience of the students to be applied to determine whether the simulation works for them.

Step 11: Student's Post Condition Evaluation – this is the stage in which student's post conditions are being evaluated and assessed to know the feedback from the simulation.

Step 12: Student's Employability Experience enriched – the final stage will contribute the student's employability experience to be enriched.

4. Methodology

This research methodology is to capture generic processes in running a logistics and transportation business in Malaysia. The process of the research covers visits, interviews, identifying the application system commonly used and collecting documents from the participants. Format used is a guided interview with the authorized personnel. The selected manufacturing companies in Northern Malaysia are as follows:

Multi-National Companies:

- Toyo Memory Technology Sdn Bhd (Kulim)
- Silterra Malaysia Sdn Bhd (Kulim)
- NGK Spark Plugs Sdn Bhd (Butterworth)
- Sumi Rubber Sdn Bhd (Sg Petani)

Local Companies:

- Hong Soon Leon Sdn Bhd (Butterworth)
- NPK Fertilizer Sdn Bhd (Gurun)
- SYM Sdn Bhd (Bukit Mertjam)
- Shorubber Sdn Bhd (Jawi)
- Thong Guan Plastics and Papers (Sungai Petani)
- DXN Sdn Bhd (Jitra)
- Ever Lantern Sdn Bhd (Sungai Petani)
- Tan Eng Hong Sdn Bhd (Jitra)
- EH Transport Sdn Bhd (Bukit Kayu Hitam)
- Saudi Cold Storage Sdn Bhd (Sg Petani)

Third Party Logistics (3PL) Companies

- Priority MTT Sdn Bhd (Penang)
- PTK Sdn Bhd (Penang)
- EH Utara (Bukit Kayu Hitam)

The selected government enforcement agency is:

- Royal Custom and Excise Department (State of Penang, Malaysia).

The processes of interviewing and site visits were conducted over a duration of six months from November 2013 until April 2014. From these interviews, site visits and documentations were collected, including a generic process and information identified. These processes and documentations identified can be used as generic processes and documentations (Baron and Kenny, 1986) required in running a Logistics and Transportation business simulation as in the objectives of this research.

Out of these generic processes and documentation identified, some will be selected based on suitability, practicality and agreed to be used in a classroom simulation environment. These selected processes and documentations are very much suitable for students or related participants for learning the basic process in logistics and transportation companies in Malaysia.

The generic processes and documentation will be selected based on the following criteria based on Malaysia Practice Enterprise Corporation (MyPEC).

- A stable process and documentation (which does not change much over the years).
- Frequently used processes and documentations in most logistics and transportation business in Malaysia.
- Relevant for learning the basic process of logistics and transportation business in Malaysia.

5. Findings

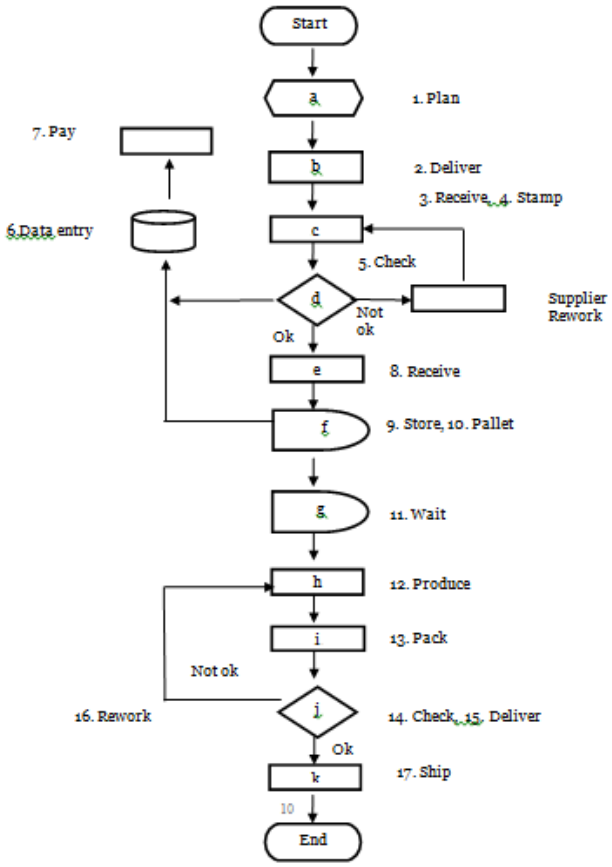
The application systems in the process of outbound and inbound that are commonly used are System Application Products (SAP) and Material Requirement Planning (MRP). It was discovered in the study that there were only four companies using the Enterprise Resource Planning (ERP) besides the Electronic Data Interchange (EDI) as part of the Suppliers Own Inventories (SOI) networking. This is the result of globalized business between one country to another.

In spite of that, the documentations processes that are involved in the outbound and inbound, including the customs clearance forms and procedures, are mainly using the customs form clearance as in Custom Act 1967. For example, the forms are CJ5, Exemption, Form D, Bond and Tax are mainly used in the process of outbound and inbound, which are applied in the Licensee Manufacturing Warehouse (LMW) and General-Purpose Warehouse (GPW),

The costing and pricing involved in the processes are confidential among the companies and will be revealed after being taxed by the Royal Custom and Excise Department. Resources involved in the outbound and inbound processes are computerized documentations during the process; the Internet or email, telephones and fax are used with well-trained staff handling these processes in computer systems and handling of suppliers and customers. The outcome and reasons being used related to the systems, documentations, costing, pricing and resources are mainly meant for upgrading and efficiency to eliminate discrepancies, time management, manpower skills and management controls. Based on such efficiency, the costing and

expenditures are reduced and at minimal cost, price quotations are usually 'manageable, adaptable and acceptable' by customers. The company could easily negotiate the prices with the suppliers effectively.The workflow of industry players, which the findings further explain the management staff and workers involved in the outbound and inbound processes. The categories are well trained, experienced and fresh staff. The Person-in-Charge (PIC) is a senior staff of the warehouse operations and inventory management department of the company. The job is usually given to receiving section managers or executives, who have experiences in dealing with the delivery and shipping of materials, transportation (containerisation, lorries and hauliers), knowledgeable about Royal Customs and Excise Department documentation process and Customs Act 1967.

During the interviews, it was observed that most companies would not engage any fresh graduates without experience, unless they have undergone extensive internship training. Mainly companies employ or engage to well experience staff for the job functions to avoid mistakes during the delivery and shipment out. The operations take place at receiving area (inbound) and shipping area (outbound). Both places are at warehouse receiving and warehouse shipping. It is a daily operation except during weekends and public holidays unless under certain circumstances, the operations have to continue during those days. Below is the actual practice of the inbound and outbound process flow in manufacturing and logistics companies.



The outbound materials to be shipped out are as follows:

- Finished Goods (FG). Example complete sets of products like motorbikes.
- Semi-Finished Goods (SFG). Example computer components.
- Raw Material (RM): Example plastics or metal parts.

6. Conclusion

Based on the research findings, it can be concluded that the information gathered are fundamentally adequate to establish a generic work-flow in the area of logistics and transportation as the focus of the research is education through simulation in logistics and transportation. Thus the whole research suggested that there is concrete evidence the content development will increase the enrichment of student's employability experience through simulation in the logistics and transportation industry. The evidence from the

generic documented process flow from the participants' suggested that simulation in the content development as learning process is effective in this area of study. This is proven based from the companies HCM development to train their respective staff to be skillful in operating the documentation process efficiently. By inculcating an artificial opportunity and threats along the content flow and also by adapting the students' degree program curriculum in the whole content flow it will further enhance the learning experience of the students thus will also enhance their employability rate as the students were trained base for the market needs.

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