THE EFFECT OF VALUE CHAIN CAPABILITIES ON SUSTAINABLE PERFORMANCE: A STUDY OF THE AIRLINE INDUSTRY

Schavana Phillips & Vinh V. Thai
School of Business IT and Logistics, RMIT University
445 Swanston St., Melbourne, VIC 3000, Australia
Email: Email: Schavana.phillips@rmit.edu.au; vinh.thai@rmit.edu.au

Abstract
Purpose: This research examines the value chain capabilities and their effect on sustainable performance of airlines in the US and Asia Pacific markets and discusses some resulting academic and managerial implications.

Research Design and Methodology: The initial phase of this research involves the case study approach with the full-service airline industry. Three major airlines, one is based in North America and the other two in Australasia, were chosen as case studies, in which six in-depth phone and Skype interviews with the senior executives in charge of respective value chain areas in each airline were conducted i.e. Operations, Sales and Marketing, Human Resources, Technology, Customer Service and IT. This is to investigate the effect the value chain capabilities on sustainable firm performance in terms of economic, social and environmental performance.

Findings: **It is found that there is a positive relationship between value chain capabilities and sustainable firm performance. Especially, it is consistently acknowledged that resource-based value chain capability such as people and technology are at the core of sustainable performance but management-based value chain capability such as meritocracy, high performing teams and culture are also fundamental and in line with the relevant theories on how firms develop capabilities to improve performance.**

Research limitations/implications: The main limitation of this research is that the data collected are only from the initial phase of a bigger study and thus may not fully unveil the whole findings.

Practical implications (if applicable): This research recognises that there are cultural differences between the airlines and their performance can be reflected by cultural norms. Therefore, monetary reward for high performance by staff is not necessarily accepted in some companies' or national cultures.

Originality/value: There is a link between sustainability and core business which has not been sufficiently recognized by companies as an opportunity but presents great potential for companies. This research is therefore original as there has not been much research on how value chain capabilities can be employed to result in sustainable performance.

Key Words: *Value chain, capabilities, airline value chain, sustainability*

Introduction

Firm performance has been primarily focused on commercial goals and there has been a lack of consideration for ecological and societal aspects which have not been sufficiently recognized as having great potential. This research looks at the value chain capabilities and their effect on sustainable firm performance as it is believed that one of the operational gaps that can make a difference to the performance of an organization is that of the value chain (Bisignani, 2011). The airline industry has attracted so much scholarly attention, yet many important issues that are operationally and share-holder aligned, have remained unresolved.

While there are several studies on supply chain management, there is a gap in the extant literature on value chain management, the enablers of an effective value chain on sustainable firm performance and

the capabilities that are critical to the current dynamic environment. It is therefore important to understand the capabilities of the airline value chains, namely, the internal resources, processes, management capabilities and design which can create value and drive sustainable firm performance and add to value-creating strategies.

Literature Review

The Value Chain Capabilities

Value chain capabilities impact firm performance, not only in terms of financial but also non-financial measures. Tangible resources such as equipment and technology and intangible resources such as culture, management capability, processes, service quality, learning and innovation, could lead to enhanced business performance (Waggoner, 1999). However, culture and leadership are important resources in the foundation of an effective value chain and are required for effectively managing the value chain (Presutti, 2013c, Drucker, 2001, Senge et al., 2011), which in turn influence sustainable firm performance. A firm's culture can play a critical role in performance and a culture of innovation coupled with the potential to explore new avenues are both factors that help companies to take up market opportunities (D'heur, 2015). Additionally, design plays a critical role in the competitive arena where organizations require continual disintegration and reintegration to have an advantage. Fine, Vardan, Pethick, and El-Hout (2002) pointed out that, in today's environment, the pace of change due to technologies and markets has made it necessary for frequent reshuffling of structural, technological, financial and human assets.

Resources

Firm resources include all tangible and intangible resources, capabilities, information, knowledge etc. which are used to conceive and implement value creating strategies to improve efficiency and effectiveness (Barney, 1991). If performance of the airline is dependent on resource allocation in terms of brand image, service levels, customer relationship, management and hub dominance these are areas of the value chain that could be the key to performance quality (Wittmer, 2011). Looking at the resource-based view (RVB), which is when a company has valuable, rare, inimitable and non-substitutable (VRIN) resources, they can be sustainably competitive by implementing strategies that create value and cannot be duplicated by competitors (Barney, 1991; K. M. Eisenhardt, & Martin, J. A., 2000; Prahalad, 1990; Teece, Pisano, & Shuen, 1997). RBV provides valuable insights into how a firm can be competitive and sustained over time (Wang, 2015). Thus, one of the objectives of applying the RBV is for firms to identify their capabilities and develop them further (Wang, 2015). Capabilities are defined as complex bundles of skills and collective learning, organized through organizational processes that ensure coordination of the firm's activities (Day, 1994). In the quest for sustainable firm performance, firms have used a number of approaches to achieve a competitive advantage and one of those approaches is the well know competitive forces approach by M. Porter (1985) which has been the dominant paradigm in the strategy field (Teece et al., 1997). This approach puts the emphasis on intense competition and defends against the competition. The capability approach locates the source of competition and applies the hard to duplicate resources which are made up of the firm's assets and capabilities (Day, 1994). Every organization acquires many capabilities to enable them to carry out the activities to move their products and services through the value chain and must be managed through the focused commitment of resources (Day, 1994). Barney (1991) suggested another approach and argued that resource heterogeneity and immobility is a possible source of competitive advantage and that performance of a firm depends on the implementation of strategy which exploits internal strengths in response to external opportunities, while neutralizing external threats. Some strategies require a mix of physical capital, human capital and organizational capital but one resource required for implementation of all strategies is managerial talent. In the airline industry, Farkas, Martin, and Pompeo (1997) postulated the importance of matching resources to industry fluctuations. Of course, it is up to the management to exploit and explore these firm specific internal resources but in time of turbulence, new capabilities must be developed or adjusted (Barney, 1991; Wernerfelt, 1984).

Management Capability

Value Chain Management is the Holy Grail of progressive companies (Trombly, 2000). It has been argued that management capability is the key to success in terms of achieving balance (Schrouder, 2015) and a

number of scholars have stated in the literature that how a firm performs is dependent on how the value chains are managed, how quickly decisions are made and how quickly strategies are turned into action. Vurro (2014) considered the managerial approaches to sustainable performance in the value chain and noted that collaboration, open and transparent management influences upstream and downstream activities which impact brand value, customer loyalty and satisfaction. Further, management approaches to sustainability of the value chain through collaborative approaches have shown positive results in some industries and, in the airline industry, a collaborative approach in achieving customer loyalty and satisfaction could impact performance and add value (Vurro, 2014). Management capabilities are critical but more than that is the need for good leaders. Leadership is not management; a manager tries to get an organization from point A to point B using tried and true practices, whereas a leader is entrusted with practically creating a new organization to meet new conditions (Drucker, 2001). "To become a leader, you must first become a human being" says Confucius and wisdom is one of the oldest ideas associated with leadership which plays a role of inspiring others and getting people on board with your vision for a firm and a responsibility to the organizations' culture (Senge, Kleiner, Roberts, & Ross, 2011).

A number of issues have surfaced in the literature and questions are raised as to whether value is the consequence of effective value chain management. Why is it that some firms succeed while others fail? Is there a competency in the locus of leadership skills that is missing because it seems that an element of developing the human side remains challenging for firms even though great effort is put into developing processes to enhance the value chain? In response to some of these questions, Kaplan (1996) suggested four management processes which can contribute to firm performance, being able to translate vision into operational terms, communication, business planning, feedback and learning. K. Eisenhardt (2013) stated that a leader must be able to make fast and conflicting decisions and still keep a team together. Bartol (2011) worked on the premise that there are four basic management principles, namely, planning, leading, organizing and controlling of which leadership is one aspect of the management practice. What then are the leadership capabilities? Good leadership capabilities enable effective management of the value chain and encourage good business behavior which is strongly linked to culture and people, a most important factor in the foundation of an effective value chain. Without a good leader, the culture of the firm is not upheld. Presutti (2013) concurred that one of the enablers of effective value chain management is leadership and together with good strategic plans and decision making skills, it allows for good management of the value chain which drives sustainable firm performance.

The goal is to achieve a seamless interaction amongst all members of the value chain through good communication, vision, planning and feedback.

Processes

Processes is the synchronization of the work of internal activities through bilateral contacts allowing for knowledge sharing (Brajer-Marczak, 2016). It is also a set of repeated activities with the objective of which is to create value for internal and external customers (Brajer-Marczak, 2016). Business processes are now considered one of the firm's most valued asset and continuous improvement has become an imperative (GartnerResearch, 2010). In looking at the processes of an organization, Kaplan (1996) stated that from an internal perspective a firm must consider what the firm excels at and how the firm can continue to improve and create value. In answering some of these questions, it is important to understand how a firm can continuously improve and activities must be measured at every stage of the value chain. The literature makes it clear that measurement of processes, relationships and top management support could lead to enhanced business performance but must be able to adjust to the changing competitive environment (Waggoner, 1999).

Today, information technology is altering the competitive environment, how we do business and how strategy is written (M. Porter, Heppelman, J.E.., 2014). The major change taking place in the current competitive environment is in information technology whereby smart connected products present major challenges as they alter the functionality of processes and are disrupting value chains causing firms to rethink and retool everything they do internally (M. Porter, Heppelman, J.E.., 2014). This has been seen twice before in the past fifty years when technology reshaped processes, with the introduction of the computer aided processes in the value chain such as bill-paying and order processing and the internet which allowed for co-ordination and integration across individual activities giving huge rise to productivity

and transforming the value chain. Now the third change is becoming integral to the product itself, introducing sensors, processors, software and connectivity which will drive huge improvements in productivity (M. Porter, Heppelman, J.E., 2014).

Design

The design of the value chain has traditionally been viewed as static but with the environment as it is, the competitive landscape dictates that this is only a fleeting commodity and is obsolete (Fine et al., 2002). The value chain architecture however is essentially a function of the operations strategy and the decisions on location of the operations, sourcing patterns, and the configuration and customization of the products are all questions that reside within the realm of the wider business strategy (Holweg & Helo, 2014). The value chain architecture is the design of large network structures of value chain partners and basically organizes a plan or map for these networks and considers the relationship between these partners (Holweg & Helo, 2014). Value chain networks can be modular or integral but because of the complexity of the value chain networks, the concept has been used in a limited context for structural decision making (Holweg & Helo, 2014). Some of the key decisions associated with the value chain are location decisions such as whether a factory forms a regional factory supplying locals or a feeder factory, supplying a larger geographical area (Fine et al., 2002; Holweg & Helo, 2014).

van Rensburg (2008) noted that there are a number of principles needed in the design of the value chain to create the appropriate architectural model and these principles deal with best practice, improvement and quality considerations.

Value Chain Capabilities on Sustainable Performance

This research proposes to conceptualize the framework of the effects of value chain capabilities on sustainable firm performance. It looks at the three pillars of sustainability, economic, social and environmental and seeks to find a relationship that will add to value-creating strategy. Value creation through sustainable practices, economic, social and environmental, are areas of opportunity but a gap exists because of a purely economic approach that has primarily focused on commercial goals and a lack of consideration of ecological and societal opportunities. D'heur (2015) stated that there is a link between sustainability and core business but this has not been sufficiently recognized as an opportunity which presents great potential for companies. This can only be achieved, where the approach is embedded in the core business, by leaders who are capable of applying the concepts of value creation. It is an area still being established as the scope is broad and no longer relates to purely environmental sustainability but includes economic sustainability such as profit, cost, strategy, customers, and social sustainability which includes CSR, ethics, diversity and safety (D'heur, 2015; Heymann, 2010; Lindgreen, Maon, Vanhamme, & Sen, 2013; Saeidi, Sofian, Saeidi, Saeidi, & Saaeidi; Schrouder, 2015; Yu-Shan, 2012). Sustainability from the social and economic perspective provides an opportunity for a firm to excel and create value; however, the challenge is to give equal consideration to value, resource efficiency and social wellbeing of customers and employees.

However, it could be argued that management capability is the key to success in terms of achieving this balance (Schrouder, 2015). If therefore management capability is the key to success, Kaplan's four management processes of translating the vision into operational terms, communicating and linking, business planning, feedback and learning can all contribute to overall performance (Kaplan, 1996). This, however, must depend on the type of organization and must be driven from the inside of the organization, which needs the participation of all stakeholders. It highlights the importance of management capabilities and the organization on the whole to be the driver of sustainable practices, transparency and collaboration with customers. Kaplan (1996) discussed the advantages of intangible assets of an organization and used the concept of the balance scorecard as a measure of performance, which could provide value chain managers with a tool to help breakdown and communicate goals in practical and simple terms that can be followed and translated into action. Wenbin (2012) concurred that operational functions are only as effective as how it is managed and the competence of the firms' leaders should evolve to respond to dynamic environmental factors that affect performance. In a high velocity market such as the airline industry, however, this tool needs to be adaptive.

Strategic success needs an understanding of the integrated value chain and it must be remembered that the value chain is a living and dynamic business ecosystem that must be nurtured to provide the desired results (Presutti (2013). However, it has not been fully explored particularly in the airline industry as noted by a recent IATA report (Pearce, 2013). It is seen that the value chain is being deconstructed with new technology and with new thought for the value chain design, which means designing the value chain to suit the strategy which is, after all, not static. Vogt et al. (2005) also noted that there are several companies which have identified the need for enhancement of value chains as a critical competency to improve performance. It is therefore important that the link between value chain capabilities and sustainable performance is elaborated empirically.

Methodology

This research employs a qualitative methodology and comes from a constructivist philosophical position. Using a constructivist theoretical framework, the initial phase of this research adopts the qualitative approach employing the case study method with in-depth interviews to investigate the effect of value chain capabilities on sustainable firm performance and how the activities can support a more efficient and competitive operation for airlines, thus adding to their value-creating strategies. The methodology is conducted based on key management in-depth interviews with senior executives from three leading full-service airlines from the US, Australia and New Zealand.

Six interviews were directed at the six areas of the value chain within each of the chosen airlines and are based on Porter's value chain model of support activities, namely, procurement, human resources, IT and primary activities; operations, sales and service (M. Porter, 1985). The semi-structured interviews are aimed at senior management who have been purposefully selected (non-random) from each of the targeted areas of the three airlines to obtain their strategic perspective on the value chain capabilities and their effect on sustainable firm performance, their practical knowledge and insights for possible areas for adjustment. A senior executive was matched with each of the areas of activity. The interviews were organized and conducted within six divisions of each airline based on Porter's value chain model. By interviewing senior executives from each of these activity areas of the value chain, it reaches the core of the functionality and the data extracted provide the basis of this research. A total of 18 interviews have been conducted.

In seeking to understand the value chain capability and its effect on sustainable firm performance, approximately eight open-ended questions were developed based on the conceptual framework involving resources, processes, design and management capabilities and the effect they have on economic, social and environmental sustainability. All interviews have been conducted through online media communication such as Skype or by phone, depending on time constraints and consideration for uninterrupted discussion.

Data from each airline are analyzed separately to identify the issues and opportunities. They are then cross-examined to compare their operational activities and identify any commonalities that lend insights, which may contribute to the conclusion of the research.

Findings – Value chain capabilities' effect on performance

The findings indicate that there is a positive relationship between value chain capabilities and sustainable firm performance in the case of airlines participated in this research. Especially, it is consistently acknowledged that resource-based value chain capability such as people and technology are at the core of economic, social and environmentally sustainable performance but management-based value chain capability such as meritocracy, high performing teams and culture are key and in line with the relevant theories on how firms develop capabilities to improve performance. As a resource, employee performance facilitated by technology is at the core of sustainable performance and is a common theme expressed across all the divisions of the airlines.

The findings also indicate that all six activity areas of the value chain i.e. sales, procurement, human resources, operations, customer service and IT are focused on their employees, the people they directly work with or people where there is strong and necessary collaboration such as suppliers and third party suppliers. More precisely, emphasis is also placed on high performing teams as a resource. This high

performance is mostly achieved through training and cross-training to achieve the skills and knowledge required to provide a competitive advantage. Training is critical in achieving an effective and efficient operation and cross-training allows for a cohesive and collaborative team environment which in turn is resourceful, reactive and responsive. Instead of being very specialized and homogeneous, people have the opportunity to know other areas that their co-workers are working in and collaborate with each other so as to develop them professionally, allow for agile responses and an effectively flexible workforce which will impact positively on social sustainability. Training and performance is highly rewarded and people are at the core of firm performance whether that is from the economic, social or environmental perspective. Incentivizing people to perform is found to be both a tool and a process which becomes part of a company culture because it has proven to be effective in achieving goals. In the human resources area, focus is placed on "meritocracy" and how the distinction is made between folks who are high performers and capability from a talent standpoint – a high performing workforce. It is also evident that culture impacts sustainable performance and the company strategy must include this intangible resource which enables agile responses to buyer behavior.

Table 1 provides a summary of key findings in this research which shows critical value chain capabilities that have a significant effect on sustainable performance. For example, the first cell identifies **economic sustainability**. The cells below identify the **resources** and how the resources **effects** economic sustainability.

Economic Sustainability		***Social Sustainability***		***Environmental Sustainability***	
Resource	**Effect**	**Resource**	**Effect**	**Resource**	**Effect**
People: (Meritocracy Engaged Efficient Empowered Expertise Communication Customer focused)	People are at the core of economic sustainability but high-performing teams through training and cross training achieve the skills and knowledge to sustain performance.	*People:* (Behavior Ethical Lawful Accountable Prideful, Satisfaction Communicative Relationships Listener)	Effective and efficient people allows for a cohesive and collaborative team environment which in turn is resourceful, reactive and responsive.	*People:* (Belief, Commitment Inclusive Customer focused Flexible)	Creating choice and the belief that being environmentally sound is really ensuring you are connected with your customer.
Technology: (Data Analytics, Artificial Intelligence, Sourcing, Communication Product development, Control, Decision making)	Systems are significant competitive advantage, showing opportunity, how the company can do better and how they are already doing well.	*Technology:* (Reputable Trustworthy, Safe, Brand)	Technology help to react in efficient ways and customer friendly ways, measure performance, and is clearly assisting in the societal process.	*Technology* (Leadership, Committed, Communicative, Agile, Motivator)	Decisions to convert from fossil fuel to electric ground service equipment. And use of electric vehicle charging stations to employee parking lots, encourage adoption of low-or-zero-emissions

					vehicles which impact the eco system.
Culture: (Behavior, Trust Ethics, Training Relationships, Partnerships, Meeting customer expectations, Collaborative)	A culture that is consistent and meets the customer expectation. Making sure customers know the product is great and employees are great. Take care of existing customers but proving to new customers.	*Culture:* (Shared purpose, Values, Open Integrity, Empowerment, Diversity, Inclusive Respect, Training, CSR, Prideful)	A culture of building relationships so that partnerships with different co-workers and teams effect the same trust factor as with customers.	*Culture:* (Green equipment, Energy efficiency, Air traffic efficiency, Product quality)	The use of utilities and working with teams to manage how they work and manage equipment, how equipment is rotated and what kind of equipment is being purchased and used and the loading of cargo and baggage.
Reputation: (Quality Security Privacy Operational standards Reliable Brand)	Once you are preferred, there is the obvious benefit that someone is willing to pay a little bit more.	*Reputation:* (Behavior Culture Trust Integrity Safety)	The reputation generates pride so when employees have pride in the workplace it drives certain behaviors.	*Reputation:* (Embeddedness Communication Commitment Opportunity Choice)	Inefficiencies cause longer taxi and wait times for take-off and landing which has environmental impact
Processes: (Automated Flexible, Communication Innovative Integrative Competitive)	The process starts with a clear outline of the goals, then communicated to the employees.	Processes: (User friendly Consistency Organized Flexible Safe)	Clear engagement model and communication path with all the stakeholders, is key to ensuring the right processes.	Processes: (Efficiency Carbon neutral Noise sensitive Time sensitive)	There are Co2 targets so being environmentally aware enough not to create one issue in solving another
Magmt. Capability (EQ, Inclusivity, Expertise, Leadership Communication,	Agility of management makes an impact on sustainable performance.	Leadership (EQ, Being human Supportive, Inclusivity, Empowerment, Expertise, Trust)	The ability to inspire and motivate and inspire employees,	Leadership (Commitment Passion, Inclusion Communication	Corporate customers questions policy on initiatives and this forms part of the

Collaboration)				Ownership Governance)	competition.
Design (Structure)	Structure is an outcome of the strategy, the goals, the process, the design.	Structure (Open Communication Relationship Safety Function)	Some individuals need to have a clear line of sight to be accountable or responsible.	Facilities (Energy Efficient)	Open plan offices allow for savings on energy.

Table 1 – Critical VC Capabilities and the Effect on Sustainability

Conclusion

Building on the hypothesis that firms achieve sustainable performance through the identification of its value chain capabilities such as management of its structures and routines, skills, knowledge and management capability together with technological and operational capability (Trombly, 2000), the findings of this research indicate that there is a strong relationship for sustainable firm performance in the current environment. However, value creation through sustainable practices in terms of economic, social and environmental aspects are areas of opportunity but a gap exists because of a purely economic approach that has primarily focused on commercial goals and a lack of consideration of ecological and societal opportunities. There is a link between sustainability and core business which is starting to be recognized by the three airlines over the last three years approximately. One airline says clearly that empowerment of their staff together with technology has made a significant difference in all three areas of sustainable performance. This can only be achieved where the approach is embedded in the core business, by leaders who can apply the concepts of value creation.

References

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *Vol. 17*, No. 9, pp. 99-120.
- Bartol, K., Tein, M.; Matthews, G.; Sharma, B.; Scott-Ladd, B. (2011). *Management foundations : a Pacific rim focus*. NSW, Australia: McGraw-Hill Australia Pty Ltd
- Bisignani, G. (2011). IATA Vision-2050. Retrieved from https://www.iata.org/pressroom/facts_figures/Documents/vision-2050.pdf
- Brajer-Marczak, R. (2016). Elements of knowledge management in the improvement of business processes. . *Management Accounting Research*, *Vol. 20*, No. 2, pp. 242-260.
- D'heur, M. (2015). *Sustainable Value Chain Management: Delivering Sustainability Through the Core Business*. Cham: Springer International Publishing. Cham.
- Day, G. S. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, *Vol. 58*, No. 4, pp. 34.
- Drucker, P. (2001). *Leading in a time of change : a conversation with Peter F. Drucker & Peter M. Senge*. San Francisco [Great Britain]: Jossey-Bass/Drucker Foundation.
- Eisenhardt, K. (2013). Top management teams and the performance of entrepreneurial firms. *Small Bus Econ*, *Vol. 40*, pp. 805-816.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *Vol. 21*, No. 10-11, pp.1105-1121.
- Farkas, A., Martin, A., & Pompeo, L., & Rivera, L. . (1997). Europe's best airline network managers may have won an unassailable lead. *The McKinsey Quarterly*, *Vol. 3*, No. 3, pp. 180-186.
- Fine, C., Vardan, R., Pethick, R., & El-Hout, J. (2002). Rapid-response capability in value-chain design. *MIT Sloan Management Review*, *Vol. 43*, No. 2, pp. 69-75.

- GartnerResearch. (2010, 16 Jan 2017). Gartner positions PNMsoft in magic quadrant for business process management suites. Retrieved from com.ezproxy.lib.rmit.edu.au/docview/761242205?accountid=13552
- Heymann, J., & Barerra, M. (2010). *Profit at the bottom of the ladder : Creating value by investing in your workforce*. . Boston, Mass.: Harvard Business Press.
- Holweg, M., & Helo, P. (2014). Defining value chain architectures: Linking strategic value creation to operational supply chain design. *International Journal of Production Economics, Vol. 147*, pp. 230-238.
- Kaplan, R. S., and Norton, David P. (1996). Using the Balanced Scorecard as a Management System. *Harvard Business Review, Vol. 74*, No.1, pp.75-78.
- Lindgreen, A., Maon, F. o., Vanhamme, J. l., & Sen, S. (2013). *Sustainable value chain management : a research anthology*. Farnham, Surrey, England: Gower Publishing Limited.
- Pearce, B. (2013). Profitability-and-the-air-transport-value chain. *IATA Economics Briefing No10*. Retrieved from https://www.iata.org/whatwedo/Documents/economics/profitability-and-the-air-transport-value chain.pdf
- Porter, M. (1985). *Competitive advantage : creating and sustaining superior performance*. New York ; London: Free Press Collier Macmillan.
- Porter, M., Heppleman, J.E... (2014). How smart, connected products are transforming competition. *Harvard Business Review,Vol. 92*, No.11, pp.64-88.
- Prahalad, C. K., & Hamel, G. . (1990). The Core Competence of the Corporation. *Harvard Business Review, 68*(379-91).
- Presutti, W. D., Mawhinney, J.R. (2013). *Understanding the Dynamics of the Value Chain*. New York: Business Expert Press.
- Saeidi, S. P., Sofian, S., Saeidi, P., Saeidi, S. P., & Saeidi, S. A. (2015). How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *Journal of Business Research*, Vol. 68, No. 2, pp. 341-350.
- Schrouder, F. R., Holbach, D. and Thomas Mueller-Kirschbaum, T. (2015). *Sustainability in the Value Chain: From Philosophy to Practice*. Cham: Springer International Publishing.
- Senge, P., Kleiner, A., Roberts, C., & Ross, R. (2011). *The Fifth Discipline Fieldbook Strategies for Building a Learning Organization*. London: Nicholas Brealey Publishing.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities And Strategic Management. *Strategic Management Journal, Vol. 18*, No.7, pp. 509-533.
- Trombly, M. (2000). Value-chain management. *Computerworld, Vol. 34*, No. 21, pp. 64.
- van Rensburg, A. C. (2008). Architectural Concepts For Value Chains. . *South African Journal of Industrial Engineering, Vol. 19*, No. 2, pp. 1-16.
- Vogt, C., Allers, T., Brosig, G., Eckart, A., Engelke, K., Jung, M., . . . Sonnenschein, M. (2005). Paradigm Shift and Requirements in Enhanced Value Chain Design in the Chemical Industry. *Chemical Engineering Research and Design, 83*(6), 759-765.
- Vurro, C., Russo, A., Costanzo, L. (2014). Sustainability along the Value Chain: Collaborative Approaches and their Impact on Firm Performance. *SYMPHONYA Emerging Issues in Management, n. 2, 2014, 2*.
- Waggoner, D. B., Neely, A.D., Kennerley, M.P.,. (1999). The forces that shape organisational performance measurement systems: An interdisciplinary review. *International Journal of Production Economics, Vol. 60*, No.61, pp. 53-60.
- Wang, M., Jie, F and Abareshi, A. (2015). *The Role Of Innovation Capability And Operation Capability In Logistics Performance Of Transport Firms: A Conceptual Framework*. Paper presented at the 9th Asia Academy of Management (AAOM) and 8th Taiwan Academy of Management.
- Wernerfelt, B. (1984). A Resource Based View of the Firm. *Strategic Management Journal, Vol. 5*, No. 2, pp. 171-180.
- Wittmer, A. (2011). *Aviation Systems: Management of the Integrated Aviation Value Chain*. Berlin; New York: Springer.
- Yu-Shan, C., & Chang, C. . (2012). Enhance green purchase intentions. . *Management Decision, Vol. 50*, No. 3, pp. 502-520.


Admission Information
Admission Criteria
Master's degree requirement
Interview
Research Proposal
Admission Requirements
Tuition Fees and Expenses
For more information contact:
PhD
DOCTOR OF PHILOSOPHY PROGRAM
IN BUSINESS ADMINISTRATION

Master of Engineering (M.Eng.)

Logistics Engineering and Supply Chain Management

(Bi-Lingual Program)

หลักสูตรวิศวกรรมศาสตรมหาบัณฑิต

สาขาวิศวกรรมโลจิสติกส์และการจัดการโซ่อุปทาน

(หลักสูตรสองภาษา)

Now Available !!!

Double Degree

with Otto-Von-Guericke University Magdeburg (OVGU)

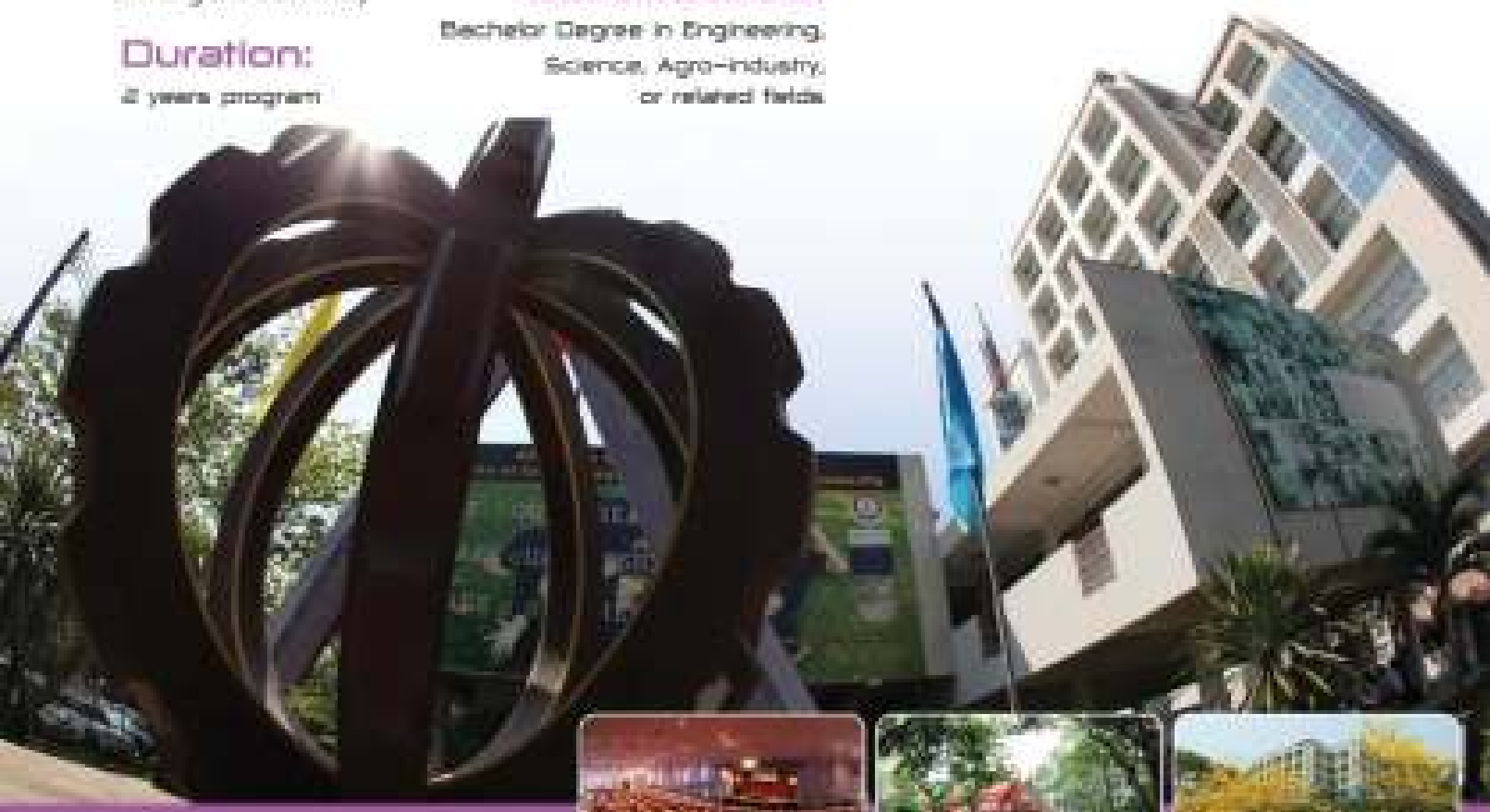
Class Location:
Faculty of Engineering
Chiang Mai University

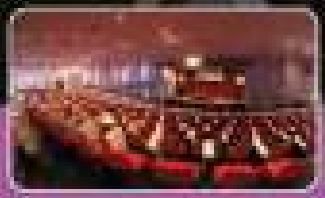
Language:
Bi-Lingual (Thai and English)

Duration:
2 years program

Qualifications:
Bachelor Degree in Engineering, Science, Agro-industry, or related fields

สมัคร Online ได้ที่ http://www.grad.cmu.ac.th
สอบถามรายละเอียดเพิ่มเติมได้ที่
ภาควิชาวิศวกรรมอุตสาหการ คณะวิศวกรรมศาสตร์
มหาวิทยาลัยเชียงใหม่
โทร 053-944125-314
Website: http://le.eng.cmu.ac.th
Email: Natnaree.le.cmu@gmail.com





Qualifications

Plan A1. (Research only Program)

- *Hold a Bachelor Degree in Engineering*
- *Hold a Bachelor's cumulative GPA of at least 3.00 or minimum 2 year working experience in related fields*

Plan A2. (Coursework + Research)

- *Hold a Bachelor Degree in Engineering, Science or related fields*

Plan A2. (Double Degree)

- *Hold a Bachelor Degree in Engineering or Science*
- *Sufficient English Proficiency (IELTS > 6.0, TOEFL > 500 or equivalent)*
- *1 year study in Chiang Mai University and 1 year in Otto-Von-Guericke University, Germany*
- *Possibility of being awarded degree from Chiang Mai University : Master of Engineering in Logistics and Supply Chain Management*
- *Otto-Von-Guericke University: Master of Science in Industry Engineering Logistics*


WICE
Logistics
Total Logistics Service and Solution Provider
Commitment to Service Excellence
In moving your business forward, we remain strongly beside
you constantly committed to your needs
Air & Sea | Customs Clearance service | Weekly consolidation to worldwide | Inland transportation
Multimodal Transportation | Warehousing & Yard Management | Door-to-Door service
Cross border trucking service (662) 681 6101
www.wice.co.th

ALL SIZES, EVERYWHERE

NEXTDAY
NATIONWIDE

ALL SIZES, EVERYWHERE

SCG Logistics

A logistics expert, is set to continually develop and improve it operational procedures as well as upgrade the service standard to increase its customers' opportunities of market expansion.

Next Day Nationwide

SCG Logistics' service innovation, has been provided for businesses that are looking for next day delivery of products to their customers nationwide. Business to Business involving products of all sizes and types of products. Thus, problems such as products weighted over than the standard and oversize products, can be handled by SCG Logistics.

SCG LOGISTICS

SEAOIL

SEA OIL PUBLIC COMPANY LIMITED
บริษัท ซีออยล์ จำกัด (มหาชน)

One of Leading Companies in International Bunkering, Oil Trading & Supply Management

SEAOIL