The Role of Business Strategy in Mediating the Relationship Between Industrial Competition and Performances: A Study in the Higher Education Industry in Timor-Leste

Estanislau de Sousa Saldanha
Faculty of Economics and Business, Udayana University, Indonesia
School of Business and Management, Dili Institute of Technology, Timor-Leste

I KetutRahyuda   Ni NyomanKertiYas,   I PutuGdeSukaatmadja
Faculty of Economics and Business, Udayana University, Indonesia

Abstract
This research aims to examine the role of business strategy (i.e. differentiation strategy, cost leadership, service focus, and innovation strategy) in mediating the relationship between industrial competition and performancein the higher education sectorin Timor-Leste. The literature was reviewed in regard to both theoretical and empirical approaches. 157 leaders, including heads of departments of eleven accredited higher education institutions in Timor-Leste were sampled, yielding130 validquestionnaires. Smart-PLS was used to testthe hypothesis. This study found that integrated business strategy based on the industrial cost leadership strategy, and the resource-based strategy (innovation strategy) positively and significantly influence industrial performance. The study contributes empirically to the debate on the industrial environment suitability strategy and combined strategy based on the contingency approach from the higher education industry's perspective. The practical implications are to enlighten government and higher education leadersin emerging countries to adopt strategic suitability principles to enhanceperformancein the higher education sector.
Keywords: industrial competition, business strategy, higher education institution, industrial performance.

Introduction
Industrial performance has become the center of attention among researchers and practitioners because it is related to the profitability and operational continuity of an organization within the complexity, dynamics and tight competition of the industrial environment. Industrial performance is a measure of accomplishment of the organization's previously-determined targets and goals (Avram and Avasilcai, 2014). It is influenced by external organizational factors such as Porter's Five Forces (Porter 1980; Metts 2007; Huang and Lee, 2012), by internal organizational factors such as resources and the organization's capabilities (Barney, 1991; Metts 2007; Huang and Lee, 2012; Battagello *et al.*, 2016), and by the organization's business strategy (Porter 1980; Barney 1991; Parnell, 2010; Bobe and Kober, 2015; Friis *et al.*, 2016; Anwar and Hasnu, 2016; Oyewobi *et al.*, 2016; Soltanizadeh *et al.*, 2016; Yuliansyah *et al.*, 2016).

Studies on the relationship between industrial competition and performance have been conducted intensely in recent days, but the results are not consistent. Some studies have found that industrial competition has positive and significant influences on industrial performance (Chong and Rundus, 2004; Chen, 2010; Hoque, 2011; Al-Rfou, 2012; Huang and Lee, 2012;Mia and Winata, 2014; Ghasemi *et al.*, 2015; Obembe and Soetan, 2015), because in a highly competitiveenvironment, company owners will focus on efficiency to minimize costs, operational and managerial risk, will provide incentives to fuel efficiency, and will promote innovation to improve performance (Januszewski, 2002; Obembe and Soetan, 2015). However, there are other studies which found that industrial competition has negative influences or does not significantly influence industrial performance (Metts, 2007; Patiar and Mia, 2009; Lee and Yang, 2011; Assaf and Cvelbar, 2011; Fosu, 2013; Teller *et al.*, 2016), because many companies have lost their market share and profitability due to the entrance of new competitors who offer the same products and services in the limited market segment.

In an era of complexity with intensity industrial competition, organizations are required to develop strategies suitable to the industrial environment to improve their competitive position and performance. Some researchers have used the contingency strategy approach by adopting industrial competitive strategy (Porter, 1980; Prajogo, 2007; Parnell, 2010; Parnell, 2011; Miles, 2013), or resource-based and capability strategies (Barney, 1991; Metts, 2007; Huang and Lee, 2012; Battagello *et al.*, 2016) or a combination of these strategies (Furrer *etal.*, 2008; Ortega, 2010; Salavou, 2015) to improve their competitive position and maintain continuously high industrial performance.

Nowadays, studies on business strategies are dominantly based on Porter'sindustrial competitive strategy or on a combination of differentiation and cost leadership strategies, in addition to exploring Porter's generic strategy in the context of differentiation strategy or cost leadership strategy on certain types of industries. Conversely, focus strategy can be performed on service or resource and capabilitystrategy in certain industries

and market segments.Studies on a combination of business strategies are still dominantly focused on the manufacturing sector and banking services (Yuliansyah *et al.*, 2016), but the higher education service industry in emerging countries such as Timor-Leste has not received much attention.

This study fills in this gap by providing empirical evidence regarding competition, business strategy and industrial performance in the higher education sector in Timor-Leste. The higher education sector in Timor-Leste has been growing rapidly, both in terms of number of institutions andstudy programs, with some duplication, thus leading to a growth in competition, which in turn influences industrial performance. The aims of this research are (1). To identify and explain the influence of industrial competition on performance in the higher education sector; (2).To examine the influence of business strategy on performance in the higher education sector; (3).To examine the mediating role of business strategy in the relationship between industrial competition and higher education industrial performance. This study builds onempirical studies regarding industrial competitive strategy (Porter, 1980; Porter, 1985), resource and capability strategy (Barney, 1991)andcombined strategy(Ortega, 2010; Salavou, 2015) in light of the contingency theory. In the dynamics complex,and highlyindustrial competition, and technological advancement, thecombined strategy is very good for increasingcompetitive advantages and industrial performance(Salavou, 2013; Gabrielsson *et al.*, 2016). In practice, this study is expected to enlighten government and higher education managers in Timor-Leste as they design policies and develop appropriate strategies to improve higher education performance.

Theoretical Framework
Industrial Competition
Industrial competition is the rivalry between two or more industries, which can be of the same or similar type, that provide products, services, prices, distribution and promotions to customers(Adnan *et al.*, 2016). The intensity of industrial competition depends on the number of competitors in the same market, the frequency of technological changes in the industry, the frequency of introduction of new products, price reductions, the agreement of packets provided to customers by competitors, changes in government regulation and policies, and the reduction in tariffs(Chong and Rundus, 2004). External factors which triggers industrial competition are: (1) the current competition intensity among competitors. (2) the threat of new entrants. (3) the bargaining power of suppliers. (4) the bargaining power of buyers, and (5) the threat of substitute products (Porter, 1980; Metts, 2007; Huang and Lee, 2012).

Industrial competition influences industrial performance, so companies must adapt to environmental changes to maintain their competitive positions(Huang and Lee, 2012; de Haan, 2015). Porter (1980) states that, in a perfectly competitive industrial environment, industrial competition decreases the rate of return of companies. Thus, companies attempt to improve their competitive position in order to beat their competitors. This means companies must develop clear business strategies to maintain their competitive position in a highly competitive environment. Business strategies decipher the goal achievement of a company based on internal and external evaluations(Soltanizadeh *et al.*, 2016).

The industrial competition this research is measured using dimensions and indicators adapted from previous empirical studies (Metts, 2007; Hoque, 2011; Huang and Lee, 2012; Mathooko and Ogutu, 2015). Industrial competition is measured along several dimensions.

First, the competition intensity dimension of industrial competition has five indicators, namely the growth of higher education institutions (Huang and Lee, 2012), competition intensity to obtain lecturers with master's and doctoral degrees(Hoque, 2011; Huang and Lee, 2012; Mathooko and Ogutu, 2015), the competition intensity of tuition fees (Hoque, 2011; Huang and Lee, 2012; Teller et al., 2016), and the competition intensity of promotional costs(Hoque, 2011; Huang and Lee, 2012; Teller et al., 2016).

Second, the dimension of threat of substitue has three indicators, namely the existence of overseas higher education institutions (Huang and Lee, 2012), the existence of private universities (Huang and Lee, 2012), and the existence of competence-based training centers(Huang and Lee, 2012; Mathooko and Ogutu, 2015).

Third, the dimension of bargaining power of buyers has four indicators, namelythe power of families (Huang and Lee, 2012; Mathooko and Ogutu, 2015), the power of employers or job providers (Huang and Lee, 2012; Mathooko and Ogutu, 2015), the power of students, and the power of the government (Huang and Lee, 2012; Mathooko and Ogutu, 2015).

Fourth, the bargaining power of suppliers dimension has three indicators, namely the power of permanent lecturers (Huang and Lee, 2012; Mathooko and Ogutu, 2015), the power of administrators (Huang and Lee, 2012; Mathooko and Ogutu, 2015), and the power of temporary lecturers (Huang and Lee, 2012; Mathooko and Ogutu, 2015).

Fifth, the threat of new entrants dimension has four indicators, namely Ministry of Education of Timor-Leste's new regulations regarding the establishment of higher education institutions (Huang and Lee, 2012), the minimum capital needed to establish a college (IC_{52}) (Huang and Lee, 2012), government laws and policies which regulate the operations of higher education institutions (Huang and Lee, 2012), and the duplication of

study programs from existing colleges (Mathooko and Ogutu, 2015).

Business Strategy

Business strategies are strategies used by organizations or companies to achieve their predetermined target or goals. Strategies are made to maintain their competitive position and increase their performance. The best known business strategy is Porter's industrial strategy (1980), which was proposed to improve the competitiveness of companies in a highly competitive environment driven by external factors. Porter divided this overall strategy into differentiation strategy, cost leadership strategy and focus strategy. Focus strategy emphasizes on the differentiation focus strategy and cost leadership focus strategy for certain market segments or industries. According to Porter, companies that desire to increase their competitive advantage and performance must choose either the differentiation strategy or the low cost strategy. If the two strategies are combined, the company will face what Porter calls "stuck-in-the middle".

Porter's business strategy was challenged by many experts through empirical studies (Baack *and* Boggs, 2008; Salavou, 2013; Gabrielsson *et al.*, 2016; Anwar *and* Hasnu, 2016), because in reality companies can adopt more than one strategy in the complex business environment of today (Hansen *et al.*, 2015). The adoption of strategies highly depends on their suitability to the environment, as well as on technological advancement and key resources owned by the company (Gabrielsson *et al.*, 2016). In the context of intense competition, a company's competitive position is not only determined by external environmental factors, but also by internal factors such as resources and capabilities developed from the resource-based theory (Barney 1991). Companies that have and develop their resources and internal capabilities to produce distinctive, unique and valuable products for the customers will improve their competitive position and performance relative to their rivals (Huang *and* Lee, 2012; Bobe *and* Kober, 2015).

In this research, business strategy is focused on the differentiation strategy, low cost strategy, service focus strategy and innovation strategy in the higher education sector.

Differentiation Strategy

Differentiation strategy is a company's strategy to develop products, service, warranties, brand image, innovation, durability, technology, reputation, shape, quality, and unique value for customers which is difficult for competitors to imitate (Acquaah, 2011; Baroto *et al*., 2012). This strategy arises because companies want to fulfill customers'sdemand for an alternative and unique product (Becerra et al., 2013; Dirisu *et al.*, 2013). Porter (1980) states that as the competition between industries of the same typegrows, companies can adopt the differentiation strategy to maintain their competitiveness and performance. Differentiation may be in the form of product quality, process and service to fulfill customer needs (Dadfar and Brege, 2012). Some empirical studies support Porter's generic strategy (Spencer et al., 2009; Lozano-Vivas, 2009; Parnell, 2010; Acquaah, 2011; Dirisu et al., 2013; Torres *et al.*, 2014; Newton *et al.*, 2015; Banker *et al.*, 2014; Martins and Queirós, 2015; Pehrsson, 2016; Yuliansyah *et al.*, 2016). However, there are also studies which state that the differentiation strategy does not influence or has negative influence on performance (Parnell, 2011; Nandakumar et al., 2011; Wu et al., 2015).

Studies on the relationship between differentiation strategy and industrial performance have to date concentrated on the manufacturing industry, and have rarely turned attention on the higher education service sector. In particular, there has not been any study regarding the contribution of the differentiation strategy in increasing the performance of higher education institutions in Timor-Leste.

This study utilizes indicators of differentiation, in particular study program, quality of graduates, and service quality. Quality of graduates and service quality are intangible factors which determine the quality and reputation of higher education institutions. Differentiation based on such intangible aspects and the local wisdom values will strengthen an organisation'scompetitive position which is difficult for competitors to imitate (Bobe and Kober, 2015). Unique study programs are determining factors in creating differentiation, because there are then no competitors in the same market (Chan Kim and Mauborgne, 2005; Kim *et al.*, 2008).

Cost Leadership

The cost leadership strategy is a company's strategy to provide products and services with lower costs than their rivals, to attract customers and attain greater market share(Porter, 1985; Banker *et al.*, 2014), making the products and services more saleable and providinggreater profit for the company. Companies thatimplement the cost leadership strategy are focused on improving products, services and processes by maximizing operational efficiency (Banker *et al.,* 2014). This can be done by controlling and tightening costsat all level of operations in order to be superior to their competitors and maintain their competitive advantage (Porter, 1985; Acquaah, 2011). Porter (1980) states that organizations can improve their competitive advantage and performance if they adopt the cost leadership strategy (Parnell and Hershey, 2005; Oyewobi *et al.*, 2016). This is supported by empirical findings which show that cost leadership strategy has a positive influence on competitive advantage and company performance (Allen and Helms, 2006; Banker *et al.*, 2014; Indounas, 2015). This occurs because companies do mass production and distribution, gaining economies of scale, incorporating technology, product design, input costs, utilization of resource's abilities, and access to cheaper raw materials(Akan et al., 2006).

However, customers have low loyalty towards cost leadership strategies, and if the costs are too low, the company may incur losses in revenue (Allen and Helms, 2006). Likewise, if products and services have low cost, this can be imitated by rivals, which would reduce the competitiveness and performance of the company (Salavou, 2015). This downside is supported by empirical studies which show that low cost strategy has negative influences on company performance (Parnell et al., 2012; Yuliansyah et al., 2016; Yuliansyah et al., 2017).

In this study, cost leadership is measured by control and cost efficiency, low operational costs, and low tuition fees per student, as developed in previous empirical studies (Ortega, 2010; Banker et al., 2014; Hansen et al., 2015; Oyekunle et al., 2016).

Focus services

Focus strategy is one of the dimensions of Porter's generic strategy which encompasses differentiation focus and cost leadership focus (Baack and Boggs, 2008). However, focus strategy emphasizes service, because service quality is closely related to profit, cost saving, market share and customer satisfaction (Angelova, 2011; Zameer *et al.*, 2015). Thus, service quality has a positive influence on competitive advantage and industrial performance (Angelova, 2011; Jain *et al*., 2011; Kwak and Kim, 2016; Paul *et al.*, 2016). On the other hand, there are some research results which show that service quality has a negative influence on industrial performance (Neely, 2008; Jamal, 2009).

Previous studies have shown that the offer of good servicesby a company is determined by the ability of the resources and its capabilities. Thus, companies attempt to develop their resources and capabilities to strengthen their service strategy, maintain good relationships with customers and strengthen the company's competitiveness (Kwak and Kim, 2016). According to the resourced-based view (RBV), a company's resources and capabilities may be in the form of physical facilities, human resources, knowledge and technology (Douglas et al., 2010; El Shafeey and Trott, 2014).

Service strategy is related to customer satisfaction (Khodayari and Khodayari, 2011) and has a positive influence on organizational performance (Ham, 2003; Paul et al., 2016). Companies that give satisfaction to customers will be more successful in maintaining customer loyalty and retention on the products and services they offer, which in turn improves their profitability (Angelova, 2011). With this, companies can develop good service quality to meet customer's expectations.

In this research, service focus is measured using five (5) indicators, namely lecturers' competence in assisting students, alignment of facility ownership with students' expectations, quality as the basis of service, responsiveness in serving students, and attention towards students (Firdaus, 2006; Trivellas and Dargenidou, 2009; Gruber et al., 2010; Cardona and Bravo, 2012; Chui et al., 2016).

Innovation

Innovation strategy is the attempt to convert knowledge and ideas into products, processes, servicees, and new systems in order to produce profits for the company and stakeholders (Perdomo-Ortiz et al., 2006; Perdomo-Ortiz *et al*., 2009; Jaskyte, 2011). In other words,it converts knowledge into money (Boult et al., 2009). Innovation can come about through using technology and organizational resource combination to create products, processes, technologies and services that are new, unique, and meet the expectations of customers in order to increase the company's competitive advantage and performance (Torres et al., 2014; Havenvid, 2015). In the theory of resource-based view (RBV), innovation is an important business capability to enable a company to produce products and services that are valuable, unique, and hard to be imitated by competitors (Acar and Acar, 2012), thus increasing their competitive position and performance. Some empirical reviews have shown that in a competitive environment, innovation has a positive influence on performance (Li et al., 2010; Jaskyte, 2011; Kim *et al*., 2011; Zehir *et al*., 2011; Acar and Acar 2012; Uzkurt et al., 2013; Al-ansari et al., 2013; Altuntaş et al., 2013; Camison and Villar-Lopez, 2014; Babkin et al., 2015; Leal-rodríguez et al., 2015; Obembe and Soetan, 2015; Pehrsson, 2016), because innovation drives companies to produce products and services that are new, unique and valuable in which is suitable with the change in customer demands. However, there are other studies which show that innovation negatively influences performance (Loof and Heshmati, 2002; Vermeulen et al., 2005; Hashi and Stojčić, 2013; Guisado-González *et al*., 2013; Campo *et al.*, 2014; Im *et al.,* 2015), because in order to innovate, companies need resources and capabilities, product change frequencies and core services , all of which have implications for cost, thus increasing risk (Soltanizadeh *et al.*, 2016).

In this research, innovation is measured using the indicators of curriculum (Duening, 2009,Bunyi, 2013**,** Edwards et al., 2016), learning and teachingmethods (Alshammari et al., 2014, Corral de Zubielqui *et al.*, 2015), and the use of technology in teaching (Desai, 2012; Al-ansari *et al.*, 2013;Durkin *et al*., 2016).

Industrial Performance

Industrial performance is an indicator which is usually used to measure the success of a company in achieving their predetermined goals and targets(Ho 2011; Avram and Avasilcai 2014), or the company's ability to fulfill customer's satisfaction and win the market through the products and services that they offer. Company performance is the collection of management and analytic processes which enablean organization's management to achieve one or more of its goals (Ab Hamid et al., 2014). Organizational performance shows the extent to

which a company achieves its financial marketing goals (Li *et al.*, 2006). In the context of the higher education sector, industrial performance is the extentto which a higher education instituteis able to develop strategies to achieve their goals inteaching, research, community service, finance, and marketing.

Industrial performance is influenced by external factors (Porter 1980; Metts 2007; Huang and Lee, 2012), internal factors (Barney, 1991; Metts 2007; Huang and Lee, 2012; Battagello et al., 2016) and the company's business strategy (Porter 1980; Barney 1991; Parnell, 2010; Bobe and Kober, 2015; Friis et al., 2016; Anwar and Hasnu, 2016; Oyewobi et al., 2016; Soltanizadeh et al., 2016; Yuliansyah et al., 2017). External factors such as the five diamond powers can affect the competition intensity and performance(Porter, 1980; Porter, 1985). Likewise, the internal factors such as resources, the company's internal capabilities (Barney, 1991), and the company's strategy can influence the competitive position and performance of the industry (Gabrielsson et al., 2016; Yuliansyah et al., 2016).

In this research, industrial performance (IP) is divided into four dimensions, namely(1) Learning and teaching performanceis a measure to assess the success of the learning and teaching process in a university. This dimension is measured by five indicators, namely student satisfaction (Asif and Searcy, 2014), student drop out rate (Asif and Searcy, 2014), the satisfaction of employers with alumni's skills (Asif and Searcy, 2014), the absorption of alumniinto the workforce (IP_{14}) (Asif and Searcy, 2014), and the growth in the number of students (Zebal and Goodwin, 2012). (2) Research performanceis measured by four indicators, namely staff publications in national and international journals, staff participation in training, seminars and workshops as either participants or presenters(Asif and Searcy, 2014), research with grants, and the impact of the research on the community. (3) Community service performanceis measured by three indicators, namelycounselling for students and alumni, community service activities, and participation in the development of the curriculum (Asif and Searcy, 2014). (4) Financial and marketing performance is measured by four indicators, namely capital return growth (Andreou et al., 2014; Abdifatah, 2014; Al-Najjar, 2014; Kilic et al., 2015), surplus growth (Zebal and Goodwin, 2012; Asif and Searcy, 2014), total income growth (Zebal and Goodwin, 2012; Asif and Searcy, 2014), and control of market share (Zebal and Goodwin, 2012; Asif and Searcy, 2014).

Conceptual Framework and Hypothesis
Conceptual framework
This research utilizes the contingency theory to explain business strategies in adopting the strategies that are most suitable for the environment in which a company operates, to maintain its competitiveness and performance. The contingency strategy is conducted in the context of industrial competitive strategy (Porter, 1980) and resource-based strategy (Barney, 1991) or a combination of the two.

The business strategies adopted in this research are combination of strategies, consisting of differentiation strategy (DS), cost leadership strategy (CL), service focus (FS), and innovation strategy (IN). Business strategy is used as the mediator in the relationship between industrial competition (IC)and higher education sector's industrial performance (IP) in Timor-Leste.

In this research, the reflective indicators are adjusted in accordance with the context of the higher education sector in Timor-Leste. Porter (1980)discusses five external forces whichinstigate industrial competition. This research use Porter's five forces in the form in which they were further developed by Huang and Lee (2012) and Mathooko and Ogutu (2015) within the context of the higher education sector. Higher education's industrial performance (IP) is measured using 4 dimensions (Asif & Searcy 2014), while Liao's (2011) indicators, (A. M. Zebal & Goodwin 2012), (Asif & Searcy 2014)), and (Kilic et al. 2015).
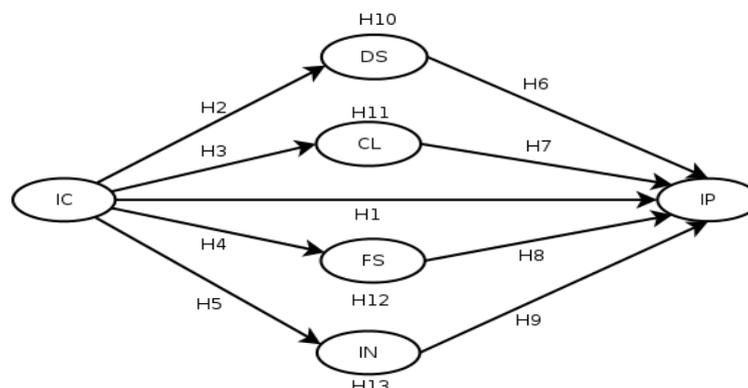*Hypotheses*

Figure 1. Conceptual Model of the Research

Industrial competition and performance
Industrial competition is triggered by external environment factors such as rivalry between competing companies,

the threat of substitutes, the threat of suppliers, the threat of buyers and the threat of new entrants which can increase industrial competition (Metts, 2007; Baack and Boggs, 2008). Industrial competition has negative influence on industrial performance (Metts, 2007; Patiar and Mia, 2009; Lee and Yang, 2011; Assaf and Cvelbar, 2011; Huang and Lee, 2012; Fosu, 2013; Teller et al., 2016).

H1: Industrial competition(IC) has a significant influence on industrial performance.

Industrial Competition and Differentiation Strategy

Industrial competition encourages companies to improve their competitive position and performance by using differentiation strategy. Porter (1980) states that in a highly competitive environment, companies can adopt the differentiation strategy toimprove their competitiveness and performance. Differentiation strategy can be conducted to develop products, services, warranties, brand image, shape, quality, and values which are unique to customers and are hard to be imitated by competitors (Baroto et al., 2012). This is done to fulfill the demand of customers who want alternative and unique products from similar companies(Becerra et al., 2013; Dirisu et al., 2013), in order to strengthentheir position in the available market (niche market), create new markets, which enables new products to enter the market (new entrance) and the available products have market advantages compared to other products (Davcik and Sharma, 2015). Industrial competition demands companies to adopt the differentiation strategy to create products, services and values that are different and unique to win the competition. Some empirical studies regarding the relationship between industrial competition and industrial strategy also show a positive relationship (Salavou, 2015; Mathooko and Ogutu, 2015; Parnell, 2011; Becerra et al., 2013).

H2: Industrial competition (IC) has a significant influence on differentiation strategy (DS).

Industrial competition and cost leadership strategy

Companies are expected to develop appropriate strategies to maintain their competitiveness in a highly competitive industry environment (Parnell, 2010). The more the company, the higher the competition, so the companies will attempt to improve their operational efficiency in order to offer a better price to customers (Banker et al., 2014; Kaufman 2015). To achieve cost leadership, companies must perform control, tightening of cost and operate more efficiently compared to competitors (Miles, 2013). Likewise, companies that are more oriented on the supply side than the demand side of the market will use the competitors' behavior as the main orientation in developing their competitive strategies (Baroto et al., 2012). In this context, industrial competition has a positive influence on the development of cost leadership strategies (Parnell, 2011).

H3: Industrial competition (IC) has a significant influence on the cost leadership strategy (CL).

Industrial Competition and Focus Services

Industrial competition compels companies to find solutions in order to maintain their competitiveness and performance. The higher the competition, companies would try to focus on improving their service quality to provide satisfaction to customers in order to increase the sale of products and services they offer (Angelova, 2011). If the company has limited resources, the company would be more focused on improving service quality to increase performance (Yuliansyah et al., 2016). As industrial competition becomes higher, companies would integrate product sales and service quality to satisfy customers (Kwak and Kim, 2016). Offering good and qualified services would distinguish the company from their competitors in providing satisfaction and maintain customers (Bamert and Wehrli, 2005).

H4 : Industrial competition (IC) has a significant influencceon service focus (FS).

Industrial Competition and Innovation

Industrial competition demands companies to conduct innovation to maintain their competitiveness. Innovation can be conducted on products, processes, an services in order to make the company havebetter competitive position compared to their competitors. With technology based innovations, companies would be able to produce products with more quality, are different, and are more valuable to customers compared to competitors (Brenes et al., 2014) in order to guarantee the continuity of growth, maintain competitiveness and company performance (Aghion et al. 2014). Innovation can give the company more profit by utilizing the advancement in technology and available resources (Havenvid, 2015), and thus industrial competition has a positive influence on innovation (Boss et al., 2009; Hopman et al., 2010; Aghion et al., 2014). This is due to the increase in industrial competition which has implications on the increase in research and development of similar companies that are competing (Aghion et al., 2005; Aghion et al., 2014).

H5: Industrial competition (IC) has a significant influence on innovation (IN).

Differentiation Strategy and Industrial Performance

Porter (1980) statedthat companies need to adopt the differentiation strategy or cost leadership strategy to improve the company's performance. Companies that adopt the differentiation strategy attain competitiveness by investing on product or service development which provides unique quality that satisfies customers and makes the product or service to be highly priced or valued(Banker et al., 2014). Some empirical studies have proved that differentiation strategy has a positive influence on industrial performance (Spencer, 2009; Lozano-Vivas, 2009; Acquaah, 2011; Dirisu et al., 2013; Banker et al., 2014; Newton et al., 2015).

H6: Differentiation strategy (DS) has a significant influence on industrial performance (IP).

Cost Leadership Strategy and Industrial Performance

Porter (1980) stated that companies can achieve competitiveness by adopting the cost leadership strategy. Cost leadership strategy was developed to attain operational efficiency (Banker et al., 2014). To increase competitiveness and performance, companies must perform cost reduction and tighten the control on overhead costs so that operational activities are more efficient and cheaper compared to competitors (Baroto et al., 2012; Miles, 2013). Some empirical reviews found that cost leadership strategy has positive influence on company performance (Allen and Helms, 2006; Banker et al., 2014). Likewise, the study by Indounas (2015) revealed that there is a positive relationship between the price determinant strategy and company performance.

H7 : Cost leadership strategy (CL) has a significant influence on industrial performance (IP).

Service Focus and Industrial Performance

Service quality is an important factor for the company's success in a highly competitive industry environment because service quality is closely related to profit, cost saving, market share and customer satisfaction (Jain et al., 2011). An industry that satisfies their customer would be more successful in maintaining customer loyalty and retention on the products and services they offer, which in return would increase the company's profitability (Angelova, 2011). Therefore, even manufacturing companies must strive to improve their service quality in order to fulfill customer's demand and increase competitiveness (Gebauer et al., 2010; Gebauer et al., 2012; Hsieh et al., 2013; Hallavo et al., 2015; Kwak and Kim, 2016). Service quality determines the perception of students regarding the educational institution and influences the word of mouth marketing (Cardona and Bravo, 2012). Thus, service has positive influence on the company's performance (Neely, 2008; Jamal, 2009; Kwak and Kim, 2016).

H8 : Servicefocus (FS) has a significant influence on industrial performance (IP).

Innovation and Industrial Performance

Innovation is related with the access to technology (Babkin et al., 2015) in order to improve efficiency, productivity, quality, competitive position and market share (Zehir et al., 2011). Companies that have different strategies and have resources and good capabilities would be able to produce products, processes and values that are unique, different, and difficult to be substituted in the fulfillment of customer needs, which would result in the increase in competitiveness and company performance (Acar and Acar, 2012). To create innovations, companies must have strategies, resources, and capabilities, which means that innovation is related to the competitiveness and company performance (Babkin et al., 2015). Innovation has positive influence on industrial performance (Altuntaş et al., 2013; Uzkurt et al., 2013; Al-ansari et al., 2013; Camison and Villar-Lopez, 2014; Babkin et al., 2015; Leal-rodríguez et al., 2015; Obembe and Soetan, 2015) because through innovation, it is possible to produce products, processes, services, and values that are different and difficult to be imitated by competitors in the same industry in the industrial environment which is dynamic and filled with turbulences (Li and Mitchell 2009; Rosenbusch et al., 2011; Leal-rodríguez et al., 2015).

H9 : Innovation (IN) has a significant influence on industrial performance (IP).

Industrial Competition, Differentiation Strategy, and Industrial Performance

Companies must adopt the differentiation strategy or the cost leadership strategy to improve their competitiveness and company performance in the highly competitive industrial environment (Porter, 1980; Porter, 1985; Porter, 1991). Thus, companies will focus on developing products or services that have unique quality which would satisfy customers such that the products or servicesare valued highly (Banker et al., 2014). There are some empirical studies which have proven that differentiation strategy has a positive influence on industrial performance in a highly competitive industrial environment (Spencer, 2009; Lozano-Vivas, 2009; Acquaah, 2011; Dirisu et al., 2013; Banker et al., 2014; Newton et al., 2015).

H10: Differentiation strategy (DS) has a significant mediating effect in the relationship between industrial competition (IC) and industrial performance (IP).

Industrial Competition, Cost Leadership, and Industrial Performance

Cost leadership strategy is the strategy devised by companies to provide products and services with lower costs compared to their competitorsto attract customers and attain market shares (Porter, 1985; Banker et al., 2014). Companies that use the cost leadership strategy will be more focused on developing products, services and processes by maximizing operational efficiencies(Banker et al., 2014) through the control and tightening of costs in all level of operations, to be more superior than their competitors in order to maintain competitiveness and increase performance (Porter, 1985; Baroto et al., 2012; Miles, 2013). Cost leadership strategy has an important role in increasing industrial performance in a competitive industry (Porter, 1980).

H11: Cost leadership (CL) has a significant mediating effect in the relationship between industrial competition (IC) and industrial performance (IP).

Industrial Competition, Focus Services, and Industrial Performance

Service quality is very important for the company's success in a dynamic industrial environment because service quality is closely related to profit, cost saving, market share and customer satisfaction (Jain et al., 2011). Kwak

and Kim (2016) in their research regarding the influence of service integration on the performance of tools and machinery companies in Korea found that service integration has a positive influence on the company's performance which is measured with return on sales (ROS). Jamal (2009), in his research regarding the influence of the five dimensions of service quality and expertise on the satisfaction and loyalty of bank customers in Greek, showed that service quality has a partial influence on customer satisfaction. The dimensions of service quality such as reliability, tangibility and empathy have positive influence on customer satisfaction, while the responsiveness and assurance dimensions do not have any influence. Neely (2008) in his study found that service integration has a positive influence on revenue.

H12: Service Focus (FS) has a significant mediating effect in the relationship between industrial competition (IC) and industrial performance (IP).

Industrial Competition, Innovation, and Industrial Performance

With technology based innovation, products produced would have quality, would be different, and are more valuable to customers compared to the competitors (Brenes et al., 2014), and this would guarantee the continuity of growth and improve company performance(Aghion et al. 2014). The factors that encourage innovation are the desire of the company to gain more profit by utilizing the technological advancement and resources available (Havenvid, 2015). Some empirical studies have revealed that industrial competition and innovation are positively related (Boss et al., 2009; Hopman et al., 2010; Aghion et al., 2014) because the increase in competition has implications on the increase in research and development of companies of the same type and are competing (neck-and-neck firm) (Aghion et al., 2005; Aghion et al., 2014). Likewise, innovation strategy also has a positive influence on industrial performance (2012; Altuntaş et al., 2013; Uzkurt et al., 2013; Al-ansari et al., 2013; Camison and Villar-Lopez, 2014; Babkin et al., 2015; Leal-rodríguez et al., 2015; Obembe and Soetan, 2015) because innovation will produce products, processes, services, and value that are different and difficult for similar industry competitors to imitate in the dynamic and turbulent industrial environment (Li and Mitchell, 2009; Rosenbusch et al., 2011; Leal-rodríguez et al., 2015). A study by Huhtala et al. (2014) found that innovation has a positive and significant role in mediating the relationship between market orientation and business performance. The study by Akgun et al. (2009) have also proven that company innovation has a positive role in mediating the relationship of emotion dynamics and company performance. Al-Hakim and Hassan (2013) in their study found that innovation has a positive role in mediating the relationship between knowledge management strategy and organizational performance.

H13: Innovation (IN) has a significant mediating effect in the relationship between industrial competition (IC) and industrial performance (IP).

Methods

This research was conducted in 11 accredited higher education institutions in Timor-Leste and the departments as the analysis unitswith a totalof 157. Questionnaires were distributed to the 157 departments within these 11 institutions, and were filled in by the Department Heads or Deputy Heads. Of these, 130 questionnaires were filled in, returned and used in this research. This shows that the response rate (83%) is above the minimum response rate (80%) for the survey to be considered a good representative of the University (Fincham, 2008). It is greater than the response rate of 67,29% which was used in the survey on Higher Education Institution performance in Taiwan (Huang and Lee, 2012), and greater than the 61,7% response rate in the study on Higher Education Institutions in Zimbabwe (Garwe, 2016). A low response rate might result in a bias in the sample which would influence the research result (Fogliani, 1999; Sivo et al., 2004).

The research instrument in this research is questionnaries using the five Likert scale. The questionnaire's validity and reliability were first tested using a pilot test with 30 respondents (Oyewobi et al., 2016). These respondents consisted of head of departmanets from the 11 accredited Higher Education Institutions in Timor-Leste because they are more knowledgable of the business strategy and performance of the higher education institution. Thus, they are able to provide input to improve the questionnaire and guarantee clarity, accuracy and comprehensiveness regarding the items in the questionnaire as a measurement tool of industrial competition, business strategy and industrial performance of higher education services in Timor-Leste. This also helps avoid ambiguity which could result in biased results (Huang and Lee, 2012; Mathooko and Ogutu, 2015).

A quantitative-inferential research analysis is conducted to answer the research problems and hypotheses. The collected data was analyzed using the partial least square (PLS) analysis tool. This analysis tool was chosen because it has several advantages. In particular, it does not require the classical assumption test, can be used for small sample sizes, reflective indicator and formative (Hair et al., 2014; Hopkins, 2015; Ringle and Sarstedt, 2016; Valaei, 2017). PLS is a technique established to calculate the path coefficient, and is able to predict constructs, analyze multivariate data, and develop and test the relationship between variables based on theory. It is rich in tools for management and strategy research (Roemer, 2016; Valaei, 2017).

The research instrument validity test was conducted using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Barlett's Test (KMOMSA) and Anti-image Correlation with a minimum KMO value threshold of

0.60 (Field, 2005), calculated using SPSS Version 17. Based on the instrument validity test result, the KMOMSA values of all the constructs in this research are greater than 0.7. The reliability of the instrument was tested using cronbach alpha with the treshold value of all constructs are greater than 0.7 (Hair *et al.*, 2010; Ndubisi and Iftikhar, 2012).This shows that the instruments in this research are valid and reliable to be used in collecting data.

Results

Respondent Demographics

The 130 respondents are all Department Heads or Deputy Heads. The majority are male (75%), and the minority female (25%) (Table I). With regard to education level, the majority have a master's degree (59%), while only 3% have a doctoral degree. The remaining 38% have only a bachelor degree (38%) (Table I), despite the fact that the Ministry of Education of Timor-Leste through the National Accreditation Board (ANAAA) mandates that lecturers (let alone Department Heads and Deputy Heads) of an Undergraduate Study Program must have at least a master's degree.

The majority of the respondents are from Private Higher Education Institutions (PTS) (76%) because PTS have a wider range of departments compared to Public Universities (PTN) (24%). This is understandable because in Timor-Leste there is only one public university, the UniversidadeNasional Timor Lorosae (UNTL),which has a total of 32 departments.

In Timor-Leste, to qualify as a university, the Higher Education General Director of Timor-Leste has decreed that an institution must have at least 4 faculties, including two science and two social science faculties. An institute, in contrast, need have only one department. Based on this criterion, Timor-Leste has 4universities and 7 institutes. In this research, the majority of respondents (67%) are from universities, with the rest (33%) being from accredited institutes (Table 1).

Table 1. Respondent demographics

	Number	Frequency (%)
Gender		
Male	97	75
Female	33	25
Education level		
Bachelor degree	50	38
Master's	76	59
Doctorate	4	3
Position		
Head of department	95	73
Deputy head of department	35	27
Statute of HEI		
Public	31	24
Private	99	76
Type of HEI		
University	87	67
Institute	43	33

Validity and Reliability Test

The reliability of each construct was tested using composite reliability (CR), average variable extracted (AVE), and Cronbach's Alpha tests. A construct is deemed to be reliable if the CR value is greater than 0.7, the minimum AVE is 0.5, and the minimum Alpha Cronbach is 0.6 (Kumar and Banerjee, 2012; Abd Razak *et al*., 2016). Table 2 shows the value of CR, AVE, and Cronbach's Alpha of each construct. The CR values of all the constructs are at least 0.8, the AVE value is greater or equal to 0.5 and the minimum Cronbach's Alpha value is 0.6. Thus, all constructs have good internal consistency, enabling them to be used in this measurement model.

Table 2. Construct Reliability Test

Construct	Notation	Composite Reliability	Average Variance Extracted (AVE)	Cronbach's Alpha
Low cost strategy	CL	0.8	0.5	0.6
Differentiation strategy	DS	0.9	0.7	0.8
Service Focus	FS	0.9	0.5	0.8
Industrial competition	IC			
Competition intensity	IC1	0.8	0.5	0.7
Threat of substitute	IC2	0.9	0.7	0.7
Bargaining power of buyers	IC3	0.9	0.6	0.8
Bargaining power of suppliers	IC4	0.8	0.6	0.7
Threat of new entrants	IC5	0.8	0.5	0.7
Innovation	IN	0.9	0.8	0.9
Industrial performance	IP			
Learning and teaching performance	IP1	0.9	0.6	0.8
Research performance	IP2	0.9	0.7	0.9
Community service performance	IP3	0.8	0.6	0.6
Financial and marketing performance	IP4	0.9	0.8	0.9

The validity test used is the discriminant validity parameters with the average variant extracted (AVE), in which the indicators are deemed as valid if the square root of averagevariant extracted ($\sqrt{AVE}$) value of each variable is greater than the correlation value between the latent variable and other latent variables (Yuliansyah *et al.*, 2017) and the minimum value is 0.5 (Lathan andGhozali, 2012). Based on the discriminant validity test result, the AVE value of each latent variable correlation is greater than the other latent variables with a minimum value of 0.69 (Table 3). This minimum value is greater than 0.5. Hence, all latent variables measured using the discriminant validity are valid.

Table 3. Validity Test Using theFornellLarscker Validity Test

Construct	CL	DS	FS	IC1	IC2	IC3	IC4	IC5	IN	IP1	IP2	IP3	IP4
CL	0.73												
DS	0.44	0.82											
FS	0.59	0.59	0.73										
IC1	0.21	0.17	0.15	0.69									
IC2	0.32	0.22	0.26	0.51	0.81								
IC3	0.38	0.37	0.39	0.40	0.51	0.78							
IC4	0.38	0.23	0.29	0.18	0.28	0.41	0.78						
IC5	0.25	0.17	0.26	0.30	0.43	0.28	0.24	0.72					
IN	0.50	0.45	0.66	0.02	0.23	0.33	0.28	0.22	0.90				
IP1	0.59	0.49	0.65	0.09	0.33	0.31	0.27	0.18	0.59	0.75			
IP2	0.46	0.35	0.55	-0.10	0.15	0.21	0.27	0.06	0.55	0.61	0.83		
IP3	0.47	0.38	0.57	0.10	0.18	0.26	0.10	0.09	0.40	0.57	0.60	0.76	
IP4	0.41	0.36	0.48	0.21	0.34	0.28	0.29	0.21	0.54	0.51	0.63	0.62	0.91

The validity test may also be performed using the Heterotrait-Monotrait Ratio (HTMT) parameter. Based on this test, the HTMT value of all the constructs must be lower than 0.85. This is indeed the case in this research, with the HTMT value attained for all the constructs being lower than 0.85 (Table 4). Hence, all constructs have valid measurement instruments.

Table 4. Heterotrait-Monotrait Ratio (HTMT)Discriminant Validity Test

Construct	CL	DS	FS	IC1	IC2	IC3	IC4	IC5	IN	IP1	IP2	IP3
CL												
DS	0.59											
FS	0.76	0.74										
IC1	0.34	0.31	0.26									
IC2	0.43	0.29	0.33	0.68								
IC3	0.52	0.45	0.46	0.45	0.68							
IC4	0.60	0.31	0.37	0.26	0.38	0.57						
IC5	0.40	0.25	0.36	0.41	0.58	0.37	0.37					
IN	0.63	0.52	0.79	0.20	0.28	0.39	0.35	0.26				
IP1	0.75	0.59	0.78	0.30	0.42	0.38	0.36	0.23	0.69			
IP2	0.59	0.42	0.65	0.32	0.19	0.25	0.34	0.19	0.64	0.73		
IP3	0.77	0.50	0.80	0.24	0.26	0.35	0.18	0.23	0.52	0.76	0.79	
IP4	0.50	0.42	0.54	0.21	0.41	0.33	0.35	0.26	0.60	0.58	0.71	0.84

Taken together, the validity tests using discriminant validity parameters such as the FornellLarscker Validity Test, Cross-loading Validity Test, and HTMT, all give parameters values above the minimum value required for validity. Thus, all the data of the constructs are valid to be used in this model.

Hypotheses

The results for each of the hypotheses are presented below.

H1: Industrial competition has a significant influence on industrial performance

The statistic test results using SMART-PLS shows that the t-statistics value of 0.180 is lower than the t-table value $0.5 = 1.96$, and the P-value is 0.857. This means that industrial competition has a positive but statistically insignificant influence on the higher education sector's industrial performance (Table 5). Therefore, hypothesis (H_1) is rejected

In the relationship between higher education industry industrial competition (IC) and industrial performance (IP), the statistic test results using SMART-PLS shows that the t-statistics value of 0.180 is lower than the t-table value $0.5 = 1.96$, and the P-value is 0.857. This means that industrial competition has positive but insignificant influence on the higher education sector's industrial performance (Table 5). Therefore, hypothesis (H_1) is rejected.

In the relationship between industrial competition (IC) and differentiation strategy (DS), the T-statistics value is 3.663 and the P-value is 0.000 (Table 5). This shows that industrial competition has a positive and significant influence on differentiation strategy. Hence, hypothesis (H_2) is accepted.

In the relationship between industrial competition (IC) and cost leadership strategy (CL), the statistics show that the T-statistics value is 6.144 and the P-value is 0.000 (Table 5). This result shows that industrial competition has a positive and significant influence on the cost leadership strategy. Hence, hypothesis (H3) is accepted.

In the relationship between industrial competition (IC) and service focus (FS), the research result shows that the T-statistics value is 4.639 and the P-value is 0.000 (Table 5). This result shows that industrial competition has a positive and significant influence on service focus (FS). Hence, hypothesis (H_4) is accepted.

In the relationship between industrial competition (IC) and innovation (IN), the PLS test results show that the T-statistics value is 3.663 and the P-value is 0.000 (Table 5). This shows that industrial competition has a positive and significant influence on innovation, where innovation is based on curriculum innovation (IN_1), learning and teaching method innovation (IN_2), and learning and teaching technology innovation (IN_3). Thus, hypothesis (H_5) is accepted.

Table 5. Path Coefficient Significance Test

	Original Sample	Sample Mean	Standard Deviation	t-values	p-values	Description
IC -> IP	0.016	0.032	0.087	0.180	0.857	Not significant
IC -> DS	0.420	0.448	0.115	3.663	0.000	Significant
IC -> CL	0.524	0.566	0.085	6.144	0.000	Significant
IC -> FS	0.474	0.517	0.102	4.639	0.000	Significant
IC -> IN	0.400	0.444	0.109	3.663	0.000	Significant
DS -> IP	0.065	0.063	0.081	0.801	0.424	Not significant
CL -> IP	0.224	0.223	0.108	2.075	0.039	Significant
FS -> IP	0.335	0.332	0.088	3.809	0.000	Significant
IN -> IP	0.277	0.283	0.102	2.720	0.007	Significant

In the test on the relationship between differentiation strategy (DS) and industrial performance (IP) of the higher education sector, the T-statistics value is 0.801 and the P-value is 0.424 (Table 5). This result shows that differentiation strategy (DS) based on study program differentiation (DS$_1$), high expertise quality (DS$_2$), and service quality (DS$_3$) does not significantly influence the industrial performance (IP) of higher education institutions. Thus, hypothesis (H$_6$) is rejected.
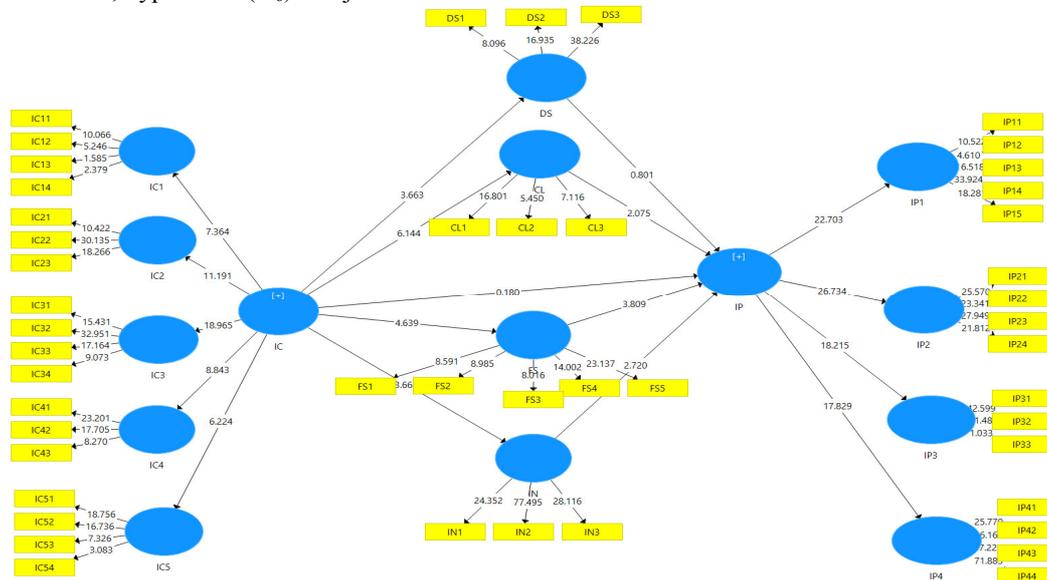

Figure 2. Results of the Path Analysis

In the relationship between cost leadership strategy (CL) and industrial performance (IP) within the higher education sector, the T-statistics value is shown to be 2.075 and the P-value is 0.039 (Table 5). This result shows that cost leadership strategy based on control and efficiency of cost (CL$_1$), low operational cost (CL$_2$), and low tuition fee per student (CL$_3$) has a positive and significant influence on the industrial performance (IP) of higher education institutions. Hence, hypothesis (H$_7$) is accepted.

In the relationship between service focus (FS) and industrial performance (IP) of the higher education industry, the processing results of PLS data show that the T-statistics value is 3.809 and the P-value is 0.000 (Table 5).This result shows that service focus (FS), as based on good competence of lecturers in assisting students (FS$_1$), teaching facilities that meet students' expectations (FS$_2$), quality based service for students (FS$_3$), responsiveness in complying to student demands (FS$_4$), and attention to all students (FS$_5$) has positive and significant influence on the industrial performance (IP) of higher education institutions. Hence, hypothesis H$_8$ is accepted.

In the relationship between innovation (IN) and industrial performance (IP) of higher education institutions, the PLS data show that the T-statistics value is 2.720 and the P-value is 0.007 (Table 5). This result shows that innovation (IN), which is based on curriculum (IN1), learning and teaching method (IN$_2$), and learning and teaching technology (IN$_3$), has a positive and significant influence on the industrial performance (IP) of the higher education sector. Hence, hypothesis (H$_9$) is accepted.

Hypothesis H$_{10}$ posits that differentiation strategy has a significant mediating effect in the relationship between industrial competition and industrial performance of the higher education sector. In this research, strategy has a role as the mediator in the relationship between industrial competition and performance. According to Hair *et al.* (2010), the basic principle of mediation is as shown in Figure 3 below.
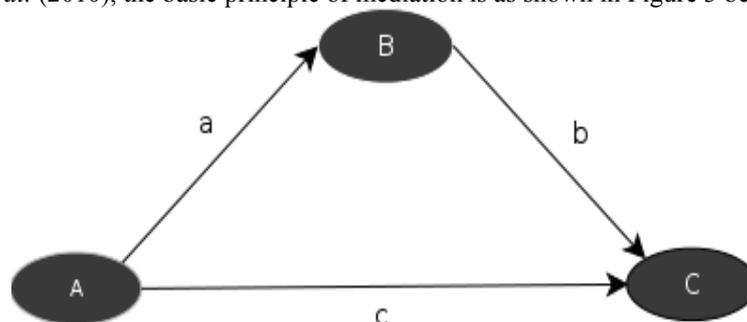

Figure3. The relationship of the exogenous variable (A) with the endogen variable (C) which is mediated by variable B.

1) If a, b and c are all significant, but the value of coefficient c = b, this is not a mediation.
2) If a or b or both are not significant, it is not a mediation.
3) If a, b, and c are significant but the direct coefficient value of c < b, this is concluded to be a partial mediation.
4) If a and b are significant, but c is not significant, the mediation is deemed to be a full mediation.

In this study, a is the relationship between industrial competition and differentiation strategy, b isthe relationship between differentiation strategy and industrial performance, and c is the relationship between industrial competition and industrial performance. Statisticalanalysis show thata (IC → DS) has a T-statistics value of 3.663 and P-value of 0.000, thus showing that the relationship between the two variables is significant, but if the value of b (DS → IP) with a T-statistics value of 0.801 and a P-value of 0.424 is insignificant. While the value of c (IC → IP) with a T-statistics value of 0.180, and a P-value of 0.857 is insignificant (Table 5). Even though the value of b (0.801) is greater than the value of c (0.180), both values are lower than the T-table value $0.05 = 1.96$, and the relationship of both is deemed to be not significant. Hence, hypothesis (H_{10}) is rejected.

Hypothesis (H_{11}) is that cost leadership strategy has an important role in mediating the relationship between industrial competition (IC) and industrial performance (IP) of the higher education industry. Based on the processed results of PLS data as shown in Table 5, the value of a (IC → CL) with a T-statistics value of 6.144 and a P-value of 0.000 is significant. Likewise, the value of b (CL→ IP) with a T-statistics value of 2.075 and a P-value of 0.039 is significant, while the value of c (IC → IP), with a T-statistics value of 0.180 and a P-value of 0.857, is shown to be insignificant. Thus, hypothesis (H_{11}) is accepted.

Hypothesis (H_{12}) is that service focus (FS) plays an important role in mediating the relationship between industrial competition (IC) and industrial performance (IP) of the higher education sector. Based on the results of PLS data in Table 5, the value of a (IC → FS) with a T-statistics value of 4.639and a p-value of 0.000, is proved to be significant. Likewise the value of b (FS → IP), with a T-statistics value of 3.809 and a p-value of 0.000, is also proved to be significant, while the value of c (IC → IP), with a T-statistics value of 0.180 and a P-value of 0.857, is shown to be insignificant. Therefore, hypothesis (H_{12}) is accepted.

Hypothesis (H_{13}) is that innovation has an important role in mediating the relationship between industrial competition and performance (IP) of the higher education industry. Based on the results of PLS data in Table 5, the value of a (IC → IN), with a T-statistics value of 3.663 and a P-value of 0.000, is shown to be significant. Likewise the value of b (IN → IP), with a T-statistics value of 2.720 and a P-value of (0.007), shows that the relationship between the two variable is significant, while the value of c (IC → IP), with a T-statistics value of 0.180 and a P-value of 0.857, shows that the relationship between the two variables is insignificant. Thus, hypothesis (H_{13}) is accepted.

Discussion

The influence of industrial competition on performance

This research examines the influence of industrial competition on performance within the higher education sector in Timor-Leste. The research results show that industrial competition which is triggered by external factors of the industry does not have a significant influence on industrial performance. The main factors which trigger competition in the higher education sector in Timor-Leste are the growth of this sector due to the leniency of the law and government policies regarding the operation of higher education institutions in Timor-Leste. This has led to competition to obtain lecturers with master'sor doctoratelevel qualifications, which are still limited in Timor-Leste. This limitation in human resource can be seen from the education level of department heads or deputy heads in higher education institutions, of whom most hold a master's degree (59%), followed by bachelor degree (39%), while a tiny minority have their doctorates (3%). Presumably amongst general lecturers, the percentage holding a master'sor doctoral degree is even lower.

The growth in the higher education sector has increased the power of student families, employers, students, and government because there are many alternatives, triggeringintense competition amongst institutions. The more alternatives there are, the stronger the bargaining power of students, student families, employers, and government. One implication is that some higher education institutions will have difficulties in attracting students, and may have to lower tuition fees, with adverse implications on their financial performance (Huang and Lee, 2012; Mathooko and Ogutu, 2015), and non financial such as teaching resource and capability, student satisfaction, student competency, job provider satisfaction, and alumni work absorption rate.

This lack of impact of industrial competition on performance in the higher education sector in Timor-Leste is consistent with the research resultsof Huang and Lee (2012). However it is not consistent with Porter's (1980) concept, nor with the majority of previous empirical studies (Metts, 2007; Patiar and Mia, 2009; Lee and Yang, 2011; Assaf and Cvelbar, 2011; Fosu, 2013; Teller et al., 2016). This difference in results is caused by the difference in the type of industry, the indicators used, the industrial environment, resources and different industrial capabilities.

The role of business strategies in mediating between competition and performance

This research examines the role of business strategy in mediating the relationship between industrial competition and performancewithin the higher education sector in Timor-Leste. In this dynamic and highly competitive environment, the main factor for an institution to maintain the continuity of its competitiveness and performance is by choosing industrial strategy using the suitability approach (Porter, 1980; Porter, 1985; Allen *et al.*, 2006) or to develop their resources and internal capabilities (resource-based strategy) (Barney, 1991; Huang and Lee, 2012). The business strategy adopted in this research follows the contingencytheory which states that organizations or companies can adopt strategies that are suitable to the environment in which they operate. In reality, managers are given the freedom to choose the most suitable strategy to increase industrial performance in the highly dynamic competition today (Akan et al., 2006).

The contingency strategy can be performed using the pure strategy (differentiation strategy or cost leadership strategy, not both) to increase competitiveness and performance, or resource-based strategy (Barney, 1991), or a combination of the two strategies (Claver-Cortés et al., 2012; Huang and Lee, 2012; Gabrielsson et al., 2016). The combination of strategy based on the competitive strategy, resource strategy and the capabilities based on the RBV has a positive effect on industrial performance (Ortega, 2010) and service focus which was derived from Porter (1980).

This research develops Porter's generic strategy (differentiation, cost leadership and focus) which is combined with innovation strategy derived from the resource-based view (RBV) theory. The results show that service focus strategy, innovation strategy, and cost leadership strategy have significant roles in increasing the industrial performance of higher education institutions in Timor-Leste, within a highly competitive environment. The higher education institutions in Timor-Leste have used combinations of service focus strategy, innovation strategy and cost leadership strategy. This result clearly contradicts Porter's statement that companies can only choose one of the strategies to achieve competitiveness and performance (Porter, 1980; Hansen et al., 2015), because the results of this research show that combinations of cost leadership strategy, focus service strategy and innovation strategy have full mediation roles in the relationship between industrial competition and performancewithin thehigher education sector in Timor-Leste. This is in line with the statement by Gabrielsson et al. (2016)who explained that the complexity of competition, advancement in technology and ability of available resource demandthat companies use multiple strategies in order to maintain their competitiveness and performance.

This research reaffirms that strategy combinations chosen by higher education institutions do not have to be focused solely on the differentiation strategy or cost leadership strategy, but can also use other strategies such as the resource and organizational capability development strategy from the resource based view (RBV) theory or the focus service strategy. Indeed the results show that differentiation strategy does not significantly mediate the relationship between industrial competition and performance of the higher education sector in Timor-Leste, while innovation based on resources and capabilities of the higher education sector has a full role in mediating this relationship.

This research result also shows that business strategy becomes a dominant factor in increasing the significance of the relationship between industrial competition, which is triggered by external factors, and the industrial performance of the higher education sector in Timor-Leste. The main factor which boosts the significance of the relationship betweenindustrial competition and performance of the higher education sector in Timor-Leste is the focus service strategy, innovation strategy and cost leadership strategy, while differentiation strategy does not significantly mediate the relationship between these two variables.

Insignificancy of differentiation strategy role in mediating the relationship of the two variables due to the high growth of higher education industry and duplication of study programs in Timor-Leste in a limited market size, which in turn lead to high imitation of products and services, ultimately making no differences among higher education industry. This will then potentially influence higher education competitive position, and performance in teaching, research, community service, and financial dimension.

This research result shows that the higher education industry in Timor-Leste can use one strategy consistent with Porter's (1980) strategy, or even use strategy combinations (service focus, innovation, and cost leadership strategy) to improve their competitive position and performance. This is in line with previous studies in which organizations and companies can use one strategy or a combination of strategies to increase their competitiveness and the industrial performance of the higher education industry (Cadez and Guilding, 2012). Likewise, consistent with the contingencytheory which explains that industries can adopt pure strategy or strategy combinations that are suitable with the environment the higher education industry operates in.

Conclusion and Implications

This research found that competition does not have a significant influence on the performance of higher education institutions in Timor-Leste. Competition includes external factors such as competition intensity, threat of substitutes, bargaining power of buyers, bargaining power of suppliers and threat of new entrants, which was

revealed by Porter (1980) do. This finding is consistent with some research (Huang and Lee, 2012), but contradicts the concept by Porter (1980), and the study by Metts (2007). This may be caused by the difference in indicators, culture (Sharma, 2017), type and size of the industry.

This research also found that innovation strategy, service focus, and cost leadership strategy are the main triggers in increasing performance of higher education institutions. This finding enriches the contingency theory in which organizations must choose the most suitable strategy for the environment in which they operate (Baack *and* Boggs, 2008; Oltra and Flor, 2010; Al-Rfou, 2012). In other sectors and other countries, differentiation strategy has been shown to significantly increase industrial performance. However it was not found to be significant in the higher education industry in Timor-Leste. This study is not in line with Porter's (1980) generic strategy which explains that companies should only choose one good strategy, differentiation or cost leadership strategy to maintain their competitiveness and performance.

This research enriches the debate regarding combination strategy, may it be differentiation strategy and cost leadership strategy (Salavou, 2015; Hansen *et al.*, 2015; Gabrielsson *et al.*, 2016; Anwar and Hasnu, 2016; Yuliansyah *et al.*, 2016). By performing innovation strategy to integrate service focus, innovation strategy based on the RBV theory and Porter's generic strategy (differentiation strategy, cost leadership strategy and focus) in the context of contingency theory shows that the combination strategy (service focus, innovation and cost leadership strategy) has a significant influence in increasing the industrial performance of the higher education industry.

In practice, this research is valuable to the government and the development of the higher education industry in Timor-Leste in developing strategies that are suitable to the conditions of the higher education sector in Timor-Leste. The differentiation strategy, cost leadership strategy, service focus strategy, and innovation strategy can be used by higher education institutions in Timor-Lesteas they face tight competition. However, the service focus, cost leadership strategy and innovation can be the most significant factors to increase performance, while differentiation strategy is less significant.

Limitations and Future Research

There are of course a number of limitations to this study. Firstly, it looks only at information from the supply side of the higher education sector. A complementary area for future research would be to view this from the demand side, such as from students, employers (industry), and government, thus giving more comprehensive results from both sides.

A second limitation is that this research used the survey method with questionnaires as the data collection instrument, such that the answers depend on the respondents. Respondents could be tempted to give socially acceptable answers, or answers which support the good name of their instititutions, but are not in accordance with reality, thus adversely influencing the research results(Bobe and Kober, 2015; Gabrielsson *et al.*, 2016).Future studies would do well to use alternative instruments, such as in-depth interviews or focus group discussions, not only with the providers of higher education, but also with other stakeholders such as students, industryand government.

Thirdly, this research is focused on analyzing the external factors which trigger industrial competition and the influence of competitonon performance within the higher education sector, by referring to Porter's Five Competitive Forces (PFCF), though the indicators have been adjusted in accordance with the conditions in Timor-Leste.In addition to these external factors, there are internal factors such as resources and capabilities of the organization, in accordance to the resource-based view (RBV) theory, which also have an important role in determining the performance of an organization in a highly competitive environment. Thus, future studies are needed to examine the influence of internal factors such as human resources, technological resources, organizational resources, financial resources, and marketing resources on competitiveness and performance.

Finally, the analysis unit in this research is at the level of departments. This is appropriate because there are only 11 accredited higher education institutions in Timor-Leste, as a result of which it would not be optimal to take institutions as analysis units. In countries with more higher education institutions, however, it would be useful to conduct analysis at the level of institutions.

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