

# **The Design of the Best University in Indonesia**

## **Using Toyota Concepts to Face Competitive**

### **Economics**

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#### **Abstract**

Population growth (bonus demography) cannot be stopped, each year the growth grows rapidly and it is challenging, in particular, universities in preparing for globalization. Tri Dharma University (education, research and community service) need innovation in the face of it. Effective and efficient education; quality research and targeted community service are still issues that need to be solved by innovating an existing system making it a more effective and efficient system. Toyota's 4P and TPS (Toyota production systems) method is the right method to solve the problem, although there are many methods that can be used, what Toyota has can be applied in accordance with the culture and quality of human resources that we have today. The final result of this journal will be the effectiveness and efficiency in reducing waste and improving quality in research and community service and this is a major concern that must be immediately changed, so that universities can be ready to face the economic community of ASEAN (MEA) and/or globalization, where the level of competition becomes higher and requires human resources who are ready to face it in the knowledge-character and reliable system both at university and government level, integrated very well.

**Keywords:** University, Systems, Lecturer, Students, Toyota 4P & TPS (Toyota production systems)

## 1 Introduction

In this journal, we will begin with a big picture of demographic bonuses that will occur in Indonesia and how these demographic bonuses have a big impact on population growth and can change an overall lifestyle and even a culture. Demographics of population density and distribution, in addition to age, education, income, lifestyle, ethnicity, and place of population-are the most important among indicators that determine emerging market conditions. For managers, strategists and entrepreneurs, consumer understanding and consumption patterns and about mastering demographic trends, this is fundamental to controlling the demand chain. The mind-to-market leaders anticipate changes in the following areas: (1) Appropriate numbers - to get to know our customers in the future, we must first know how many people or our potential customers are; (2) The needs and desires of people-age, education, ethnicity, race, and religion, and preferences help in determining what and how consumers desire to buy; (3) This purchasing power includes consumer resources, along with its budget, time, energy, and attention; (4) The willingness to buy-here we will monitor changes in the way consumers make decisions about products, as well as their willingness to pay debts; (5) The purchasing authority-we will need to determine which family members and organizations are influential and have purchasing responsibilities. If consumers are frequently and rapidly changing, the information-gathering fundraiser should be ongoing in every business or organizational operation. Without the latest data, an organization can go the wrong way in interpreting the overall retail picture. The basic questions that need to be asked when evaluating consumer information derived from demographic data include: (1) Is this trend long-lasting and rooted in or just a momentary mode ?, (2) How this will affect our customer base, in terms of size and (4) What will the demand chain pattern be if influenced by that trend? (5) What opportunities or problems will it cause for the company and the competitor? ; (6) What opportunities will arise from: a. new product or service opportunities b. a new position of existing products and services?; c. new segments that become the sales of existing products? d. new retail or distribution strategy ?; e. Groups with members of the new demand chain ?. At the university level, demographic bonuses should not be taken lightly, because with the rapid population growth, the university must be able to innovate in existing systems, and more importantly how the old system can be revised and innovated to be so orderly that it can run effectively and efficiently, as a result, will not reduce the level of administrative failures and other systems. First of all, we must first define the meaning of the lecturers and students in the universities-a lecturer is an internal product and consumer that must be developed continuously; a student is an external product and consumer that must be processed correctly so as to produce human resources

that have high quality in the face of globalization today. Next, with this understanding, we can connect between Tri Dharma colleges (Education-research-community service) with systems that have been implemented by Toyota. Toyota has a 4P model for developing its company:



Figure 1 Model 4P Toyota

In the philosophy (long-term thinking) - make management decisions based on long-term philosophy, even at the expense of short-term financial goals; Process (Eliminate waste) - Create flowing processes to reveal problems; use tensile system to avoid overproduction; level workload (Heijunka); stop if there is a problem (Jidoka); standardize work for continuous improvement; use the visual control tool so there are no hidden issues; use only reliable and thoroughly tested technology. People & partners (Respect, challenge and develop them) - develop leaders who animate and live the philosophy; respect, develop and the hands of your people and your team; respect, challenge and help your suppliers. Problem-solving (continuous learning and learning) - organizational learning continuously through Kaizen; see with your own eyes to better understand the situation correctly (Genchi Genbutsu); make decisions slowly through consensus, carefully considering all possible and implement quickly. In addition to the 4P model, Toyota has a TPS (Toyota Production Systems), which both determine Toyota's management style and uniqueness.

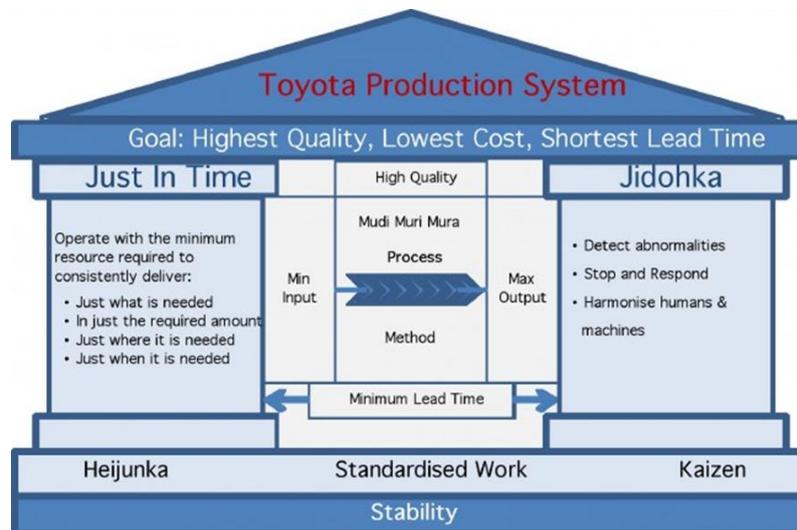


Figure 2 TPS (Toyota Production Systems)

Bruno G. Rüttimann & Martin T. Stöckli (Journal of Service Science and Management (2016)), said that Today, we are living in a world with an information overload, a situation that is confusing people (the Japanese call it Muri). This leads to the desire to simplify and sometimes even to ultra-simplify in order to be able to govern the complexity and to facilitate communication. Now, when consultants come into play, this situation often gets worse rather than better: Due to their high daily rates, the time slots given to consultants to explain, e.g. to the management team of a company, are usually short, forcing consultants to stick to the essential, especially if the topic is complex. The results are simple presentations typically with an appealing key message on each slide is easy to be remembered. Such presentations are designed to be understandable also for non-experts and talking in a language familiar to the audience. This consultant and management-oriented way of communication bears an intrinsic danger to oversimplify concepts with the result not to pass the real core message but passing an idealized and distorted message of the situation. Further, the simplification has the sweet, but the very dangerous side effect to remain in the realm of the problem or system[1]. Lukasz M. Mazur; Shi-Jie (Gary) Chen & Barbara Prescott (Journal of industrial engineering and management (2008)), said: To deal with the problems of Toyota Production System (TPS) (also called "lean ") Approach to help solve their process related problems. TPS principles and tools have been used in many applications to achieve major improvements in the quality, efficiency, safety, and/or customer-centered processes, products, and services in a wide range of manufacturing and service industries. However, the healthcare sector as a whole has been very slow to embrace lean principles and tools, even though they have been shown to yield the small but growing number of healthcare organizations and clinicians that have applied them[2]. Major problems within the university, not a well-integrated system and also human resource issues that still need further development. Referring to both of these problems, it is necessary to improve using

Toyota 4P and TPS (Toyota production systems) methods, certainly not all will be discussed in this journal, this journal will be directly on the solution and solution for the problem so that it will directly hit the target that indeed there really needs to be improvement.

## 2 Methodology

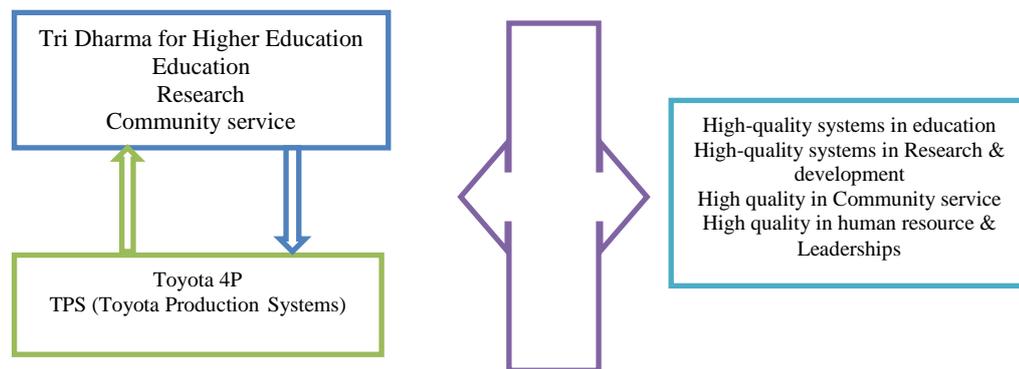


Figure 3 University & Toyota 4P – TPS (Toyota production systems) process to develop effective & efficiency

In Figure 3, we see an important process of application of Toyota's method to the university, at this point; we will develop an old system that will be streamlined and not efficient to be organized according to the Toyota method. The concept of education which is the process of teaching and learning in the lecture and classification of lecturers and working hours become the main subject of discussion that will be discussed in more details; research (journals) that should be able to generate benefits for the university-government; and the last is the public service that gives more profits to the universities. Toyota production systems are Toyota's unique approach to production, and these can be linked with universities. This is the basis of various lean production movements that have dominated trends in production (such as Six Sigma). Despite its great influence on lean, it is still limited to its surface only. The reason is that many organizations focus too much on their tools like 5R and Just In Time (JIT), without understanding lean as an integrated system that must be pervasive in organizational culture. In the majority of organizations that have implemented lean, senior management is not involved in day-to-day operations and continuous improvement that is part of lean, but Toyota has a different approach. So, the question is what exactly is lean (lean) organization?, we can answer that it is the end result obtained from the application of TPS to all parts of our system.

James Womack & Daniel Jones (Lean Thinking), defines lean manufacturing, "A process consisting of five steps: defining a value for customers, applying value streams, making them flow, attracted by customers and striving to achieve the best.

To be a lean manufacturing company requires a mindset that focuses on making products flow through the process of adding value without interruption, a system of attraction that begins with customer demand, by simply replacing what the next process takes in a short interval, and a culture where everyone strives for continuous improvement ". Taiichi Ohno (TPS creator) said, "All we have to do is observe the timeline since the customer gave his order until we collect the cash. And we reduced that timeline by eliminating waste that did not add value. "

Figures 1 and 2 are the two methods used and can be summarized as follows: The TPS house has become one of the most famous symbols in modern manufacturing. Why a house?, because a house is a structured system. The house will be strong if the roof, pillars and foundations are strong. A weak relationship will weaken all systems. There are different versions of the house, but the core principle remains the same. Starting with the goal of achieving the best quality, lowest cost, and the shortest rooftop lead time, then there are 2 outside pillars - Just in time (JIT), perhaps this is the most publicized TPS characteristic, and Jidoka, which in essence means never letting defective products pass to the next station and freeing people from machine- automation with human touch. At the center of the system are people. Finally, there are various core elements that include requirements and standardization, stability, reliable processes, and also Heijunka, which means mixing and limiting production schedules, both in volume and product mix. Evenly distributed schedules (Heijunka) are required to keep the production system stable and inventory minimal. A large increase in producing certain products and ignoring other products will create deficiencies in some parts unless a lot of inventory is added to the system. Each element of the house is important, but more important is the way the elements reinforce each other. JIT means getting rid of as much as possible, the inventory used to support the operation process in the face of problems that may arise in production. The ideal OE piece flow is to create a unit at a time at a level appropriate to the level of consumer demand or take (German term for meter). Using a smaller buffer (removing the safety net) means problems like defective products will soon be revealed. This strengthens Jidoka, which halts the production process. This means that workers must solve the problem as soon as possible before resuming production. The foundation of the house is stability. Ironically, the requirement to work with a small supply and stop production when problems arise leads to ignorance and gives a sense of urgency to workers. In mass production, when a machine breaks down, there is no sense of urgency; the maintenance department is scheduled to repair the machine, while sufficient inventory keeps the operation running. Conversely, in lean production, when an operator stops equipment to fix a problem, another operation will stop producing, create a crisis.

So there is a sense of urgency in everyone in production to fix a common problem for the equipment to get back on track. If the same problem occurs repeatedly, management quickly concludes there is a critical situation and it may be time to invest in total production maintenance (TPM), where everyone learns to clean, inspect and maintain equipment. A high level of stability is required so that the system does not constantly stop. People are the center of the home because only through continuous improvement, the operation can obtain the necessary stability. One should be trained to see waste and solve problems at the root cause by repeatedly asking why the problem occurred. Troubleshooting occurs in actual places to see what's really going on (Genchi Genbutsu). In a number of versions of the model house, some of Toyota's philosophy added to the foundations such as "respect and humanity". While Toyota often presents this house with the goal of cost, quality, and on-time delivery, in fact their factories follow the usual practice in Japan by focusing on QCDSM (quality, cost, delivery, safety and morale) or some other variation. Toyota will never sacrifice the safety of its workers for the sake of production. And they do not need to do that, because eliminating waste does not mean creating an unsafe workplace, and full of stress. Ohno said, "Any method available to reduce working hours in order to reduce costs must of course be pursued vigorously, but we must not forget that safety is the foundation of all our activities. Sometimes increased activity cannot be recommended for safety reasons. In that case, go back to the starting point and look back at the purpose of the operation. Never be content with not acting. Question and redefine your goals for progress. "

### **3 Results and Discussion**

Quality and quantity, we've all heard these two important words, quantity is proof of quality, but quantity should not sacrifice quality. Quality and quantity must go together like a married couple, which in turn will produce children with high character and abilities. At the university level, the main focus should not be on quantity but how it can be upgraded to the highest level, called the highest goal of the university, lecturers, and students who are the main centers in this regard, must have quality and quantity that can compete in the face of globalization. Referring to Figures 1 and 2, Toyota's Toyota 4P and TPS (Toyota production systems) methods, this can be divided into 3 important sections already mentioned in Tri Dharma colleges (education-research and community service). At the stage of building power in human resources, it must first be understood, we must build strength in leadership; this has been put forward by Jim Collins in his book *Good to Great*:



Figure 4 Hierarchy-5 Level \* the Development of Human Resource Inside University- High-quality level

Figure 4 explains that there are 5 levels to be built in generating great leadership. Level 1 (high-ability individuals) - make productive contributions through good talent, knowledge, skills and work habits; level 2 (Contributing team members) - contributes the individual's ability to achieve group objectives and work effectively with others in group settings; level 3 (competent manager) - organizes people and resources toward effective and efficient efforts to achieve predetermined objectives; level 4 (effective leader) - catalyzing commitment to and striving to sincerely realize a clear vision and arouse strong desire, stimulate higher performance standards; level 5 (level 5 executives) - builds lasting excellence through the paradox mix of humility and professional will[3]. This explanation is quite clear and explains that universities in order to deal with globalization, first of all, need to improve human resources, especially on lecturers and students, which in turn produce a stable level of genius and high ability in some respects. The 10 characteristics of the smart people are: (1) Original thinking - a genius begins with open, organized thinking, takes on new perspectives, is able to decipher the problem and reunite it in a better way. Many ideas have been rejected because they do not fit into conventional thinking, and are considered impractical or advanced from their time. For example, Swiss watchmakers, they reject the idea that timepieces can be made through electronic equipment rather than per and gear, as well as manufacturing floppy disks that cannot see the arrival of CD-ROMs and lately, USB pens; (2) Creative thinkers - a genius is always open to every possibility, trying to solve a problem with a hypothesis, have a good mentality, then see if it proves to be true or not. Einstein often uses the hypothesis to prove his mathematical calculations, to find possibilities which he can later prove true or not.

Logical or logical sources will lead us to a way of thinking, depending on where you started. Constantly making curiosity and confidence for the first, such as: "what if?", Rather than just seeking to secure what is near or already known before; (3) Analytical thinking-a genius will work to solve problems or seek ideas regularly or slowly, carefully and thoroughly as well as creatively, challenging mathematical logic or science. While a genius reaches a new level or dimension through creative steps, there is still a need to understand and apply it not to be nonsense. Often this requires a purely logical mentality because of mathematical formulas or principles of science that may now originate or be based on false assumptions. breakthroughs are rarely achieved from a source of principle or rule, but still evidence of a new concept is required; (4) Conservative Thinking-a genius has a high level of awareness, a high sensitivity to what's going on and looking for patterns like a forensic expert or a detective. Some of the best conclusions come from observation rather than inquiry, like an anthropologist who observes and thinks about what is going on. This is particularly useful when there is no longer any language or logic to describe a behavior or phenomenon. Alexander Flemming found a mold on his medical culture, just like any other doctor. Instead of just throwing it away. He thought about what caused it to happen. An observation derived from a curiosity that eventually results in penicillin; (5) multiple thinking-a genius can think in parallel, tolerate ambiguity, unite opposites and connect unrelated things. New solutions are often full of contradictions, either by rules, or within themselves. Of course, Scott Fitzgerald's definition of what makes for superior thinking is "the ability to hold two conflicting ideas at the same time". Niels Bohr, Danish physicist imagines how light can be seen both as particles and waves. This sounds very contradictory. However, the discovery of these "phonons", invisible particles behave like waves, leading to the theory of complementarity. together with Leonardo da Vinci which combines the sound of a bell with a wave that occurs at the moment it falls into the water, leading to the conclusion that the sound explores as a wave; (6) Holistic thinking - a genius can accept a broader perspective, to look at holistic problems according to the context of the environment and reunite the parts. Einstein unifies the different parts of our world, uniting the broad attributes of energy, mass and the speed of light. Picasso's abstract work of many views can represent more than just a simple image. His work shapes his personality, context, feelings and vision of observation. He tries to provoke more deeper and holistic thinking, rather than just recreating what he has seen. Of course the ability to see larger images, or fill empty spaces, can mean that a genius "can see what others see but have thoughts that others have never thought of"; (7) Volume thinking - a genius seeks more solutions than just one, builds or challenges one another and constantly seeks a more perfect solution. Having more active and productive thinking, the result of thought that can be intimidating, because it takes time to identify the best. Mozart wrote 600 pieces of music and Bach wrote one every week, even though he was ill. Einstein published 148 articles, although he was famous for his first work. The great work of Picasso in the later years of his life was regarded as the persistence of an elderly man who sought to maximize his ability; (8) Pragmatic thinking-a

genius recognizes ideas and solutions that are rarely used in concepts, that theory or concepts must be made real, should be practical and useful. Constantly thinking, exploring, innovating and discovering. However, a genius can only be a genius if his thoughts can be applied to real action, and can add value in a certain way. Edison holds 1093 patents, more than anyone to this day, and demands him to make a little discovery every 10 days, and a great discovery every 6 months. Just as the case with the most successful entrepreneurs will have many failures behind them before achieving their success and most innovators will develop more new ideas than to see commercial success; (9) Visual thinking - a genius is able to express his ideas more clearly, usually through visuals by using diagrams and analogies, to be able to understand the complexity that exists in a more comprehensive way. The explosion of creativity that took place in the Renaissance era was dotted with numerous paintings and diagrams, along with Galileo and Leonard da Vinci which illustrate his revolutionary ideas through graphics. This method can capture a lot of imagination from many people rather than using words or numbers. The images allow relationships to be made quickly, concepts can be elaborated more easily and holistic systems easier to explain; (10) Thought without hesitation-a genius must have inner strength, confidence and confidence to fully support what they believe, while others and colleagues will challenge them. From Galileo and Leonardo, to Einstein and Picasso, genius needs strength within him in the form of a conviction to stick with unusual ideas and actions that can challenge the status quo, easily compromised with other people. In the course of any life, there are rarely any people who like to change the environment, work or beliefs that suddenly. We prefer stability, security, with what we know that we do not know. But we can regularly see all the possibilities, logic, and advantages of different thoughts and we can accept them. A genius often has to reach more than today and slowly others will follow and try something new, different and better. This is the 10 things that need to be developed in the faculty and students at this time.

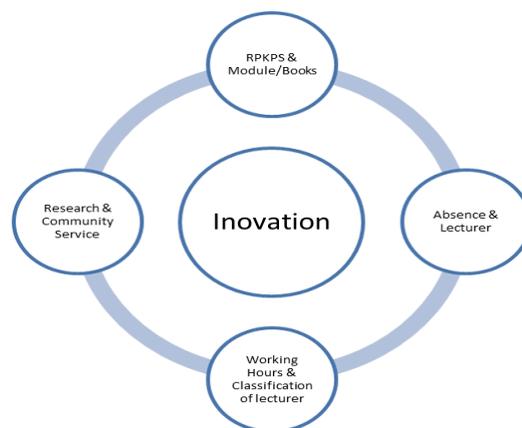


Figure 5 Innovation- University- old systems become middle systems- and new systems- become more effective and efficient

### **3.1. Innovation 1- RPKPS & Module / Books**

RPKPS or the extension Plan of semester lecture program activity is a standardization to provide a guideline to lecturers to teach according to the regular, but the question is whether this really makes the lectures to be organized and effectively can run properly and can make the time to be more efficient, can yes or no. Here, we see a waste, especially on paper and administration. These two things take time and possibly RPKPS is not very helpful in lectures, this makes the learning process / lectures become rigid, because there is the most important thing here, if it is established in RPKPS, what about the science that continues to grow, whether the students just get fit with a textbook without knowing anything about the real world of work and/or general knowledge that should be necessary to know. Understandably, students should not only get what they want to hear but what they need to hear, it is the true teaching. From here, referring to Toyota methods, there is a problem, and this should be done JIDOKA (stop if there is a quality problem), and should do HEIJUNKA (leveling workload). So, what is the solution?

Solution stage 1- of each lecturer appointed as a coordinator of one course and/or several courses is required to make the module, more precisely the book that must be read by students, the quality of the book must have high quality, it is much more effective and efficient because students will get real guidance. The Coordinator of the Constitutional Court can work together with other lecturers on the same subject so as to maintain the level of objectivity. Solution stage 2- after the book so, then the next student is required to buy the book as the main guide and this will be able to provide benefits to universities and government. In addition to the books that have been made by lecturers, the students must download 2 eBooks that became the guide and this on the recommendation of the coordinator of the course. For the initial phase, the book is made in Indonesian. The next three-step solution of the book can go through a process of higher quality improvement, in collaboration with two universities and lecturers to create a book that is a combination of 3 universities, which can then be marketed nationally in bookstores. The 4-phase solution of the book after 1 year is used as a guide, so for the future impact, the book should be converted into English and then marketed internationally, so it will be able to bring the university's name better and benefit the government[4]. Let's think, the workload poured into the right thing will be able to generate profits for everything, if the book is published, then the profits will be gained by the university, the name of the university, and the publisher will publish the book, help to market it and then the government will wear taxes for that matter, so that all parties benefit.

### **3.2. Innovation 2- Absence & Lectures**

The problem of absenteeism becomes a scourge and a problem that may always be back and forth, lack of absences so that it cannot take the exam and still for many reasons made. First, the problem of absences can lead to waste of paper and

secondly, the problem of absent wasting wasted time. The solution to this is the need to invest and build infrastructure for absenteeism, in each class, there is a fingerprint absent for every student and lecturer, so checking is absent for attendance either on time or in time, all based on data obtained, if it is too late 15-30 minutes, then the lecturer cannot teach and the students can not follow the lecture, this will be more recorded, than the signature absentee that has seen obsolete[5].

A lecture problem, especially in the use of presentation slides, is this still necessary or not? The answer is simple, it can be necessary, it cannot, and the lecturer should be able not only to present the theory/concept in the lecture but also the general knowledge as widely as possible. The classic problem must be straightened out, for example-a lecturer present only in the first week, then never present in the following weeks and then present in the last week; lecturers who do not teach more than 3x; lecturers who only ask students to absent and then go home do not teach; lecturer who only gives the task and then does not explain anything. These are costs of wasting money and not delivering funds to the right people but to the waste of time, cost, though, and energy[6]. Energy is depleted simply because it takes care of people who have no competence at all, not even less science but lacks a sense of humanity and exemplifies others, keep in mind the principle that Toyota puts it, "respect and humanity, "let we think if we keep someone who does not have the ability and character that is not adequate, is not it a form of waste? But if the right person who is in the right position will be able to benefit the university and government. A very wasteful form of waste is that if an investment is not right on target, it is only wasted on something that is continuously happening and there is no solution, it is a circle of damage in quality, human is a human technology that has tremendous investment value for the future on the whole impact, be it to himself, the university and the government as well as his fellow human beings, to produce a form of product and / or service that will ultimately make life better, therefore lectures must also be taught general and experience that should be necessary for life. The solution - to be able to produce qualified human resources, the lecturer must have experience in the course he taught, the minimum lecturer already has experience in a project so that what is shared not only monotonous, fixated on the theory and concept but cannot provide more than that, so lectures must have a high quality of knowledge and experience, and also from the flexible and not rigid. This will be in line with Toyota's concept of "people and teamwork" and "waste reduction" that will result in JIT (Just in time).

### **3.3. Innovation 3 - Working hours & lecturer classification**

The working hours are also a problem at the university level, maybe some of them are absent in the morning, teaching, then disappearing, and coming back late in the afternoon for going home, this is a classic problem, which when talking about it is very boring because that's all that is discussed and there is never any end to it. Working hours have 2 types; the first is static, ie by specifying from 7:00 to 16:00

pm or 8:00 to 17:00 pm (Monday-Friday). The second is flexible, 1 week 25-40 hours. The first is the positive and negative side, the negative side-stiff and will waste time; the positive side is regularity. The second is also positive and negative, the positive side is very flexible, and the negative side will not be controlled. So what is the solution to this working hours problem? Solution: The second is much better because it concerns the very dynamic development of technology and lecturers must be able to move quickly and unrestricted but still must be controlled properly[7]. Sample solutions for flexible working hours, lecturers must have consultation hours known to the university and students, and during the consultation hours the lecturer is required to attend and, for other times, the lecturer may do other things such as- following the national/international seminar; create modules/books in English and Indonesian; looking for projects for universities so that this can generate profits for the workplace, so working hours are not just monotonous. So working hours focus on performance outcomes not just the amount of time on campus, but what performance, performance and results it generates, is a form of outstanding results achievement and eliminates waste[8].

Table 1 Lecturer Consultations Hours/Time

Name of lecturer	Consultation hours
<b>Mr. Toblerone, PhD</b>	A. Lecturer
	Monday 7:00-9:30am- CRM
	Tuesday 10:00-12:30pm-Project Mgt
	Wednesday 15:00-17:00pm-Fund-mgt
	Thursday 14:00-16:00pm-CRM
	Friday 9:30-11:30am- Ethics
	B. Consultations
	Monday 10:00-12:30pm- TA/KP/etc
	Wednesday 14:00-16:00pm- etc
	Friday 13:00-15:00pm- etc
<b>Mrs. Strawberry, MSc</b>	A. Lecturer
	Monday 7:00-9:30am- ERP
	Tuesday 10:00-12:30pm-SCM
	Wednesday 15:00-17:00pm-Fund-mgt
	Thursday 14:00-16:00pm-Fund-mgt
	Friday 9:30-11:30am- Ethics
	B. Consultations
	Monday 10:00-12:30pm- TA/KP/etc
	Wednesday 14:00-16:00pm-etc
	Friday 13:00-15:00pm-etc

In the classification of lecturers, this is also a major problem, lecturers who each semester taught not in the same subject will be wasted to continue studying things that may not be their field, it is true, that we should not close ourselves to science but need remember that every intelligence begins with focus, not fragmented and there is no clarity in that. Therefore, the solution to this is the need to classify lecturers so that universities and students will be able to know and eliminate time wastage. Solution- with the classification of lecturers based on the ability and research and community service that has been done, the student will easily consult the lecturers in accordance with the field, if at the time of choosing the supervisor

will be on target, the science will be able to develop and develop as much as possible because lecturers focus on the field of science.

Table 2 Classification of lecturers based on ability and results

Nama of lecturer	Classifications
<p align="center"><b>Mr. Cadbury, PhD</b> (Coordinator MK-Information systems)</p>	<p>A. Specialization: Information systems; systems design; SCM B. Journal: 1. Application and implementation of CRM... 2. The design of SCM.....</p>
<p align="center"><b>Mr.Kitkat, MSc</b> (Coordinator MK-Web development)</p>	<p>A. Specialization: Java Programming; Web development B. Journal: 1. Design of web.... 2. Application using java programming...</p>

Table 3 Details of classifications

Name	:	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p><b>Photo-Lecturer</b></p> </div>
Faculty	:	
Department	:	
Specialization	:	
Journals	:	
1. ....		
Community Service	:	
1. ....		
A topic for thesis	:	
1. ....		
A topic for practical work	:	
1. ....		
E-mail	:	
Mobile	:	

Table 2 is a classification that can be announced to the students, so that the student will be able to know the lecturer of anyone who has the capability of programming, CRM, SCM and so on, so that when will take the final project and / or practical work or if want to ask other things, right on target and not wasting time. For table 3 is a classification item owned by the university, and lecturers can fill in periodically, this is to help the administration become easier, first filled in the form in table 3 and the administration will be able to transfer it to the human

resources department, the human resources in each university should work to include it, so the lecturer is not wasted his time just to take care of administrative, focus lecturers is education / teaching-research-community service, human resources and administration should work as much as possible.

### 3.4. Innovation 4 - Research & Community Service

This is the most important and most difficult issue to explain briefly and requires a separate discussion of both, but at the present time, it will be explained in great detail, and we hope that readers can grasp the essence of the explanatory intent. Research and community service must be done separately, for SERDOS the most important point is on research and community service will get its own portion:

Table 4 Functional position and points

Jabatan functional (functional positions)	Points
Asisten Ahli *AA	500
Lektor*L	1500
Lektor Kepala*LK (Maximum-1 year)	2000
Professor* Prof (Maximum-2 Year)	5000

Positions A, B, C, 200/300 and so on are eliminated and replaced by performance-based points system, these points will be able to provide incentives that can replace SERDOS's name: Performance Appraisal Lecturer (PAL Systems), here lecturers have points certain that must be achieved to obtain PAL, if it exceeds the point then the position of functional position can rise if it exceeds what should be, this can be applied on AA and L, but special LK and Prof has a time limit of 1 year to produce results from the measured performance by PAL. This will be explained and simulated in the next explanation. In journaling and point also require a table of standardization, for example, is as follows:

Table 5 Journal and Classifications - Points

Classifications of journals	Points systems from PAL
National Journals	English-100 & Indonesia-50
National journal with accreditation A/B	150
International Journals	200
SCOPUS Journals	Q1-1000; Q2-500; Q3-300; Q4-250
National conferences	150
International conference	200

Table 6 Point and conversion of incentive PAL Systems (SERDOS)

Points for functional positions	Incentive for PAL systems, standardization
500	IDR (Rp) 2.500.000,-
1000	3.000.000,-
1500	3.500.000,-
2000	4.000.000,-

Table 6 (Continued): Point and conversion of incentive PAL Systems (SERDOS)

2500	4.500.000,-
3000	5.000.000,-
3500	5.500.000,-
4000	6.000.000,-
4500	8.000.000,-
5000	10.000.000,-

Example:

A lecturer has an LK position (2000 points) in 1 year and LK must reach 2000 points, otherwise, he will lose PAL incentives. And at 1 year although 2000 points have been achieved, there are more points because the lecturer is active in following the seminar, the simulation is as follows:

2000 - LK gets 4,000,000, -

Within 1 year include:

SCOPUS Q1- 1000

SCOPUS Q2-500

Conference International-200

International journal-200

National Journal (English) -100

Total: 2000, so LK gets PAL (SERDOS) for 4 million in 1 year as an incentive, if LK exceeds 2000 limit, it can be simulated as follows:

SCOPUS Q4-250

SCOPUS Q4-250

International journal-200

Total: 700 (2000 + 700 = 2700). Over 700 points

In the table there are no 700 points, so LK earns an additional 500 points PAL of 2.500.000, - and the remaining 200 points can be saved for the next year.

Total PAL obtained are: 4,000,000 + 2,500,000 = 6,500,000, -

Using this, it will be more measurable in giving incentive and reducing waste, as well as providing benefits to the government and not consuming much unorganized administrative time.

### Especially for community service

Table 7 Project &amp; level

Project Lists	Level projects
University (Inside University)	1. Administration systems ( <b>Level 1 Red</b> - difficult; level 2 Green-easy; level 3 Yellow-middle) 2. Absents systems (Level 1 Red; level 2 Green; <b>Level 3 Yellow</b> )
Other University (Outside)	1. Administrations systems (Level 1 Red- difficult; level 2 Green-easy; <b>level 3 Yellow-middle</b> ) 2. Absents systems ( <b>Level 1 Red</b> ; level 2 Green; Level 3 Yellow)
Private company (national)	1. Marketing (Level 1 Red- difficult; <b>level 2 Green-easy</b> ; level 3 Yellow-middle) 2. Operational (Level 1 Red; level 2 Green; <b>Level 3 Yellow</b> )

Table 7 (Continued): Project &amp; level

<b>Private company (international)</b>	1. Export dan Import systems (Level 1 Red- difficult; level 2 Green-easy; <b>level 3 Yellow-middle</b> ) 2. SDM ( <b>Level 1 Red</b> ; level 2 Green; Level 3 Yellow)
<b>International company</b>	1. SCM ( <b>Level 1 Red- difficult</b> ; level 2 Green-easy; level 3 Yellow-middle) 2. SDM (Level 1 Red; level 2 Green; <b>Level 3 Yellow</b> )
<b>Government</b>	1. Administrations systems ( <b>Level 1 Red- difficult</b> ; level 2 Green-easy; level 3 Yellow-middle) 2. Absent systems (Level 1 Red; level 2 Green; <b>Level 3 Yellow</b> )
<b>City</b>	1. Banjir ( <b>Level 1 Red- difficult</b> ; level 2 Green-easy; level 3 Yellow-middle) 2. Sistem absence, employee of government (Level 1 Red; level 2 <b>Green</b> ; Level 3 Yellow)
<b>Villages</b>	1. Village funds from the government ( <b>Level 1 Red- difficult</b> ; level 2 Green-easy; level 3 Yellow-middle) 2. Clean water management ( <b>Level 1 Red</b> ; level 2 Green; Level 3 Yellow)
<b>Community</b>	1. Training (Level 1 Red- difficult; level 2 Green-easy; <b>level 3 Yellow-middle</b> ) 2. Small business ( <b>Level 1 Red</b> ; level 2 Green; Level 3 Yellow)
<b>Schools</b>	1. Teacher and training (Level 1 Red- difficult; level 2 Green-easy; <b>level 3 Yellow-middle</b> ) 2. Communication with students and parents (Level 1 Red; level 2 Green; <b>Level 3 Yellow</b> )
<b>Organizations; etc)</b>	1. congestion monitoring system ( <b>Level 1 Red- difficult</b> ; level 2 Green-easy; level 3 Yellow-middle) 2. CCTV ( <b>Level 1 Red</b> ; level 2 Green; Level 3 Yellow)

In table 7, we look at the list of projects offered by various parties. The data must first be integrated first, for example, the management of village funds, the lecturer can act as a consultant and help the villages to build a system or small business, which will then be implemented to the villagers, transportation and so on, borne by the campus, if the lecturer to a village, there as long as the lecturers held consultation needs what is needed by the village and acts as a consultant with other lecturers team. At the time the system is well built and running, with a certain period of time, then the lecturer will get incentive from the PAL system dedicated community service.

Table 8 Level Project and incentive

Level project	Incentives
<b>Level 1 Red (Difficult)</b>	10.000.000,-
<b>Level 2 Green (Easy)</b>	2.500.000,-
<b>Level 3 Yellow (Medium)</b>	7.000.000,-

This incentive will only be given when the project has been completed, not half-finished, or still in the process, the question is what about maintenance? a lecturer will get also incentive from maintenance system

Level Project (Maitenance)	Icentive
Level 1	3.500.000,-
Level 2	1.500.000,-
Level 3	2.500.000,-

Incentive system in this maintenance is given only when there is an update of the project and only given 1x only after the update or repair has been implemented to completion.

Another example is the lecturer can play a role as a company-specific consultancy, where the company has research and development, where there are products or services that need to be developed. For example, a company requires the development of e-commerce systems; lecturers and team will be able to create websites and information technology infrastructure in the company. the difference is here the lecturer acts as a consultant and there is a patent system applied. By the time the e-commerce is already in place, the lecturer and his team will have 50% of the patent to be divided into 3: 30% for the lecturers and team-10% for the University and 10% for the government, thus the university and the government will benefit, and The remaining 50% of patents are held by the company, even though the patent is under 1 name, but this is called revenue sharing, 50-50 (30-10-10-50).

#### 4 Conclusion

Innovation will have a major impact on the whole system, in this journal, changes from the old system are not directly applicable but through mixing between old and new systems and/or total new systems. Moreover, Infrastructure should refer to two things: hard infrastructure and soft infrastructure, these two not only focus on building the power of information technology but no development on the human side.

#### References

- [1] M.T. Stockli, Bruno G. Rüttimann, Going beyond Triviality: The Toyota Production System-Lean Manufacturing beyond Muda and Kaizen, *J. Serv. Sci. Manag.*, **9** (2016), no. 2, 140–149.  
<https://doi.org/10.4236/jssm.2016.92018>
- [2] L. M. Mazur, S.-J. (Gary) Chen and B. Prescott, Pragmatic evaluation of the Toyota Production System (TPS) analysis procedure for problem solving with entry-level nurses, *J. Ind. Eng. Manag.*, **1** (2008), no. 2, 240–268.  
<https://doi.org/10.3926/jiem.2008.v1n2.p240-268>
- [3] R. N. Pratikna and I. Gamayanto, Developing Leadership Systems Inside University Using Jim Collins Method [Good to Great]: People Management

- Development to Face ASEAN Economic Community in Indonesia, *Rev. Integr. Bus. Econ. Res.*, **6** (2017), no. 3, 45–55.
- [4] S. Samadi, Open Innovation Business Model in the Food Industry: Exploring the Link with Academia and SMEs, *J. Econ. Bus. Manag.*, **2** (2014), no. 3, 209–213. <https://doi.org/10.7763/joebm.2014.v2.126>
- [5] L. Jraisat, Organisational Studies and Innovation Review, *Organ. Stud. Innov. Rev.*, **1** (2015), no. 2, 17–32.
- [6] D. J. Teece, Business models, business strategy and innovation, *Long Range Planning*, **43** (2010), no. 2–3, 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- [7] P. S. Aithal, V. T. Shailashree and P. M. S. Kumar, Factors & elemental analysis of six thinking hats technique using abcd framework, *Int. J. Adv. Trends Eng. Technol.*, **1** (2016), no. 1, 85–95.
- [8] I. Gamayanto and F. Esti Nilawati, Metodologi working hours development pada sistem informasi dosen (e-lecturer) dalam menghadapi masyarakat ekonomi asean, *Techno.COM*, **15** (2016), no. 1, 58–65.

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