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Katsinovas Framework Prototype Apps Hardware as based Innovation Readiness Level

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Abstract: ***Start-up industry, start-up companies go into the moldy lifestyle of young people to form a community to help solve more specific community problems and accurate results. Application testing on community applications is used as alpha 1 before the final release. It is prioritized that the concepts, components and application resolution of serious problems be alleviated. Until the performance. This test is not just an application but a hardware device created by Blueprint. The application of testing uses the framework of Katsinov, up to level 6 where each level explains the concepts, components, completion, enthusiasm or market potential, competition, technology development.***

Keyword: Katsinova, Prototype, Innovation Readiness Level

I. INTRODUCTION

Indonesian researchers are currently developing rapidly and are supported by the acceleration of the Indonesian Ministry of Research and Higher Education. This form of support is in the form of incentives if it penetrates international journals. In fact, not only that, several other campuses if the results of research pass in the national accreditation journal at least Sinta3 get a reward for boosting the name of the campus and its researchers.

The Indonesian Ministry of Research and Higher Education holds several events to raise campus performance and lecturers among them: simlitabmas (portal for lecturers conducting research and service each year), BSLN (Overseas Seminar Assistance) research results are presented abroad, CPBBT / PBBT (Prospective Business Beginner) Based on technology), the portal puts forward lecturers, students and third parties who are entitled to participate in prestigious events every year.

The presence of Katsinov as a measure of the readiness of directed investment technology has become the development of human resources with international competitiveness and the absorption of the state budget on Indonesian inventors.

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Obviously, the Head of Sub Directorate of Energy and Transportation Industry Directorate of Industrial Innovation, Directorate General of Strengthening Industrial Innovations at the SEMINAR FUTURE POWERTRAIN TECHNOLOGY SCENARIO event [1], [2], [3], [4], [5].

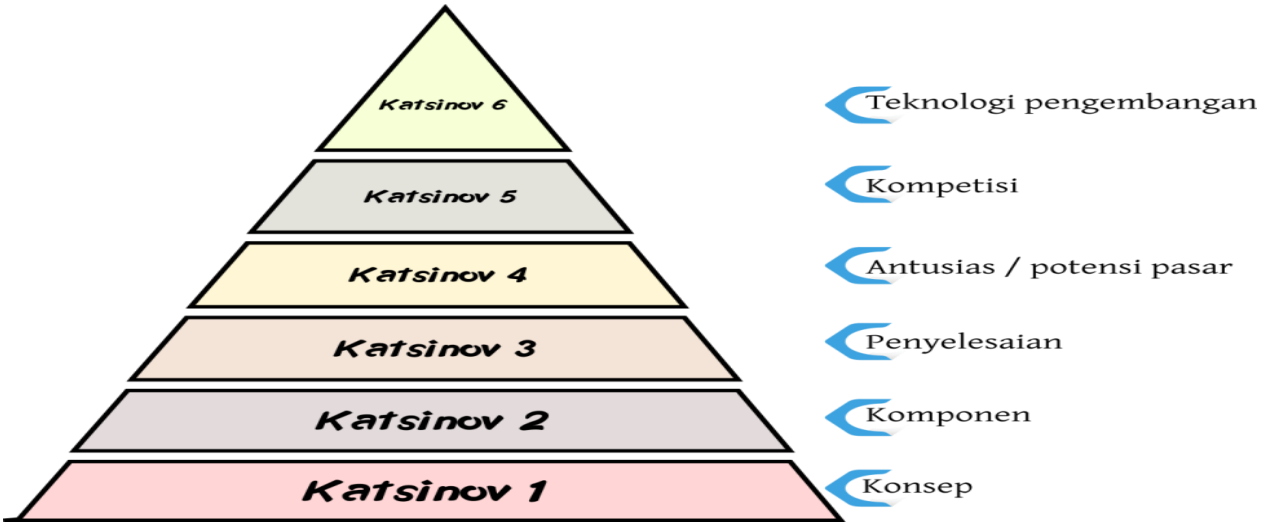
On future power train technology innovation vehicles for the Indonesian market by The Directorate General of Strengthening Research and Development, Dr. M Dimyati, said that the Ministry of Research, Technology and Higher Education encouraged 1,071 per one million research population to improve the quality of research results. This is not comparable with the conditions of other countries in Asia and ASEAN. It is hoped that the increase in web-based national & international journal publishing to 16,000 does not leave the quality of publication standards[6]

Supporting the quality of innovation and research is proven by the presence of a Katsinov framework, by Ristekdikti as a measure of innovation. This framework is free to all prospective entrepreneurs or start-up companies. Another supporting factor of Katsinov is the measurement of target market and future market potential.

In other studies testing was done using the AHP method, while ranking was done using the TOPSIS method. Based on the stages of the study and the criteria for the problem, an example of passing an application is implemented with a calculation to be completed [7].

The presence of Katsinov by Kemenristekdikti financed a number of invention proposals resulting from the research and development process of a number of domestic innovators to be made into innovation products. To determine an invention, it can be called an innovation product using a measuring instrument called the Innovation-Meter Readiness Level Measurement (KATSINOV). Ways to assess and overcome risks must be emphasized in the list of technical planning in order to manage innovation activities. Aspects of risk in this case include the identification of technical risks at the KATSINOV level 1 to 3, identification of risks, especially financial indicators at the KATSINOV levels 4 and 5, as well as the risk assessment of the decision to re-innovate or develop new technologies [8] .

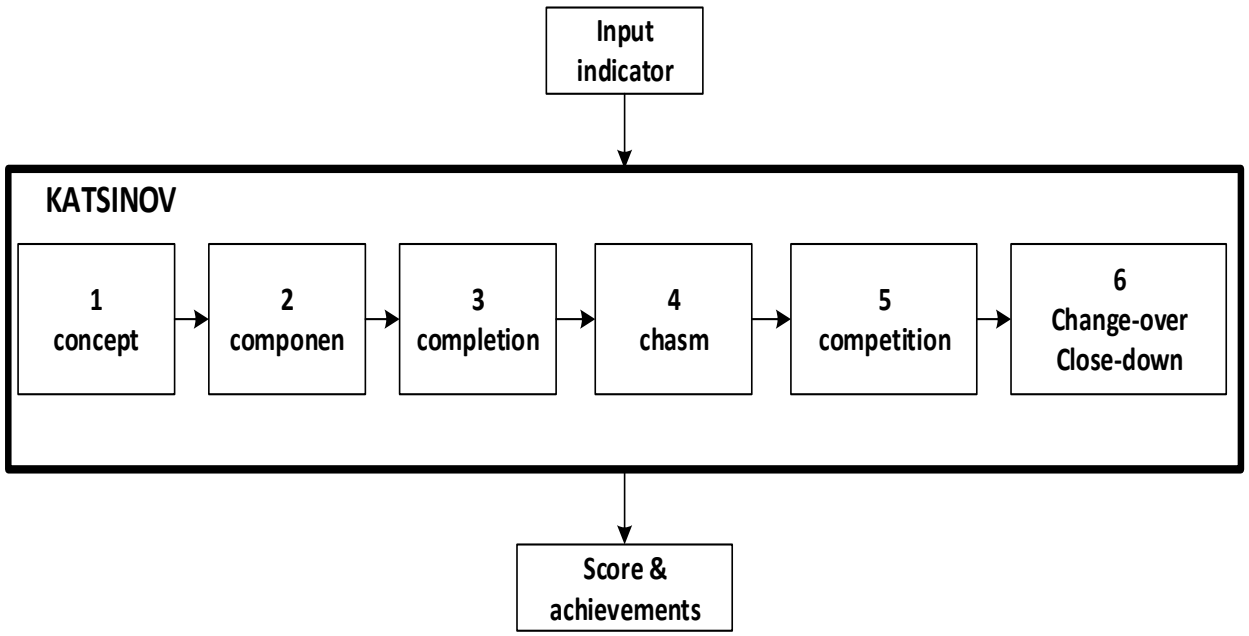
Innovation products include three things: a novelty that causes significant changes, innovation must be able to be used or used by users, and innovation must be able to provide commercial value. Katsinov is closely related to the level of innovation readiness, preparing that this framework will become the foundation of an innovation product ready to be published. The katsinov framework consists of several stages of katsinov 1 through katsinov 6. Each katsinov explains the level of explanation, application, concept to the solution ofthe product to the problem. This will be clearer in Figure 1.



On Fig 1 shows each level katsinov has approximately 22 questions and shows each different focus. This shows the seriousness that the Indonesian government as the Ministry of Research and Technology wants to promote the level of innovation and creativity starting from Universities, Public Colleges to Private Schools.

II. PROPOSED METHODOLOGY

a. BLOCK DIAGRAM KATSINOV



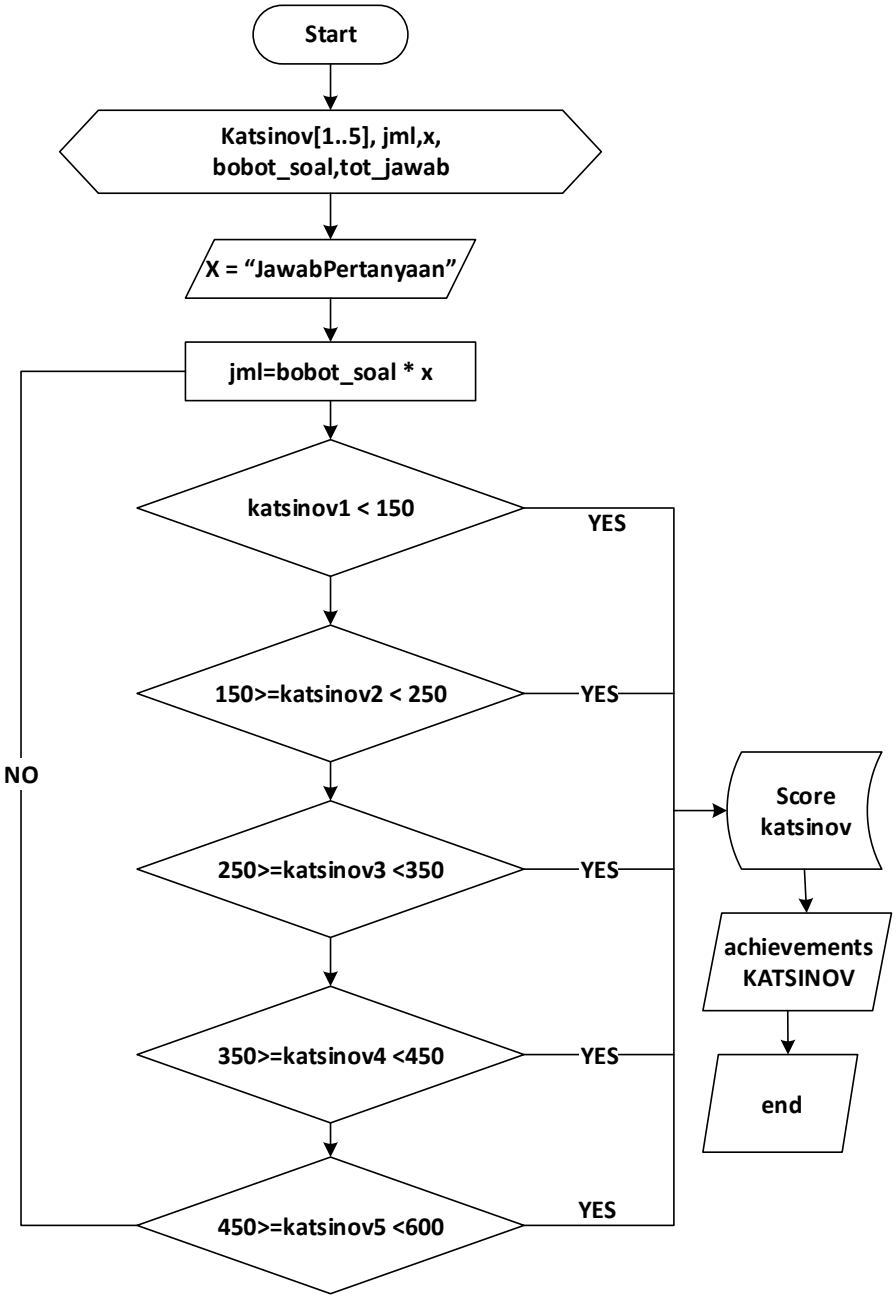
BLOCK DIAGRAM KATSINOV

Level of measurement of innovation

b. Algorithm Method Katsinov.

1. Describe the variables katsionov, jml, x, bobot_soal, tot_jawab
2. input the indicator answer that is stored at the value x
3. calculate the jumlah(jml) =bobot_soal * x
4. If Katsinov1 <150, then show katsinov score and Katsinov achievements = achieved / not achieved
5. If 150> = Katsinov2 <150 then display katsinov score and Katsinov achievements = achieved / not achieved
6. If 250> = Katsinov3 <350 then display katsinov score and Katsinov achievements = achieved / not achieved
7. If 350> = Katsinov4 <450 then display katsinov score and Katsinov achievements = achieved / not achieved
8. If 450> = Katsinov5 <650 then display katsinov score and Katsinov achievements = achieved / not achieved
9. Finish

c. Flowchart Katsinov Method



FLOWCHART KATSINOV METHOD

III. RELATED WORK

Katsinov is organized into six levels and seven key aspects which include technology, market, organization, partnership, risk, manufacturing, and investment. While the measurement uses Katsinov-Meter, a software that collects several standard statements for each level and displays Katsinov graphically.

The purpose of the formation ofatsatsov 1 through 6 is aimed at the readiness of different innovations. It is expected by the Government of the Republic of Indonesia that this be at a minimum to the Katsinov 3 stage. Because in stages 1 to 3 it the readiness of the concept and the application of the field. The following table explains the purpose of katsinov.

Tabel 1 Explain Innovation Readiness Level

Katsinov		Explain
6	change-over nor close-down	Stage of market downturn, and the determination of two options, namely moving (change-over) with re-technological innovation, or stopping (close-down) to see the innovation has become obsolete and decided to get out.
5	Competition	This is the phase of market maturity, when a market equilibrium is achieved in the absence of meaningful growth or innovation.
4	Chasm	Chasm is between early adopters (the enthusiasts & visionaries) and early majority (the pragmatists). An initial phase of innovation results has been introduced to the market. At this stage there are challenges and difficulties whether the product innovation meets the needs or demands of customers when first introduced into the market.
3	Completion	Technology development has been completed and all system functions have been proven in the field.
2	Component	Components have been developed and validated, and prototypes have been developed demonstrating the technology.
1	concept	The basic scientific principles of innovation have been observed and reported, and critical functions and / or characteristics have been confirmed through experiments.

Each question in Katsinov has aspects so that innovation products do not come out of tupoksi that will be marketed later. Some of them ask about technology aspects (T), market aspects (M), manufacturing aspects (Mf), organizational aspects (O), partnership aspects (P), investment aspects (I), risk aspects (R).

In the matter of katsinov after the aspect and focus of the next field the weighting which is characteristic for the product to be good and directed. The following sample katsinov 1 weighting as a whole is shown in Figure 2.

S atau % terpenuhinya — **Indikator KATSINOV 1** — [beri tanda *cross* (X) pada kolom yang sesuai]

[beri tanda cross (X) pada kolom yang sesuai]

No	Aspe	0	1	2	3	4	5	(0=tidak terpenuhi; 1=20%; 2=40%; 3=60%; 4=80%; 5=100% atau terpenuhi)
1	T	0	0	0	0	0	0	Ide baru yang memberi solusi permasalahan masyarakat.
2	T	0	0	0	0	0	0	Telah dilakukan pengamatan prinsip-prinsip ilmiah dasar dan publikasi ilmiah.
3	T	0	0	0	0	0	0	Faktor yang membedakan temuan dengan temuan lain dan unsur kebaruan dari sebuah ide atau gagasan telah
4	T	0	0	0	0	0	0	Mengidentifikasi tahapan riset dan targetnya.
5	T	0	0	0	0	0	0	Teknologi yang akan dikembangkan telah layak secara ilmiah (*scientific feasibility*).
6	M	0	0	0	0	0	0	Inovasi dilakukan berdasarkan permintaan dan / atau kebutuhan pelanggan.
7	M	0	0	0	0	0	0	Permintaan dan kebutuhan pelanggan telah diidentifikasi.
8	M	0	0	0	0	0	0	Telah mengidentifikasikan lokasi pasar yang akan dituju.
9	O	0	0	0	0	0	0	Telah memiliki strategi inovasi.
10	O	0	0	0	0	0	0	Lingkup proyek dan tugas telah diidentifikasi.
11	O	0	0	0	0	0	0	Kebutuhan akan sumber daya, dana dan fasilitas penelitian telah dikonfirmasi.
12	O	0	0	0	0	0	0	Tersedia saluran komunikasi tanpa hambatan.
13	Mf	0	0	0	0	0	0	Konsekuensi hasil temuan telah diidentifikasi melalui dasar manufaktur ekonomis.
14	Mf	0	0	0	0	0	0	Teridentifikasi dalam konsep manufaktur secara teknis dan ekonomis.
15	Mf	0	0	0	0	0	0	Tersedia bukti konsep manufaktur melalui analitik atau eksperimen laboratorium.
16	I	0	0	0	0	0	0	Ide yang dikembangkan memiliki konsep model bisnis.
17	I	0	0	0	0	0	0	Ide yang dikembangkan memiliki hasil analisis pelanggan, pasar, dan pesaing.
18	I	0	0	0	0	0	0	Ide yang dikembangkan telah terbukti memberi solusi bagi pelanggan.
19	P	0	0	0	0	0	0	Telah tersusun strategi membangung jaringan kerja dan kemitraan.
20	P	0	0	0	0	0	0	Mitra potensial telah diidentifikasi.
21	R	0	0	0	0	0	0	Kajian risiko teknologi telah menjadi pertimbangan dalam setiap langkah penelitian.
22	R	0	0	0	0	0	0	Pada tahap penelitian dilakukan penyusunan rencana pengendalian risiko teknologi.
		0	0	0	0	0	0	
S		0						
%		0,00%						TIDAK TERPENUHI

KATSINOV 1

Figure 2. katsinov 1

The weights in katsinov 1 to 6. are overall formulated in the following equation:

$$V = (NxO) + (Nx2) + (Nx3) + (Nx4) + (Nx5) \quad (1)$$

$$L = \frac{V}{S\,x\,5} \quad (2)$$

N : Number of selected weighting values

I : Katsinov level selected

S : Total task

S = Numbers of question katsinov

Insert equations (1) and (2) in the following formula:

$$\sum_{k=1}^{6} = Lx100\% \quad (3)$$

operation will be divided by 100% as a form of presentation of the final value. Katsinov 1, has a 70% graduation threshold to reach katsinov 2. It is closely related that Katsinov 1 tests the concept of tool knowledge and applies to problems.

IV. RESULT

Each question in katsinov has a weighting value between 0 to 5 interpreted with the letter N. The value of 0, very less even 5 is very satisfying. The weighting of values will be multiplied and added up to each problem ... at the end of the

Tabel 2. THRESHOLDKATSINOV

Item	Soal	Minimal Kelulusan
Katsinov 1	21	80%
Katsinov 2	22	80%
Katsinov 3	22	80%
Katsinov 4	22	80%
Katsinov 5	22	80%

Calculation if it is assumed an innovator is able to prove the concept and application in the field (Katsinov'sself assessment 1 to Katsinov 3). Given a value that has been created and filled, then the results are displayed as follows:

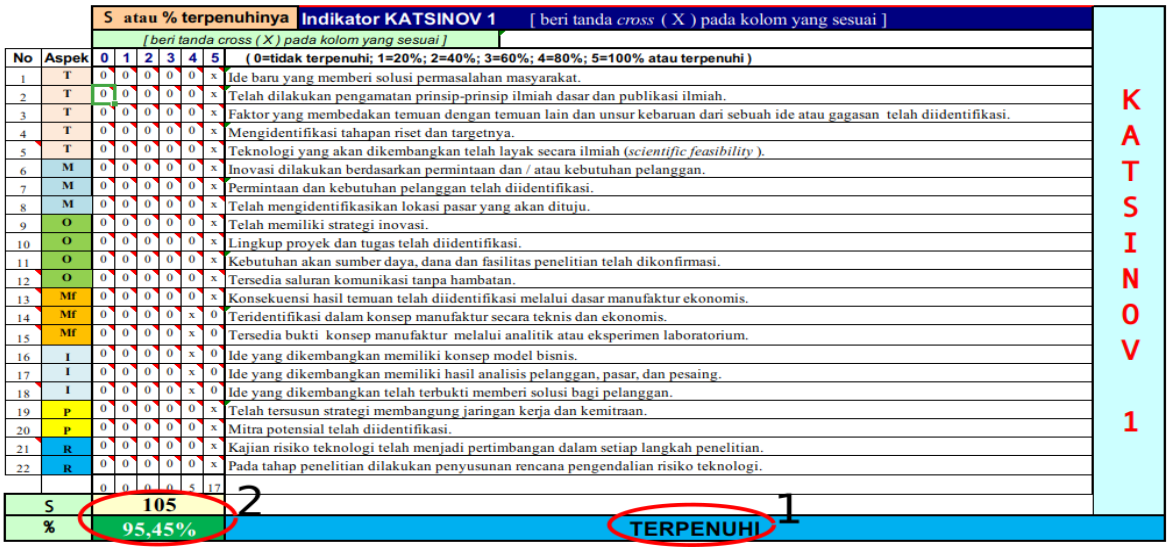


Figure 3. katsinov 1

assessing Fig. 3, shown below

$$V = (Nx0) + (Nx1) + (Nx2) + (Nx3) + (Nx4) + (Nx5)$$
$$= (0x0) + (0x1) + (0x2) + (0x3) + (5x4) + (17x5)$$
$$= 0 + 0 + 0 + 0 + 20 + 85 = 105$$
$$S = 22$$

$$L = \frac{V}{S\ x\ 5}$$

$$= \frac{105}{22x5} = 0{,}9545$$

$$\sum_{k=1}^{k=6} = Lx100\% = 95{,}45\%$$

Result katsinov 1, **K1=>80%** = continue to katsinov 2

Consider, to fit the equation **(2)**

$$\sum K1 = 95{,}45\%$$

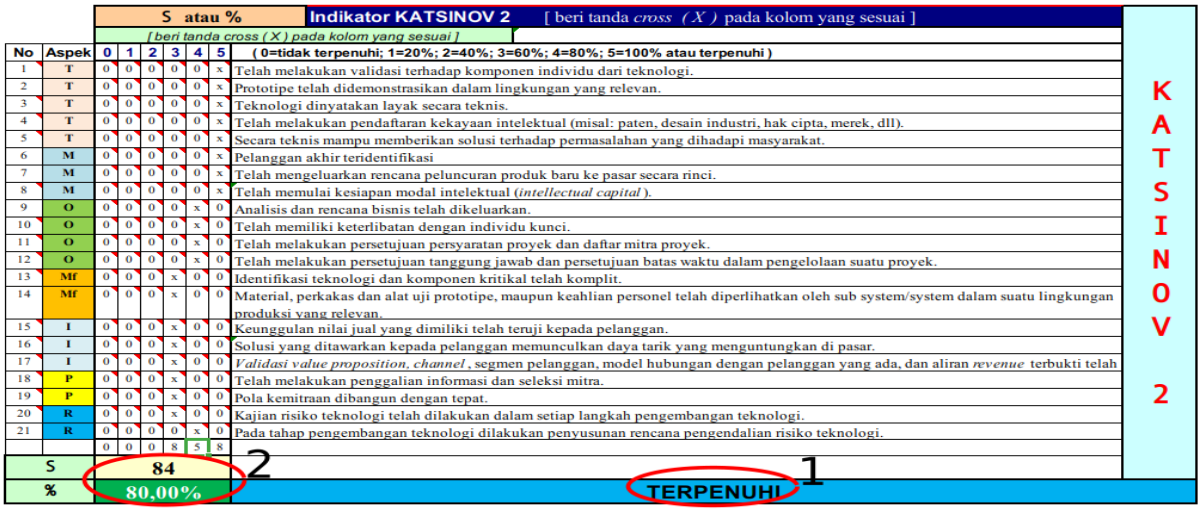


Figure 4. katsinov 2

Assessing fig.4 ,shown below

$$V = (Nx0) + (Nx1) + (Nx2) + (8x3) + (5x4) + (8x5)$$
$$= (0x0) + (0x1) + (0x2) + (24) + (20) + (40)$$
$$= 0 + 0 + 0 + 24 + 20 + 85 = 84$$
$$S = 21$$

Consider, fit in equation **(2)**

$$L = \frac{V}{S\ x\ 5}$$

$$= \frac{84}{21x5} = 0{,}8$$

$$\sum_{k=1}^{k=6} = Lx100\% = 80\%$$

Result katsinov 2, **K2=>80%** = continue to katsinov 3

$$\sum K2 = 80\%$$

		S atau %					Indikator KATSINOV 3 [beri tanda *cross* (X) pada kolom yang sesuai]	
		[beri tanda cross (X) pada kolom yang sesuai]						
No	Aspek	0	1	2	3	4	5	(0=tidak terpenuhi; 1=20%; 2=40%; 3=60%; 4=80%; 5=100% atau terpenuhi)
1	T	0	0	0	0	0	x	Sistem aktual teknologi telah didemonstrasikan dalam lingkungan yang sebenarnya.
2	T	0	0	0	0	0	x	Uji eksternal dari teknologi yang dikembangkan telah dilakukan secara lengkap, dalam rangka memenuhi persyaratan teknis dan
3	T	0	0	0	0	0	x	Telah mendokumentasikan teknologi yang dikembangkan.
4	T	0	0	0	0	0	x	Hasil Inovasi telah diperkenalkan.
5	T	0	0	0	0	0	x	Telah memperoleh Kekayaan intelektual (misal: paten, desain industri, hak cipta, merek, dll).
6	M	0	0	0	0	0	x	Kebutuhan khusus dan keperluan pelanggan telah diketahui.
7	M	0	0	0	0	0	x	Segmen, ukuran dan pangsa pasar telah diprediksi.
8	M	0	0	0	0	0	x	Produk telah diperkenalkan, dan harganya telah ditetapkan.
9	O	0	0	0	0	0	x	Penetapan organisasi (struktur bisnis dengan staff dan kolaborator).
10	O	0	0	0	0	0	x	Identifikasi beberapa tambahan staff yang dibutuhkan.
11	O	0	0	0	x	0	0	Telah merincikan pembagian tanggung jawab dan beban kerja.
12	Mf	0	0	0	x	0	0	Desain sistem sebagian besar stabil dan terbukti dalam uji dan evaluasi.
13	Mf	0	0	0	x	0	0	Proses dan prosedur manufaktur terbukti dalam skala pilot.
14	Mf	0	0	0	x	0	0	Produksi pada laju rendah telah dilaksanakan.
15	I	0	0	0	x	0	0	Telah mendefinisikan kondisi akhir dari produk teknologi dengan mempertimbangkan target person, pasar vertikal, serta geografik.
16	I	0	0	0	x	0	0	Validasi terhadap bisnis yang dilakukan sudah diterapkan.
17	I	0	0	0	x	0	0	Identifikasi dan validasi terhadap indikator kinerja utama yang mengindikasikan keberhasilan bisnis.
18	P	0	0	0	x	0	0	Telah terjalin kemitraan secara formal.
19	P	0	0	0	x	0	0	Telah menyusun dan telah menerapkan rencana kerja sama.
20	R	0	0	0	x	0	0	Kajian risiko teknologi menjadi dasar pengambilan keputusan teknis dalam tahap engineering & Operation.
21	R	0	0	0	x	0	0	Pada tahap penerapan teknologi dilakukan penyusunan rencana pengendalian risiko teknologi.
		0	0	0	11	0	10	
S		83						
%		79,05%						TIDAK TERPENUHI

KATSINOV 3

Figure 5. katsinov 3

Asesing fig.5, shown below

$$V = (Nx0) + (Nx1) + (Nx2) + (Nx3) + (Nx4) + (Nx5)$$
$$= (0x0) + (0x1) + (0x2) + (11\ x\ 3) + (0x4) + (10x5)$$
$$= 0 + 0 + 0 + 33 + 0 + 50 = 83$$
$$S = 21$$

Consider, fit in equation **(2)**

$$L = \frac{V}{S\ x\ 5}$$

$$= \frac{83}{21x5} = 0{,}7905$$

$$\sum_{k=1}^{k=6} = Lx100\% = 79{,}05\%$$

result of katsinov 2, K3=<80% = conclusion halt at katsinov 3

$$\sum K3 = 79{,}05\%$$

We got formula like :

$$\sum K1 + K2 + K3 = 95{,}45 + 80 + 79{,}05 = 254{,}5$$

Katsinov innovation potential collected was 254.5 in katsinov 3.

V. CONCLUSION AND FUTURE WORK

Achievements from measurements up to katsinov 3. This proves that the results obtained include the concept has been mastered, from the concept of the problem to the problem and its solution. This is indicated by the value of katsinov 1 getting a score of 95.45%. Obviously getting an almost perfect score above average.

Katsinov 2, the score obtained 80% is the standard of success. This proves that the protoype component was developed according to field problems and was validated. However, the solution of the problem has not been reached in accordance with the initial expectations. Revalidation of problem solving is needed.

Katsinov3, the score obtained 79.05% is a low standard and has not yet achieved success in the application of the actual environment. What has been proven remains to be done evaluating the prototype, the system and is supported by reports by tester users. It is expected to pass the Katsinov 3 selft assessment to Katsinov 4.

From all this it is found that the components have been developed and validated, and the prototype has been developed demonstrating the technology is one of several that must be measured in measuring innovation. Some of them are the concepts and designs of Katsinov thinking and measurement practices (measuring tools) and the understanding of Business Model Canvas (BMC).

ACKNOWLEDGMENT

Gratitude to the Saint Paul Catholic Polytechnic has sponsored research into the application of Katsinov to innovation products. It is hoped that the creation of these tools can become self-assessment and be an encouragement to develop themselves and applications for the better

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