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# Correlation of Agile Maturity Model Level With Perceived Project Success In Indonesian Banks

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A R T I C L E I N F O

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ABSTRACT

Agile Project Management is considered as project management methodology which have important role in the current rapid changes business environment. Agile maturity model hence provide a structured agile implementation guidance to help continuous implementation and improvement of agile. This research is conducted to assess the correlation of agile maturity model with perceived project success in Indonesian Banks. This research is using Partial Lest Square (Structured Equation Modeling). From 5 levels of agile maturity model, this research found that there are positive correlation between agile maturity model and perceived project success in level 2, 4, and 5. In specific this refer to the project planning, sustainable pace and performance management in each respective level. The result of this research is expected to assist the project practitioners to be more efficient in the implementation and the improvement of agile project management quality.

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## 1. Introduction

Rapid changes in the market demand and the process to acquire the goods and services itself have been a long concern of many companies in different industries and countries. In Indonesia, more recent data shows that the changes of process to acquire is significantly disrupted as a result of Covid19 pandemic in early 2020. Based on survey conducted by Bank DBS Indonesia, there is 42% increase in the e-commerce shopping preference compared to other way to shop and compared to pre-covid behavior (Indonesian Consumption Basket, DBS Group Research, Aug 2020).

This rapid change from the consumer perspective is also need to be considered in fast manner by the companies in order to survive, non-facing, social distancing/ medical protocol activities push companies to be more virtually/ digitally available to the consumer during and possibly continued after the pandemic. This tendency meaning that more and more banking will relies on how good its IT development and delivery can support the business on being more digital. However in banking, widely known as highly regulated industries, the delivery of such digital strategic initiatives perceived as a struggle by most Indonesian banks. Based on PWC survey on 2018, only one third of the respondent stating projects are delivered on time (Digital Banking Survey, PWC Indonesia, 2018).

The struggle on the delivery may have background as the bank is one of the most industries with complex IT system, involving how it manage its core banking, loan processing and other various system, while also have constraints in its robust risk and security policies.

Many companies, have been using Agile project management methodologies to support the delivery. As a rising key concept in project management, agile project management has become one of the most applicable methodologies – especially in the software development process (Rasnacis & Berzisa, 2016). The agile approach in software development often emphasizes on flexibility as it may need to quickly respond to the changes in the macro-environmental factors (Moniruzzaman & Hossain, 2013).

PWC survey on 2018 shows that only 18% of respondents in Indonesian Banks not implement agile at all, which means 82% of it already use/has started using Agile. The same survey shows also that 76% respondents plan to increase the agile adoption in subsequent years. This data is interesting to evaluate how this perception changing on more recent perspective in addition with the how the Banks in Indonesia perceived whether the agile adoption is really influenced the project success. Reflecting on the previous research done by Henriques & Tanner (2020), there is lack of research related to agile implementation level which represent by agile project management maturity (Patel and Ramachandran in Henriques and Tanner, 2020), to perceived project success.

Henriques & Tanner research in South Africa then found that there is a correlation between agile maturity & perceived project success. However in their research, they mixed different industries consists of: Banking (14%), Insurance (43%), Retail (14%), Medical (4%), other financial services (10%), and other non-financial services (15%). This mixed is questionable as different industries may have different complexity due to different business nature, system architecture, risk, and security policies constraints.

Therefore this study will contribute to assess the agile methodology adoption in Bank in Indonesia with the main questions are: 1. Is there any correlation between agile project management maturity with perceived project success, 2. What extent are respondents currently using agile development processes? 3. Will respondent use of agile development processes increase, decrease, or stay the same next year?

## 2. Research Methods

In this research, the conceptual model and hypothesis is adopted in the previous research done by Henriques & Tanner (2020) to answer the third question whether there is any correlation between perceived project success and agile maturity level. The conceptual model as suggested by Henriques & Tanner is developed by combine the Agile Maturity Model from Patel and Ramachandran (2009) and perceived project success from Serrador & Pinto (2015). Based on this conceptual model, Henriques and Tanner then build 11 hypotheses and their corresponding null hypotheses which adopted in this research to be tested in banking industry in Indonesia as shown in following figure.

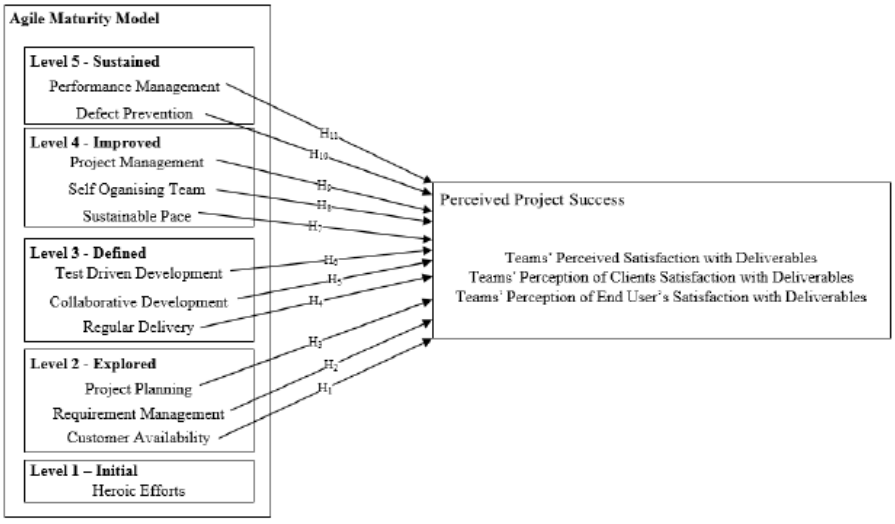


**Fig 1.** Conceptual Model to evaluate the association of focus areas
from Agile Maturity Model and Perceived Project Success
Source: Henriques & Tanner (2020)

Furthermore to expand from previous 11 hypothesis as Model 1 (Indicator Model), Henriques & Tanner also explore the second model which is the correlation of the each maturity level itself to the perceived project success as Model 2 (Dimension Model). Therefore on this research those two models are defined on figure 2 and 3 below.

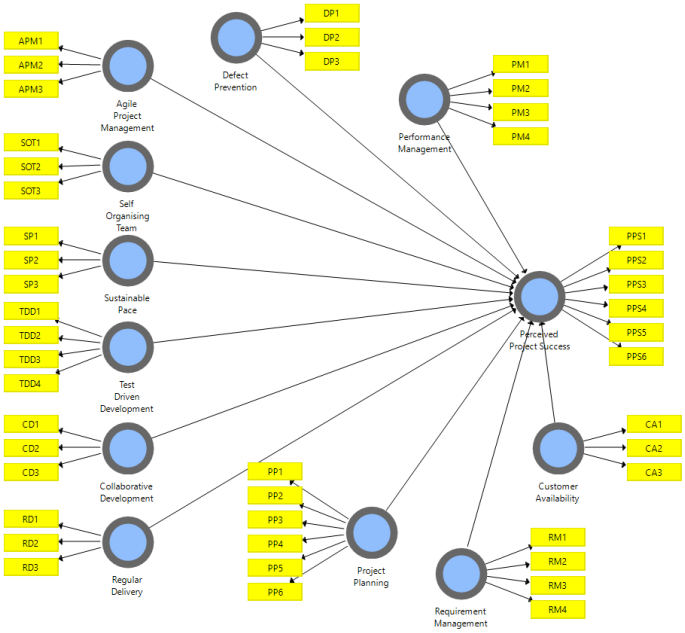


**Fig 2.** Model 1 – Indicator Model
Source: Research Model (2021)

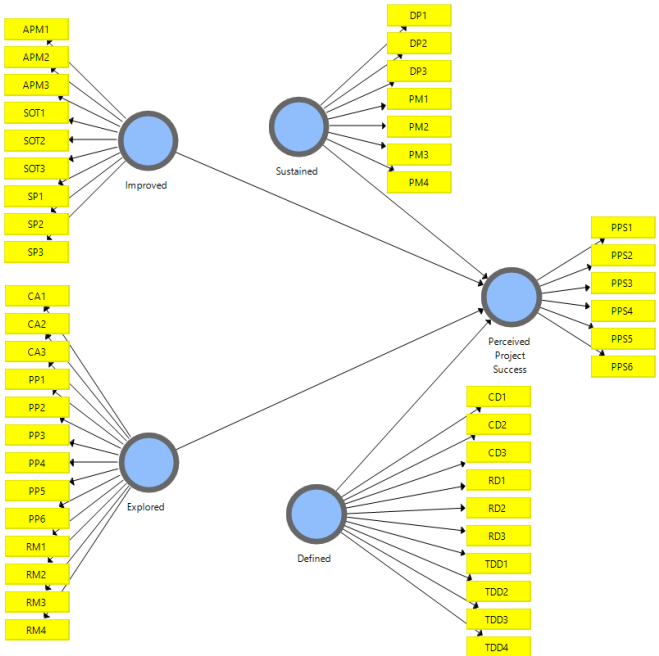


**Fig 2.** Model 2 – Dimension Model
Source: Research Model (2021)

The research will be carried out by using quantitative approach via online survey to the target respondents to answer the research questions. Adopting the previous study, combination of non-probabilistic sampling approaches was used (Saunders et al in Hendriques and Tanner 2020). Purposive sampling initially used however different with previous study that use mixed industry such as banking, insurance, retail, health, etc as their respondents, this research is focus on banking industry as a target respondent. Based on that the survey is shared to contacts within banking industry and agile communities' members who working at the bank, thereafter the snowball sampling techniques was employed.

## 3. Result and Discussion

### 3.1 Description of Research Sample

The total number of respondents to the survey was 63 which all come from banking industry as the main focus on this research. The total completed responses closely similar with Henriques & Tanner survey sample, which is 69. Based on the survey result, the respondents indicate Scrum is the agile method that mostly used (42%). On the job grade, it is known that majority of the respondents are middle management level and first line management, in alignment with the year of experience of working. For agile experience, majority (80.9%) indicate using agile for three years or less, similar with previous study 72%. Regarding the the role within the agile team the majority respondents is claimed as other (Project Manager, Extended team, etc) and Product owner.

### 3.2 Validity & Reliability Test

a. Validity Test

The validity test of both model is asssessed by using Convergent Validity Test, AVE Value, Fornell Larcker, and Cross Loading Indicator Method. After the elimination of some invalid indicators based on the each respective test, both model 1 & 2 constructs both for dimension and variable values are complying the required convergent validity (<0.7 value) and AVE Value (<0.5). Discriminant validity test result by using Fornell Larcker method and Cross Loading indicator are also showing that the model have good discriminant validity as the value on diagonal is more than value below diagonal and as the highest indicator is on its constructs rather than toward other constructs respectively.

b. Reliability Test

The reliability test of both model is assessed by using Cronbach's Alpha, Composite Reliability and Goodness of Fit (SRMR model). Based on each respective test, both model are reliable as shown by value of Cronbach's Alpha and Composite Reliabilty <0.7. While for Goodness of fit test, model 1 is considered as perfect fit as shown by SRMR model value <0.08, while for model 2 is considered as fit as shown by SRMR model value <0.1

### 3.3. Hypothesis Test

a. Model 1

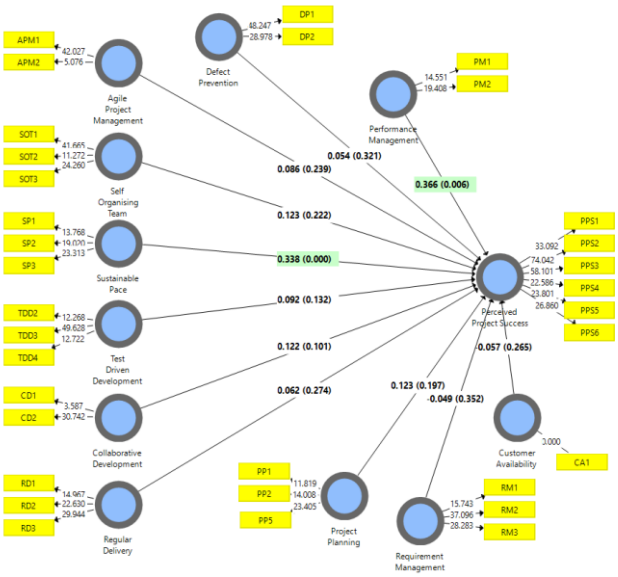


**Fig 3.** Model 1 – PLS path coefficient evaluation
Source: Processed Data (2021)

Based on the PLS path coefficient evaluation on figure 3, all path are considered significant if the P value <0.05 as shown in table 1. Therefore the variables that has significant correlation to perceived project success are Performance Management and Sustainable Pace on 95% confidence level. Project Planning also considered has significant correlation to perceived project success on 90% confidence level.

**Table 1**
Model 1 - Partial Correlation Test Result

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|---|
| **APM -> PPS** | 0,004 | 0,062 | 0,146 | 0,027 | **0,489** |
| **CA -> PPS** | -0,064 | -0,037 | 0,121 | 0,532 | **0,298** |
| **CD -> PPS** | 0,051 | 0,047 | 0,100 | 0,507 | **0,306** |
| **DP -> PPS** | 0,101 | 0,090 | 0,135 | 0,750 | **0,227** |
| **PM -> PPS** | 0,409 | 0,377 | 0,156 | 2,626 | **0,004** |
| **PP -> PPS** | 0,199 | 0,185 | 0,148 | 1,344 | **0,090** |
| **RD -> PPS** | -0,045 | -0,033 | 0,122 | 0,368 | **0,356** |
| **RM -> PPS** | -0,069 | -0,034 | 0,134 | 0,514 | **0,304** |
| **SOT -> PPS** | 0,159 | 0,118 | 0,155 | 1,023 | **0,153** |
| **SP -> PPS** | 0,331 | 0,322 | 0,097 | 3,421 | **0,000** |
| **TDD -> PPS** | 0,109 | 0,100 | 0,101 | 1,085 | **0,139** |

Source: Processed data (2021)

Therefore based on the partial correlation test result H0-3, H0-9 and H0-11 are rejected in favor of H3, H9 and H11 meaning each respective constructs is positively correlated with perceived project success. On the other hand for H0-1, H0-2, H0-4, HO-5, H0-6, H0-7, H0-8, H0-10 are accepted meaning each respective constructs are not positively correlated.

**Table 2**
Model 1- Determination Coefficient

| | R Square | R Square Adjusted |
|---|---|---|
| PPS | 0,773 | 0,723 |

Source: Processed data (2021)

Determination coefficient by using R Square in table 2 showing the degree of correlation between exogenous variable and endogen variable, based on the analysis of adjusted R square, the value is 0.773. This value meaning 77.3% of perceived project success variable is influenced by all exogenous variable that assessed in this research.

b. Model 2

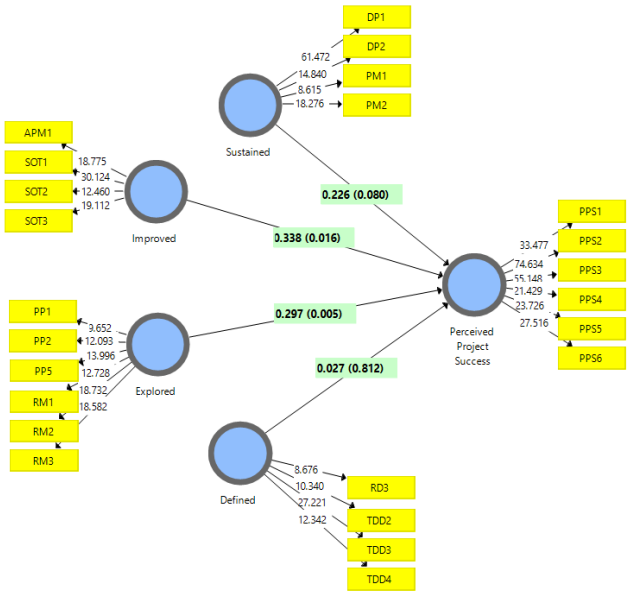


**Fig 4.** Model 2 – PLS path coefficient evaluation
Source: Processed Data (2021)

Based on the PLS path coefficient evaluation on figure 4, all path are considered significant if the P value <0.05. Therefore the variables that has significant correlation to perceived project success are Explored and Improved dimension on 95% confidence level as shown on table 3. Sustained also considered has significant correlation to perceived project success on 90% confidence level.

**Table 3**
Model 2 - Partial Correlation Test Result

| | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|---|
| **DEF -> PPS** | 0,027 | 0,002 | 0,113 | 0,237 | **0,812** |
| **EXP -> PPS** | 0,297 | 0,301 | 0,106 | 2,803 | **0,005** |
| **IMP -> PPS** | 0,338 | 0,361 | 0,140 | 2,410 | **0,016** |
| **SUS -> PPS** | 0,226 | 0,224 | 0,129 | 1,753 | **0,080** |

Source: Processed data (2021)

Therefore based on the partial correlation test result H0-3, H0-9 and H0-11 are rejected in favor of H3, H9 and H11 meaning each respective constructs is positively correlated with perceived project success. On the other hand for H0-1, H0-2, H0-4, HO-5, H0-6, H0-7, H0-8, H0-10 are accepted meaning each respective constructs are not positively correlated.

**Table 4.**
Model 1- Determination Coefficient

| | R Square | R Square Adjusted |
|---|---|---|
| PPS | 0,661 | 0,637 |

Source: Processed data (2021)

Determination coefficient by using R Square in table 21 showing the degree of correlation between exogenous variable and endogen variable, based on the analysis of adjusted R square, the value is 0.637. This value meaning 63.7% of perceived project success variable is influenced by all exogenous variable that assessed in this research.

### 3.3. Extent of Agile Implementation

Regarding questions no 2 and 3 in this research, which is "To what extent are respondents are currently using agile development processes?" and will respondent use of agile development processes increase, decrease, or stay the same next year?" The survey resulted in following findings.

**Table 5.**
Extent of Agile Implementation Comparison with PWC survey in 2018

| Extent of Agile Implementation | PWC Digital Banking Survey 2018 | Survey Result (2021) |
|---|---|---|
| Not at all | 18% | 6.3% |
| On a pilot basis (<10%) | 24% | 17.5% |
| Between 10-50% of the projects | 28% | 44.4% |
| On more than 50% but not all project | 24% | 25.4% |
| On all projects | 6% | 6.3% |

Source: Processed data (2021)

Based on table 5, compared to PWC survey in 2018 there are 76% respondents stated that they will increase the extent of agile implementation. Based on the survey feedback, the increasing indeed happened significantly within the extent of use in 10-50% of the projects and on more than 50% but not all project. Moreover there is decreasing tendencies on the area with extent of use in not at all and on pilot basis showing that agile is now become more and more adopted by banking industries.

**Table 6.**
Estimation on Agile implementation increases on next year

| Extent of Agile Implementation | PWC Digital Banking Survey 2018 | Survey Result (2021) |
|---|---|---|
| Not at all/Stay the same | 24% | 7.9% |
| Increase | 76% | 92.1% |

Source: Processed data (2021)

The increasing adoption tendencies also proven with the research survey result in table 6 showing that there are 92.1% respondent that will increase the agile implementation, this show significant increase compared to previous PWC survey on 2018. On the detail based on the survey result on this research, 27% respondents stated that they will increase less than 10%, 42.9% stated that they will increase between 10-50%, and 22.2% stated that they will increase more than 50% of the projects in next year.

## 4. Conclusion

Based on the results of this study, it is known that banks in Indonesia are currently tend to adopting agile methodology on the majority of its projects. It is also found that this agile methodology adoption more likely to increase in the upcoming years. While the data analysis shows that the correlation is found in Project Planning, Sustainable Pace and Performance Management it also can be concluded that majority (Level 2, 4, and 5) of the maturity level in the AMM is positively correlated with perceived project success.

For project or agile practitioners in banking industry, the study has more relevant and practical implications compared to previous study by systematically identifying what is main critical agile activities in unique condition & ecosystem of banking project's delivery. Meaning they will be able to put higher focus or priority on highly correlated activities that is to improve the perceived project success.

Project practitioners then can prioritize the adoption of proper project planning, availability of team member during product grooming and/or sprint planning, sustainable working pace & hours, clear development & testing definition of done, customer/user availability to clarify requirements and provide feedback and also a discipline defect/issue tracking during testing period as suggested in Patel and Ramachandran agile maturity model (2009).

Despite the positive contributions, our study needs to be developed as it is proven to be difficult both on this study and previous study to collect high number of samples or responses, it might be useful to perform this study more on the qualitative basis by using the similar conceptual model or by specific segment of agile role or segment of experience in agile project. This would allow the future researcher to know in real cases what and how specific activities in agile maturity model can really improve the perceived project success. In addition future study can also compare the correlation results with other existing agile maturity model in the market to seek which model has more correlation with perceived project success. All of these will enhance the detail of the findings and possibly can become bases or benchmark for agile implementation generalization in banking industry.

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