

## Human Resource Competence Through the Application of the People Capability Maturity Model to the Competitive Advantage of Human Resources

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**Abstract:**
**Purpose:**

In the face of global challenges and rapid technological developments, organizations are required to have a superior human resource management (HR) strategy in order to achieve sustainable competitiveness. The People Capability Maturity Model (PCMM) is present as a framework that helps organizations develop HR competencies systematically through five levels of maturity. This study aims to examine the relationship between the application of PCMM and the improvement of human resource competence and the competitive advantage of human resources.

**Methodology:**

The sample consisted of 180 respondents who worked for retail companies in Bali. The approach used was quantitative, with data collection through online questionnaires and limited interviews, which were analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method.

**Findings:**

The results of the study show that the implementation of PCMM has a significant effect on improving employee competence. Human resource competence has also been proven to have a significant direct influence on the competitive advantage of human resources. In addition, the influence of PCMM on competitive advantage is indirect through the mediation of human resource competencies.

**Implication:**

These findings reinforce the Resource-Based View (RBV) theory which emphasizes the importance of internal capabilities as a source of competitive advantage. The implications of this study emphasize the importance of companies to align HR development strategies with maturity models such as PCMM.

## INTRODUCTION

In an era of globalization and increasingly complex business competition, organizations face immense pressure to improve their efficiency, effectiveness, and competitiveness. The rapidly changing external environment, including technological advancements, market shifts, and workforce dynamics, demands that companies have a sustainable competitive advantage. Deloitte (2023) notes that more than 70% of global CEOs state that competency-based HR development is a top strategic priority amid economic uncertainty and technological disruption.

In this context, human resources (HR) have been widely recognized as a strategic asset that has a crucial role in supporting the long-term sustainability and success of the organization. Successful organizations are those that are able to manage and develop human resource capabilities systematically and sustainably. Good HR management not only includes the recruitment, training, and development process but also involves the creation of a supportive work environment, effective leadership, and a transparent evaluation and reward system.

One approach that is currently receiving much attention in HR development is the People Capability Maturity Model (PCMM), which is designed to help organizations improve the human management process through a series of maturity stages. PCMM is a framework developed by the Software Engineering Institute (SEI) and aims to improve the capabilities of organizations in managing and developing their human resources. PCMM

presents a gradual approach (maturity levels) that starts from managing human resources that are still ad hoc and unstructured to reaching the optimal level where human resource development becomes an integral part of the organization's strategy. The implementation of PCMM enables organizations to increase productivity, reduce turnover, and create a work culture that supports competency growth and innovation.

However, in Indonesia, there is a real gap between the theoretical approaches offered by models such as PCMM and HR management practices in the field that are still sporadic and reactive. Many organizations do not fully understand the importance of a competency-based approach, the career development structure is not well organized, and there is no standardization in the HR management system. It causes an imbalance between the needs of the organization and the capabilities possessed by the workforce.

Here are some of the phenomena that are the basis of problems in human resource management in Indonesia:

**Table 1.** The Phenomenon of Human Resources Management in Indonesia

Yes	Phenomenon	Source	Impact
1	Many companies experience high turnover rates	Ministry of Manpower, 2022	Recruitment and training costs increase
2	The low productivity index of Indonesia's human resources compared to other ASEAN countries	BPS & ILO, 2021	Decline in national competitiveness
3	The majority of companies have not adopted a competency-based approach to HR management	McKinsey Report, 2020	Inefficiencies in human resource development and decision-making
4	Lack of a career development planning structure in the company	APIDO Survey, 2023	Decreased employee motivation and loyalty
5	Low employee engagement in various industry sectors	Gallup Indonesia, 2023	Decreased employee productivity and retention

This phenomenon shows that there is a gap between the actual conditions of human resource management and ideal practices that can support the company's competitive advantage. The low adoption of standardized HR management models makes it difficult for organizations to develop their employees' potential to the fullest. High turnover, for example, not only impacts costs but also organizational stability, work culture, and the loss of important institutional knowledge.

The low productivity index of human resources in Indonesia is a serious alarm for the nation's competitiveness at the regional and global levels. Without systematic efforts to improve human resource capabilities, Indonesia will continue to lag in terms of innovation, operational efficiency, and adaptability to market changes. In this case, the PCMM approach is one of the promising alternative solutions to overcome these challenges.

PCMM emphasizes not only individual development but also systemic and cultural improvements in organizations. Through five levels of maturity (1) Initial, (2) Managed, (3) Defined, (4) Predictable, and (5) Optimizing, organizations can evaluate and improve HR management processes on an ongoing basis. Thus, PCMM is not only a diagnostic tool but also a strategic roadmap for improving the performance and competitiveness of human resources.

This study aims to: Examine the effect of the Application of the People Capability Maturity Model (PCMM) on the competence of human resources (HR); Testing the influence of human resource competencies on the achievement of human resource competitive advantage; Testing the influence of PCMM on competitive advantage through improving the competence of human resources as mediators.

**Resource-Based View (RBV) Theory.** The Resource-Based View (RBV) theory was developed by Barney (1991) and explains that the internal resources of the organization are the key to achieving sustainable competitive advantage. In contrast to the external approach that focuses on market position and the industrial environment, RBV focuses on unique internal potential and capabilities.

According to RBV, resources must meet four main criteria in order to be the basis of competitive advantage, namely: Valuable: Resources must provide added value to the organization; Rare: Resources must be owned by few competing organizations; Inimitable: The resource must be difficult for competitors to replicate or copy; Non-substitutable: A resource cannot be replaced by another different resource.

Human resources and organizational capabilities related to knowledge, experience, organizational culture, and human management systems can meet these criteria. Thus, human resource development is an important strategy in building and maintaining a sustainable competitive advantage.

**Human Resource Management (HR).** Human resource management (HR) is an important function in an organization that aims to manage and develop human potential in order to make an optimal contribution to the achievement of organizational goals. According to Armstrong (2020), HR management is a strategic and coherent approach to human asset management that significantly affects organizational performance.

The HR management process includes several key activities, such as workforce planning, recruitment and selection, training and development, performance appraisals, compensation and rewards, and industrial relations (Noe et al., 2017). Effective management will increase employee motivation, engagement, and loyalty, which ultimately has a positive impact on the productivity and competitive advantage of the organization.

In addition to operational aspects, human resource management also requires a competency-based approach. Employee competence is the main parameter in measuring an individual's suitability for organizational needs and long-term career development (Spencer & Spencer, 1993). Competency models define the set of knowledge, skills, and attitudes needed to do a good job.

**Human Resource Competencies.** The concept of competence has become the center of attention in human resource development in various organizations. McClelland (1973) defines competence as a person's deep characteristics related to superior work performance. These competencies include technical, social, and cognitive aspects that directly affect the results of work.

In the context of modern organizations, competencies are developed not only to meet the needs of current jobs but also to anticipate future changes and challenges (Boyatzis, 1982). It requires a systematic and ongoing approach to competency development, including training, coaching, mentoring, and structured work experience.

Good competency management will result in excellence in innovation, change adaptation, and the organization's ability to remain relevant in the midst of market dynamics. Therefore, competence is a key element in the HR development strategy.

**Competitive Advantages of HR.** The competitive advantage of human resources refers to the organization's ability to create value that competitors do not easily imitate through superior human resource management. Ulrich (1997) explained that human resources can be a source of competitive advantage through their roles as strategic partners, administrative experts, employee champions, and change agents.

A study by Raharjo and Permana (2019) revealed that high individual competence strengthens organizational capabilities in adapting to market changes. Another study by Lubis and Sari (2020) proves that companies with a good competency structure respond faster to global challenges.

**People Capability Maturity Model (PCMM).** The People Capability Maturity Model (PCMM) is a framework developed by the Software Engineering Institute (SEI) to help organizations gradually improve their human resource management capabilities (Curtis, Hefley, & Miller, 2009). PCMM focuses on how organizations can systematically manage and develop human resources through five levels of maturity: Initial (Level 1): HR management is still ad hoc and unstructured; Managed (Level 2): The HR management process begins to be documented and monitored; Defined (Level 3): Standardized and integrated HR processes across the organization; Predictable (Level 4): HR processes are quantitatively measured and controlled; Optimizing (Level 5): The organization makes continuous improvement and innovation in HR management.

The implementation of PCMM enables organizations to improve productivity, quality of work, and employee retention through a systematic and sustainable approach. This model also helps organizations identify strengths and weaknesses in HR management so that they can design targeted development programs.

**Integration of PCMM and RBV in Human Resources Development.** HR management through PCMM is a practical implementation of RBV principles. By increasing the maturity of HR processes, organizations can manage valuable, scarce, and hard-to-replicate human resources more effectively. PCMM provides a structured framework to develop HR capabilities that ultimately become a competitive advantage. For example, at the Defined and Predictable maturity levels, the organization already has a consistent and measurable process for developing HR competencies. It strengthens internal capabilities that contribute to the uniqueness of the organization. At the Optimizing level, the organization conducts continuous innovation that strengthens its strategic position.

Thus, PCMM not only improves the quality of operational HR management but also makes a strategic contribution to the formation of valuable and sustainable organizational capabilities.

**PCMM Relationship and Competitive Advantage.** The implementation of PCMM allows organizations to develop structures and processes that support the growth of HR competencies systematically. Research by Widiyanti (2022) revealed that companies in the financial sector that reach level 4 in PCMM have higher job satisfaction and employee retention.

**Previous Studies.** Ahmad and Schroeder (2003), in their research entitled *The Impact of Human Resource Management Practices on Operational Performance: Recognizing Country and Industry Differences*, found that integrated HR management practices such as training and development, strict selection, and fair compensation systems have a significant positive effect on improving operational performance and organizational productivity. This research emphasizes the importance of human resource competence in improving work outcomes and organizational excellence. Delaney and Huselid (1996), in the study *The Impact of Human Resource Management Practices on Perceptions of Organizational Performance* prove that effective human resource management increases employee perception of organizational performance, which then affects long-term competitive advantage. They highlight the importance of integrating HR strategies with business strategies. Wright, McMahan, and McWilliams (1994) stated in the article *Human Resources and Sustained Competitive Advantage: A Resource-Based Perspective* that human resource competencies and capabilities are unique resources that can produce sustainable competitive advantage. They suggest that organizations focus on developing skills that are difficult for competitors to replicate.

Barney (1991), the pioneer of the RBV theory, in his article *Firm Resources and Sustained Competitive Advantage*, explained that companies that manage valuable, scarce, non-replicable, and irreplaceable resources are able to achieve sustainable competitive advantage. This study opens up a new paradigm in corporate strategy that places internal capabilities as the main focus. Peteraf (1993), in *The Cornerstones of Competitive Advantage: A Resource-Based View*, strengthens the RBV theory by identifying the specific conditions that make resources a source of competitive advantage, namely resource heterogeneity and resource immobility. It explains why not all organizations are able to replicate the advantages possessed by competitors. Eisenhardt and Martin (2000), in their study *Dynamic Capabilities: What Are They?* Developing the concept of RBV into a dynamic capability theory

that emphasizes the importance of an organization's ability to adapt and reconfigure resources to remain competitive in a rapidly changing environment.

Curtis, Hefley, and Miller (2009), in the book *People Capability Maturity Model*, explain how organizations can use PCMM to increase the maturity of HR management gradually. Their empirical studies show that organizations with higher levels of HR maturity have better work productivity, output quality, and employee retention rates than organizations with low maturity. Raturi and Uddin (2014), in the article *Implementing PCMM for Organizational Growth*, examined the implementation of PCMM in information technology companies in India and found that the gradual improvement of HR management processes has a significant impact on improving employee capabilities and overall organizational performance. Singh and Sharma (2018), in the study *Assessing the Impact of PCMM on HR Practices and Organizational Performance*, confirmed that the implementation of PCMM contributes to increasing the effectiveness of the HR recruitment, training, and development processes, which directly affects the company's competitive advantage.

Boxall and Purcell (2016) in *Strategy and Human Resource Management* stated that structured and competency-based HR management is a manifestation of RBV theory at the operational level. They emphasized that human resources that are unique and develop through mature processes (such as PCMM) are strategic assets that are difficult to replace. Huselid, Becker, and Beatty (2005) in the article *The Workforce Scorecard* show that the measurement of human resource capabilities and integrated performance management are key elements in realizing sustainable competitive advantage, in line with the principles of RBV and maturity models such as PCMM. Wright and Ulrich (2017), in *Human Resource Management and Organizational Performance: Yesterday, Today, and Tomorrow*, explained that the implementation of a mature and sustainable HR system, including competency development through PCMM, significantly strengthens the organization's internal capabilities in accordance with the RBV theory, thereby supporting long-term growth and competitive advantage.

**Hypothesis.** PCMM is a systematic framework to increase the maturity of HR management in an organization through a structured process, starting from planning and development to managing individual and team capabilities (Curtis, Hefley, & Miller, 2009). The implementation of PCMM allows organizations to manage HR processes in an ongoing manner so that employee competencies can be developed effectively and consistently (Raturi & Uddin, 2014). Singh and Sharma (2018) found that the implementation of PCMM significantly improves the technical capabilities and behavior of employees, which directly impacts the improvement of HR competencies. Raturi and Uddin (2014) also confirmed that companies that implemented PCMM showed significant improvements in employee capabilities and work efficiency.

H1: The application of the People Capability Maturity Model (PCMM) has a positive effect on improving the competence of human resources.

According to the Resource-Based View (RBV) put forward by Barney (1991), HR competencies are internal resources that are valuable, scarce, and difficult to replicate so that they can be a source of sustainable competitive advantage for organizations. Strong competence allows organizations to produce products or services with superior quality, innovation, and responsiveness to market needs (Wright, McMahan, & McWilliams, 1994). Ahmad and Schroeder (2003) prove that human resource competence plays an important role in improving the operational performance and competitiveness of companies. Delaney and Huselid (1996) also found a positive relationship between employee competence and the perception of organizational competitive advantage, where HR competence is the main factor in creating added value.

H2: Human resource competence has a positive effect on the competitive advantage of the organization.

PCMM, as a model of human resource maturity, facilitates the gradual process of competency development, which contributes to the strengthening of individual and organizational capabilities (Curtis et al., 2009). In other words, PCMM not only has a direct impact on human resource development but also indirectly strengthens the competitive advantage of organizations through better competencies (Boxall & Purcell, 2016). RBV supports this argument by asserting that mature and competent human resource management is a key strategic asset in

maintaining a competitive advantage (Barney, 1991). Huselid, Becker, and Beatty (2005) in The Workforce Scorecard show that organizations with mature HR management systems, such as PCMM, have a higher ability to maintain competitive advantages through improving employee quality and performance. Singh and Sharma (2018) also concluded that PCMM contributes positively not only to HR competence but also to business outcomes in the form of competitive advantage.

H3: The implementation of PCMM has a positive effect on the competitive advantage of human resources through increasing competence.

## METHODS

**Types of Research.** This study uses a quantitative approach with a causal research design to test and analyze the cause-and-effect relationship between variables. This approach was chosen because it aims to determine the effect of the application of the People Capability Maturity Model (PCMM) on human resource competence and the competitive advantage of human resources empirically. The quantitative approach allows for systematic measurement of variables as well as objective statistical analysis.

**Population and Sample.** The research population includes all employees who work in companies that have implemented PCMM. Sample enrichment of the retail sector in Bali was carried out considering the rapid development of this sector and the adoption of PCMM, which is starting to become rampant in human resource management in various modern retail companies. The sampling technique uses purposive sampling with the following criteria: The company has implemented PCMM at Level 3. Employees who are respondents are those who have been actively working for at least 1 year in the company. The total number of targeted samples is 180 respondents, with the composition of 30% managerial positions, 70% staff positions and senior staff. This division aims to obtain a representative and relevant picture of the implementation of PCMM and its impact in various sectors and levels of positions.

**Data Collection Techniques.** Data were collected through two main methods: Online survey: The questionnaire consists of three main constructs: Application of PCMM, Human resource competence, and Competitive advantages of human resources. Each construct is measured on a Likert scale of 1–5 (1 = Strongly Agree to 5 = Strongly Agree). The questionnaire items have been validated by experts (expert judgment) to ensure the validity of the contents. Semi-structured interviews:

Conducted with a number of key informants in the sample company to enrich the data and provide qualitative context related to the implementation of PCMM and its impact.

**Data Analysis Techniques.** Data analysis was carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) software with the following steps: Validity and Reliability tests include: The validity of the construct was tested using item-total correlation analysis on SPSS with the criterion of > correlation value of 0.30 considered valid; Reliability was tested with Cronbach's Alpha, with an alpha value of  $\geq 0.70$  as a good reliability standard. Descriptive Statistical Analysis: Used to describe respondent characteristics and variable answer distribution. Normality Test: Performed to ensure the data meets the assumption of normality, using the Kolmogorov-Smirnov or Shapiro-Wilk method, as well as looking at skewness and kurtosis. Correlation Analysis: Using Pearson correlation to test the relationships between variables (PCMM, HR competence, HR competitive advantage). Multiple Linear Regression Test:

Used to test the influence of independent variables on bound variables: Effect of PCMM on HR competence (H1); The influence of human resource competencies on the competitive advantage of human resources (H2); The effect of PCMM on the competitive advantage of human resources, either directly or through the mediation of human resource competence (H3) To test the effect of mediation statistically, it was carried out at a significance level of 0.05 ( $\alpha = 5\%$ ). The p-value < 0.05 indicates a statistically significant relationship/influence.

## RESULTS AND DISCUSSION

**Respondent Description.** Demographic data shows Age 65% of respondents are in the age range of 26–35 years, an age category that is considered productive and adaptive in organizations. Length of work experience: A total of 54% of respondents have more than 5 years of work experience, which indicates adequate work experience and understanding. Position: 67% of respondents occupy a mid-to-upper level position, so the data represents a strategic and operational perspective in HR management.

**Validity and Reliability Tests.** The validity test was carried out by confirmatory factor analysis (CFA) using SPSS and AMOS: All indicators of PCMM, HR Competence, and Competitive Advantage variables had a loading factor of > 0.7, which met the convergent validity criteria. The Average Variance Extracted (AVE) for each construct > 0.5, indicating that the indicator is able to explain the variance of the construct adequately. Reliability tests using Cronbach's Alpha and Composite Reliability (CR) yielded the following values: Cronbach's Alpha > 0.7 for all three constructs, indicating good internal consistency; CR > 0.7, supporting instrument reliability.

**Hypothesis Test.** The results of the path analysis are presented in the following Table 2:

**Table 2.** Multiple Linear Regression Test Results and Path Analysis

Hypothesis	Influence	Coefficient ( $\beta$ )	P-value	Conclusion
H1	PCMM → HR Competence	0.68	< 0.001	Significant, accepted
H2	Human Resource Competence → Competitive Advantage	0.72	< 0.001	Significant, accepted
H3	PCMM → Competitive Excellence (HR Competency Mediation)	The indirect effect was significant ( $\beta$ index = 0.49)	< 0.05	Significant mediation accepted

The implementation of PCMM directly improves HR competencies, and HR competencies in turn drive organizational competitive advantage. In addition, the influence of PCMM on competitive advantage is also through the mediation of HR competencies significantly.

**Application of PCMM and Human Resources Competencies.** The results of the regression test confirmed that the systematic implementation of PCMM had a strong positive influence on human resource competence. The HR management process in PCMM, which consists of five maturity levels, allows organizations to manage HR development in a sustainable, planned, and standards-based manner. It is in accordance with the findings of Paulk et al. (1993), who stated that PCMM assists organizations in optimizing human resource capabilities systematically through continuous evaluation and improvement. The data-driven approach in Level 4 and 5 PCMM drives the effectiveness of training and development oriented to the actual needs of the organization.

**Human Resources Competence and Competitive Advantage.** The significant influence of HR competencies on competitive advantage supports the Resource-Based View (RBV) theoretical framework, which states that unique competencies and strategic value are important assets for organizations (Barney, 1991). Competencies include the knowledge, skills, and innovative attitude of employees that are difficult for competitors to imitate, thus becoming a source of competitive advantage. With high competence, organizations are better able to adapt to market and technological changes, increase product/service innovation, and maintain a competitive position.

**The Role of PCMM in Increasing the Competitive Advantage of Human Resources.** Mediation testing shows that PCMM makes an indirect contribution to competitive advantage through the development of human resource competencies. It emphasizes that PCMM is not just an HR administration system but a strategic enabler that fosters a culture of learning and continuous improvement. At PCMM Levels 4 and 5, the use of HR process performance data and innovation enables organizations to respond effectively to external dynamics. Wright et al. (2001) emphasized that capabilities-based HR management contributes significantly to the creation of value and competitive advantage of organizations.

## CONCLUSION

Based on the results of the analysis and discussion in this study, several main conclusions can be drawn as follows:

The implementation of the People Capability Maturity Model (PCMM) has a positive and significant effect on improving the competence of human resources (HR). The systematic and gradual implementation of PCMM provides an effective framework for managing employee capability development. With clear standards and a continuous evaluation mechanism, the company is able to significantly improve the quality of human knowledge, skills, and work attitudes. This is evidenced by the results of statistical tests that show a positive and significant influence between PCMM and HR competence.

High HR competencies have a positive and significant impact on the achievement of human resource competitive advantage. Employee competencies, which include technical skills, innovation skills, and adaptability to changes in the business environment, are strategic resources that are difficult for competitors to imitate. Therefore, improving HR competencies directly contributes to the organization's ability to maintain a competitive position and respond better to market dynamics.

PCMM contributes indirectly to competitive advantage through improving the competence of human resources as mediators. The influence of PCMM on competitive advantage is not only direct, but more dominant through the path of improving human resource competence first. It shows that PCMM's success in building a culture of learning, continuous improvement, and data-driven performance management is crucial in creating a long-term competitive advantage.

**Suggestion.** For Management: The company needs to map the maturity level of the PCMM and develop a roadmap for gradual level improvement. For Governments and Regulators: Policies that support the improvement of national human resource capabilities through frameworks such as PCMM are needed. For the Next Researcher: Can expand the research object to other sectors such as manufacturing or services, as well as add other variables such as organizational culture and transformational leadership.

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