# EKN-1

## Knowledge Management Effect on Manufacturing Performance

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### EXTENDED ABSTRACT

Knowledge Management (KM) deals with the management of three vital aspects which are knowledge resources, processes and factors. This research investigated the effect of KM on manufacturing performance and their relationship. KM was represented using various constructs for knowledge resources, KM processes and KM factors (i.e. human capital, knowledge and information capital, intellectual property, knowledge acquisition, knowledge creation and generation, knowledge utilization and application, knowledge storing and updating, knowledge sharing and transferring, knowledge protection, culture, management leadership and support, organizational infrastructure and technology, and strategy). Each of these constructs has its own set of measurement items or metrics. On the other hand, manufacturing performance was measured based on quality, cost, time and delivery, flexibility, and customer satisfaction. Data for KM and manufacturing performance were collected from a large number of manufacturing companies through a questionnaire survey. Based on these data, various hypotheses that linked KM with manufacturing performance were tested using structural equation modeling. First-order and second-order confirmatory factor analyses were done on the measurement models and the fitness of the overall structural model was evaluated. The hypotheses testing results showed that KM has a significant and direct effect on manufacturing performance, implying that it is a means to improve production performance. In essence, KM factors have the strongest positive effect on manufacturing performance, followed by knowledge resources and KM processes.
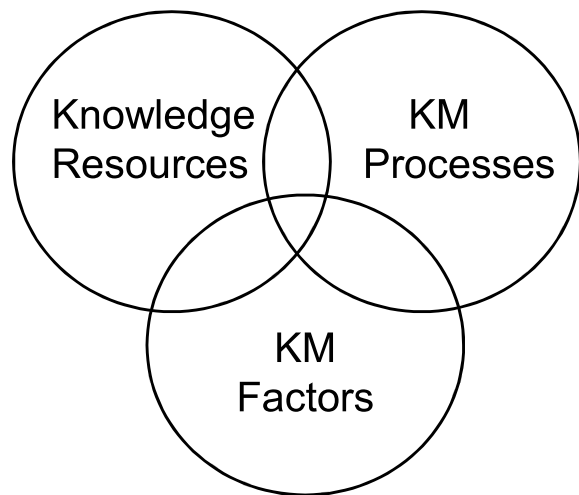
# Knowledge Management Effect on Manufacturing Performance

**Kuan Yew Wong, *PhD***

# Knowledge Management (KM)

KM is the management of knowledge resources and processes with a set of supporting factors.

Three KM aspects:

## Knowledge Resources

Human capital
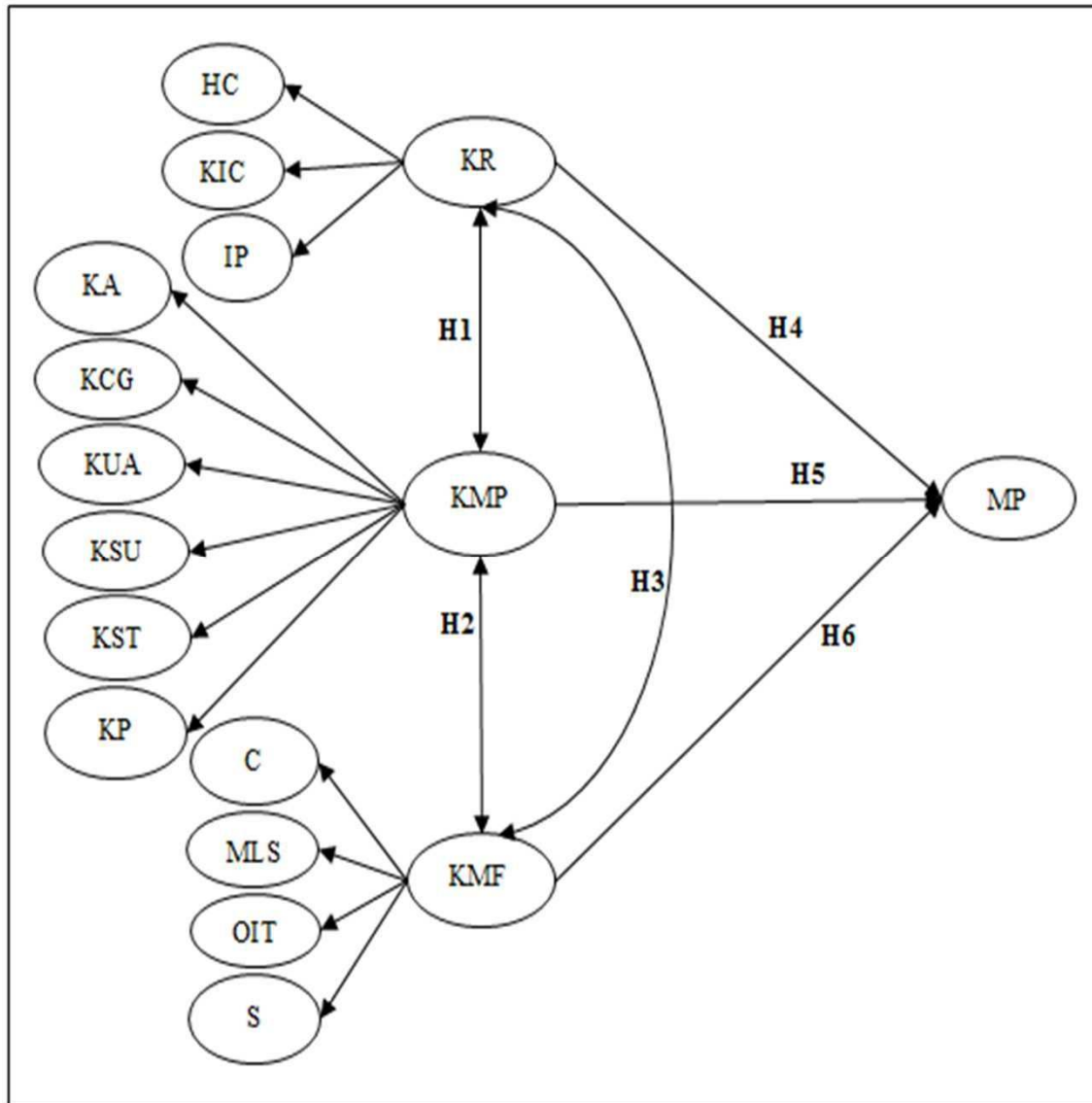Knowledge and information capital
Intellectual property

## KM Processes

Knowledge acquisition
Knowledge creation and generation
Knowledge utilization and application
Knowledge storing and updating
Knowledge sharing and transferring
Knowledge protection

## KM Factors

Culture
Management leadership and support
Organizational infrastructure and technology
Strategy

# Relational Model



KR: Knowledge Resources
HC: Human capital
KIC: Knowledge and information capital
IP: Intellectual property

KMP: Knowledge Management Processes
KA: Knowledge acquisition
KCG: Knowledge creation and generation
KUA: Knowledge utilization and application
KSU: Knowledge storing and updating
KST: Knowledge sharing and transferring
KP: Knowledge protection

KMF: Knowledge Management Factors
C: Culture
MLS: Management leadership and support
OIT: Organizational infrastructure and technology
S: Strategy

MP: Manufacturing Performance

## Hypotheses

H1: The covariance between KR and KMP is significant.

H2: The covariance between KMP and KMF is significant.

H3: The covariance between KR and KMF is significant.

H4: KR has a significant and direct effect on MP.

H5: KMP has a significant and direct effect on MP.

H6: KMF has a significant and direct effect on MP.

## Data Collection and Analysis

Data were collected from a large number of manufacturing companies through a questionnaire survey.

All the hypotheses were tested using structural equation modeling.

Confirmatory factor analyses were done on the measurement models.

The fitness of the overall structural model was evaluated.

## Results and Conclusions

Knowledge resources, KM processes and KM factors are shown to be significantly correlated with each other.

Knowledge resources, KM processes and KM factors have a significant and direct effect on manufacturing performance, implying that KM is a means to improve production performance.

KM factors have the strongest positive effect on manufacturing performance, followed by knowledge resources and KM processes.