

# Organizational Culture Transformation towards Management of Technology

Augustina Asih Rumanti and Harries Wirawan

**Abstract**—A research that conducted in small medium enterprise (SME) that involved in CV. Kajeye food, has a purpose to identify the level of technology SME has, with using technometric model. Based on value of total contribution coefficient (TCC), we got a value of 0.0566, indicated that the technology belongs to CV. Kajeye food is very low and its technology classified as a traditional one. Besides identifying the level of technology mentioned above, this research also analyzing the organizational culture transformation as an impact of management of technology implementation in order a holistic change this SME had done. With a fusion of model formulation: JCG mastery of change model, organization culture transformation model, technometric model, and integrated technology-business plan model, so in the end we can give a recommendation about the step of strategic planning that SME can implemented in their business process.

**Index Terms**—Organizational culture transformation, small medium enterprise, technometric model.

## I. INTRODUCTION

In recent national economic state, small medium enterprise emphasis that the development of economic sector must be concentrated in SMEs sector and cooperative, with these reasons : 1) The sum of SMEs achieved 55.4 million SMEs (data until March 2012) 2) One of the kind of business that could survive from impact of national economic crisis (year 1998) and global economic crisis (year 2008) 3) SMEs could contribute to 60% GNP 4) Rate of employee absorption surround SME's environment up to 97% [1].

SME's rated to be given suitable role and contribution that can be used in almost developing countries, including Indonesia, because SMEs could motivate local entrepreneurial with national resources saving, could absorb a quite large amount of employee, and these development of small business could motivate the implementation of inter-region decentralization, because it can be developed in rural sectors.

Things that causing nowadays industrial intense competition are not only influenced by the organization's output of quality or quantity anymore, but there is a trend of how an organization could explore their skill through its technology, the use of its technology, and the future use of its technology. Technology can be defined as knowledges, products, processes, equipments, methods, and systems those been applied to produce products or to provide services [2].

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Literally, technology is all humans can be performed to gain a better standard of living, from these definitions, in mind that the ultimate goal of using technology is welfare [3].

Technology indirectly related to the economic system, culture and politics. Technological changes that occurred caused by economic, culture or politics may lead to positive and negative impacts for society, therefore, management of technology is needed to minimize negative impacts and maximize the benefits gained.

According to Tjakraatmadja in 1997, management of technology is a knowledge needed to maximize the added value of technology in a manner appropriate management process[3]. Management of technology is an interdisciplinary scope that integrates science, engineering, management knowledge, and practices [2]. The scope of management of technology are surrounded by a variety of aspects, namely engineering, natural science, social science, industrial science, and business theory. Thing that be the focus of the management of technology is the aspect of technology, so management of technology treats technology as a seed of wealth creation system.

According to the fact that amount of SME in Indonesia is quite large and scattered in various regions and sectors, we believe that each SME has its own organizational culture, that distinguishing one and another, where organizational culture is the perception of workers and how it is formed beliefs pattern, values, and expectations [4]. Furthermore, organizational culture is a pattern of values, beliefs and customs that are owned and held together as well as in the adoption by the people who make up an organization [5]. From the two statements above, it is clear that organizational culture has a strong influence to form the behavior of members of the organization by providing a sense of identity, strengthen loyalty among staff and customers, building recognition, and receptive to reason against a decision of the company made [6].

With the statements mentioned above, it is very clear that SME needs awareness of knowledge and mindset adjustment towards the importance of technology, where this technology term will be defined to the smaller parts called technology components, THIO, those are : technoware (facilities component), humanware (human resources abilities), infoware (document and information), and orgaware (frame work technology).Management of technology is a bridge to get around the needs of the business against the increasingly high-technology, reinforced by the fact that the success of a business unit is not only depends on ability to design a system to generate value added output, but is also determined by the managerial ability to anticipate business environment.

The city of Malang, East Java, Indonesia is filled with high potential of fruits, tempe, and vegetables chips

production. It is not independent by the discovery of vacuum frying machine, with the newest technology of frying in the vacuum air state, so fruits and vegetables can be processed perfectly with the removal of the water content in it so that the taste, aroma and its nutritional is unchanged.

CV. Kajeye Food is a SME producing various fruits and vegetables chips such as jackfruit chips, apple chips, mango chips, watermelon chips, papaya chips, mushroom chips, carrot chips, et cetera. Based on the results of interview with the owner, we knew that SME has fulfilled itself with international certification of ISO 9001:2008 and HACCP certification (Hazard Analysis and Critical Control Points).



Fig. 1. Kajeye food's fruit chips.

This research involved in CV. Kajeye Food because this industry is highly visible role of technology in the development of business and systems and its business processes. This SME is necessary considered to analyze the strategic studies in order to defend its existence among another hi-tech industries. With the implementation of its newest technologies, such as vacuum-frying machine, boiler, and cold storages, it is enable that SME could expanding rapidly, that need to be well-organized in its relation of organizational culture transformation and future's strategic planning.

This research which seeks to solve CV. KajeyeFood's problem aims to:

- 1) To identify the technology level contained in CV. KajeyeFood, Malang, Indonesia.
- 2) To give recommendation about the step of strategic plannings related with its organizational culture and implementation of management of technology in all over business process area this SME done.

Problem's boundaries in this study are as follows:

- 1) Observations were made in 26-28 June 2013 and data collecting was done in 22-25 September 2013 in CV. KajeyeFood, Malang, Indonesia.
- 2) Respondent of this study is the owner and employer of CV. KajeyeFood.
- 3) Technology will be analyzed as technology components (technoware, humanware, infoware, and orgaware)
- 4) This study is limited only in recommendation step, so it won't be done till implementation step.

## II. LITERATURE REVIEW

Technometric model is the terminology that is used to measure technologies explicitly. Technometric model measures the combined contribution of each component to the technological sophistication of the technology that is

operated on the transformation process. The assessment of four components of technology are expected to give contribution to the transformation of inputs into outputs. The classification of level technology shown in Table I.

TABLE I: TCC'S LEVEL OF TECHNOLOGY

TCC Value	Classification
$0.1 \leq TCC \leq 0.3$	Traditional
$0.3 \leq TCC \leq 0.7$	Semi-Modern
$0.7 \leq TCC \leq 1$	Modern

State of the art is a level of complexity of four technology components. State of the art is a depiction of the actual technological conditions for each technology component contained in SME. The component contribution equation represents how the actual conditions supposed to be owned and used in CV. Kajeye Food. Therefore, the comparison between state of the art value and contribution component value is defined as contribution component intensity. It is shows the use percentage of technology components.

## III. RESEARCH METHODOLOGY

### A. Data Processing Method

In the research process, data processing will use technometric model, which is the terminology used to measure explicitly technologies through four technology components. Technometric model measures the combined contribution of each component to the technological sophistication of the technology that is operated on the transformation process.

### B. Research Strategy

The study was based on case studies, the analysis addressed to CV. Kajeye Food overall. Researchers chose this SME because of the organization background is appropriate to the topic and research studies, namely the implementation of management of technology with regard to organizational culture transformation. Through the organization's culture, values can fundamentally set up for then make strategic planning in order to achieve the expected results.

## IV. RESULTS AND DISCUSSION

The data used in this study collected qualitatively and valuation given by reference to the level of sophistication use to change the data type to quantitative. The results of data processing using technometric model gives results that technoware technology components had fully utilized its potency, which cannot be achieved by other technologies components, namely humanware, infoware, and orgaware.

State of the art value shows how much the use of SME's current technology component, while the value of the contribution of components stated maximum limit of potential development of SMEs technology component. Result of data processing on technometric model shown on Table II and Fig. 2 shows the results of data processing the using technometric model.

TABLE II: THE RESULT OF TECHNETRIC DATA PROCESSING

Technometric Components	State of The Art	Component Contribution	Component Contribution Intensity
Technoware	0.2944	0.2586	1
Humanware	0.4500	0.4889	0.9204
Infoware	0.5500	0.5981	0.9196
Orgaware	0.6000	0.6556	0.9152

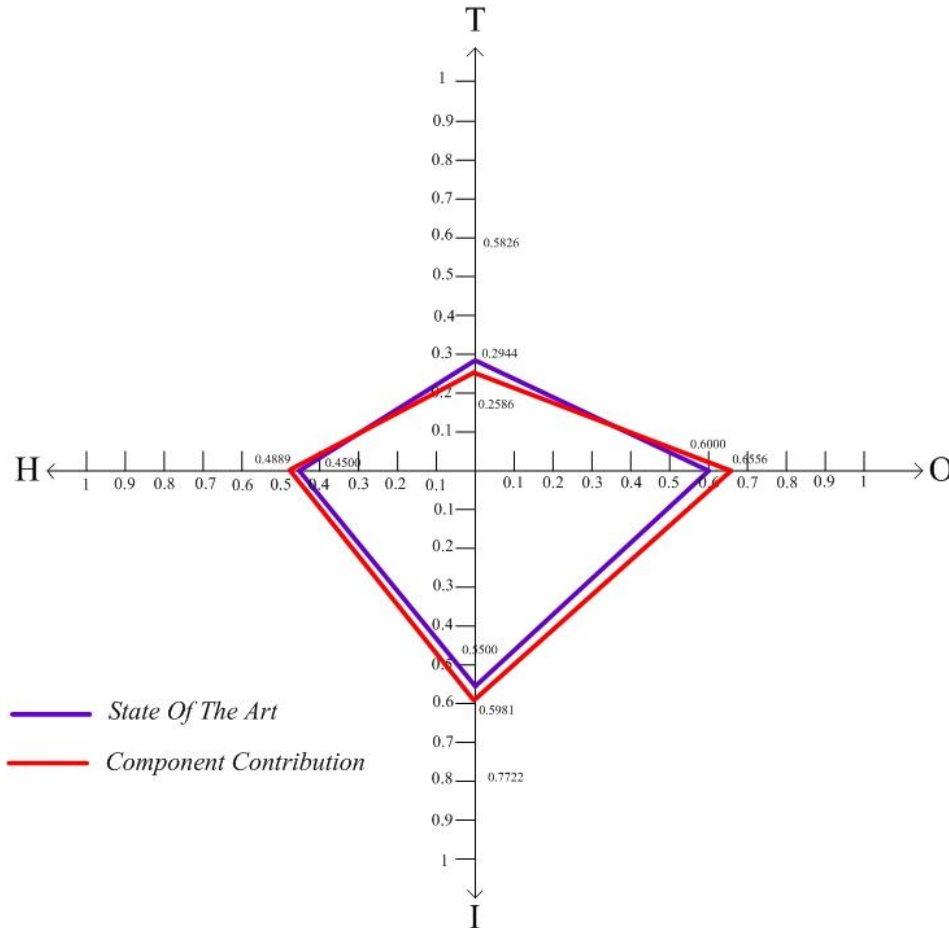


Fig. 2. The comparison of THIO diagram based on state of the art value and component contribution.

V. ANALYSIS

Analysis regarding the implementation of management of technologies that affects the organizational culture transformation in the strategic planning of SME's will be provided through the formulation of joint models are interlinked. Fig. 3 will show that the combined model formulation.

Fig. 3 shows the joint between the model formulations that be the focus of this research study. The first step in the strategic planning proposals for the CV. Kajeye Food is fundamental purpose organization. This step begins with a thorough change carried out on the CV. Kajeye Food so the 'new' companies is supposed to prepare in advance the values and goals that are fundamentally to plan for future business development. Through Fig. 3, the changes to the company holistically begins with an organizational culture with all its functions, in which the organization conducted a thorough change is influenced by external factors, individual factors, and internal factors. The sub factors of internalfactors

studied further with new technology implementation that generates organizational culture transformation.

After CV. Kajeye Food specify fundamentally assumptions and values and objectives of the company, then CV. Kajeye Food set general goals those are translated into strategic planning. Strategic planning, according to Bhalla in 1987, should be translated into two tracks that run parallel and sustainable through effective inter-organization communication, namely the business goals and technology goal for each to determine its planning [2]. In relation to the management of technology, THIO diagram shows the potential for the development and utilization could be an input for the step of technology planning.

Through business planning and technology planning, the next step is the allocation of all the resources of the organization. It is important to achieve the company's goals, then do the implementation plans and evaluation process is carried out so that the company can achieve results such as increased profit margins, new product development, and others.

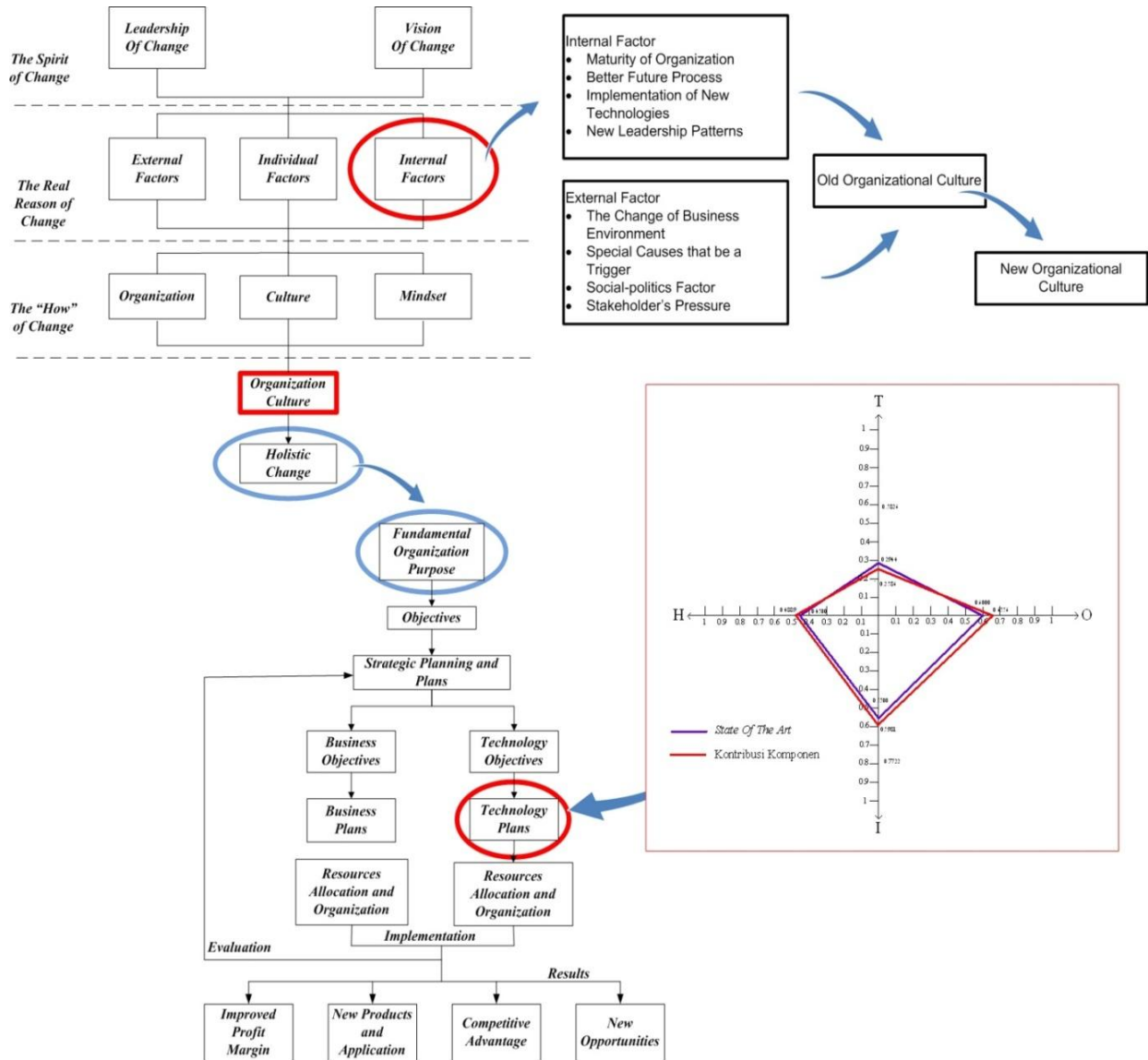


Fig. 3. Formulation of integrated technology – business plan model with jcg mastery of change model and organizational culture transformation model.

VI. CONCLUSION AND RECOMMENDATION

A. Conclusions

- 5) With the value of Total Contribution Coefficient (TCC) is 0.0566, so we get that the technology CV. Kajeye Food use is very low, and the level of technology classified as traditional one.
- 6) Implementation of management of technology with its four factors is the internal factors that could affect organizational culture transformation through the slices of technology assessment criterias and the dimensions of organizational culture. The new organizational culture can influence SME in order to determine its strategic planning.

B. Recommendations

- 7) Balancing the gap between technology components is very important to be done, in order to run these technology components with continuous and be aligned in the process of transforming input to output.
- 8) Technoware does not need further development because CV. Kajeye Food have maximumly utilized its technoware's technology potential.

- 9) Humanware should be the main developing focus because of having the lowest value of state of the art, with the operational recommendations mentioned below :
  - a. Increasing the awareness of duty, discipline, and responsibility with an informal briefing in the early work days and do supervisory control needed and maintain the kinship relation in the organization.
  - b. Increasing the creativity and innovation in problem solving and the skill of maintaining production facilities, with the ways of employee training suit to its each job description.
  - c. Increasing the skill of teamwork and management's leadership. Things can be done with emphasizing production target can't be done without teamwork.
- 10) Infoware technology component still can be developed, here are the operational recommendation :
  - a. Increasing the factor of network and internal information system with forming such as dashboard to indicate organizational performance and production target quantity thatt must be achieved.

- b. Increasing the administration technology that can be important to managements, with using computerized system in all areas of organization administration.
- 11) Orgaware technology component still can be developed, here are the operational recommendation :
- a. Increasing otonomy factor and future-oriented organizational vission, with the emphasizing of organizational culture strengthening so that can form strong organizational identity. This identity and fundamental values of organization is important to huild organization fundamental purpose that suits with organization vission.
  - b. Create a condusive climate and work environment , with the implementation of leadership effectively and try to achieve worker's job satisfaction and welfare.
  - c. Increasing the organizational adaptiveness with external dynamic environment, with building a good relation to interested parties, such as local government to get corporate certificate or external financial support.

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