

Winter 12-6-2018

Critical Success Factors of Alignment between Websites and OCAs in the Manufacturing Industry

Tsung-Yueh Lu

*Department of Industrial Engineering and Systems Management, Feng Chia University, Taiwan, R.O.C.,
cs320866@yahoo.com.tw*

Wei-Hsi Hung

Department of Management Information Systems, National Chengchi University, Taiwan, R.O.C., fhung@nccu.edu.tw

Yun-Chen Lin

Department of Information Management, National Chung Cheng University, Taiwan, R.O.C., jne824@ms39.hinet.net

Mei-Fang Wu

Department of Industrial Engineering and Systems Management, Feng Chia University, Taiwan, R.O.C., mfwu@fcu.edu.tw

Follow this and additional works at: <https://aisel.aisnet.org/iceb2018>

Recommended Citation

Lu, Tsung-Yueh; Hung, Wei-Hsi; Lin, Yun-Chen; and Wu, Mei-Fang, "Critical Success Factors of Alignment between Websites and OCAs in the Manufacturing Industry" (2018). *ICEB 2018 Proceedings*. 82.
<https://aisel.aisnet.org/iceb2018/82>

This material is brought to you by the International Conference on Electronic Business (ICEB) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICEB 2018 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Critical Success Factors of Alignment between Websites and OCAs in the Manufacturing Industry

(Full Paper)

Tsung-Yueh Lu, Department of Industrial Engineering and Systems Management, Feng Chia University, Taiwan, R.O.C.,
cs320866@yahoo.com.tw

Wei-Hsi Hung*, Department of Management Information Systems, National Chengchi University, Taiwan, R.O.C.,
fhung@nccu.edu.tw

Yun-Chen Lin, Department of Information Management, National Chung Cheng University, Taiwan, R.O.C.,
jne824@ms39.hinet.net

Mei-Fang Wu, Department of Industrial Engineering and Systems Management, Feng Chia University, Taiwan, R.O.C.,
mfwu@fcu.edu.tw

ABSTRACT

In this study, a list containing twelve organizational critical activities (OCAs) of manufacturing industry is found out by the interviews with executives and revision of two experts. The analysis on secondary data and the deeper interviews are carried out to obtain the critical success factors of the alignment between websites and OCAs in the manufacturing industry. Six common critical success factors of the three companies are: Support of Executives, Excellent and Professional Team, Full Communication, Harmonic Website Build Process, Technical Support, and Complete Information System Architecture. Finally, this study hopes that companies in the manufacturing industry can improve the competitiveness according to the result of this study.

Keywords: Organizational critical activities, critical success factors, alignment, manufacturing industry and organizational success.

*Corresponding author

INTRODUCTION

Organizations frequently carry out important and continuous activities on organizational internal operations to facilitate organizational success. These activities, called organizational critical activities (OCAs), are given abundant resources. Besides, executives supervise and guide these activities periodically. With social changes and advance, information technology has entered everyone's daily life. It brings people convenience, helps employees shorten working hours, and changes the original organizational ecology.

However, with enterprises to adopt E-ops one after another, e-commerce has been regarded as the primary corporate operational channel. In the operational process, some enterprises succeed but some fail. With the continuous advance and innovation of network technology, enterprises must think about how to adopt E-ops appropriately, especially exploring how to conduct self-evaluation of E-ops effectively. For example, Chen et al. (2017) sought to identify a set of key weighting indicators on tourist attractions in Taiwan, and develop a self-evaluation mechanism of quality control on tourism business, using the Analytic Hierarchy Process and Delphi (AHP-Delphi) approach.

Organizational Critical Activities (OCAs) were introduced by Hung in 2006, whose research emphasized the collegiate OCAs which the web supported. The research subjects on OCAs is deficient. This study adopts manufacturing industry as an example to explore the maturity of alignment between websites and OCAs to provide organizations with foundation when carrying out OCAs. In this study, the definition of OCAs is as follows:

Activities must be continuously implemented by the organization for the success in the industry. OCAs are regarded as an essential element on the short-term, mid-term, and long-term success of industry. Thus, they will receive a huge amount of resources and frequent supervision and instruction from executives.

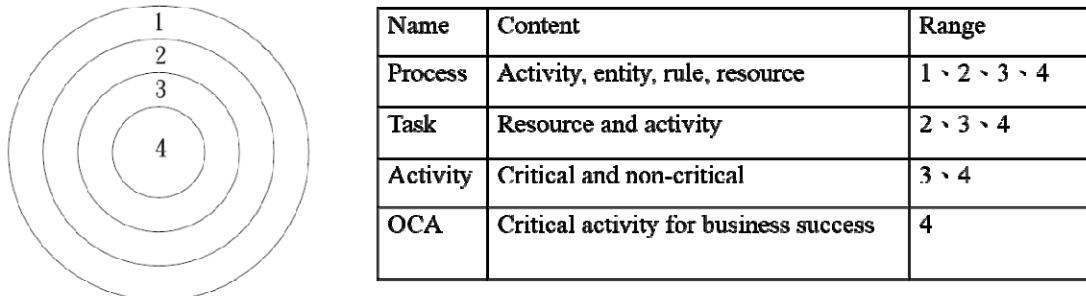
Now, there have been many different proposed evaluative mechanisms of corporate websites, which can also be used to evaluate the applicability, quality, performance, and so on of websites, but these methods or mechanisms cannot evaluate OCAs. Hung (2006) developed a set of evaluative methodology of "Organizational Critical Activity Web Support Evaluation Methodology" (OCAWSEM), which can evaluate the degree of OCAs which websites support.

Hence, this study focuses on the manufacturing industry and hopes that the following goals can be achieved: how the website aligns OCAs; what factors influence the alignment between websites and OCAs? What critical success factors (CSFs) facilitate alignment between websites and OCAs?

LITERATURE REVIEW

2.1 Organizational Critical Activities (OCAs)

Hung (2006) proposed that Activity should be different from Process and Task; Process means hierarchical interactive Activity; Task includes Activity and Resource at the same time. The differences among various terms discussed before are shown in Figure 1 below.



Source: Hung (2006).

Figure 1: The relationship among process, task, activity, and OCA.

The comparison of activity, task, process, and OCAs is shown in Figure 1 above. Organizational Critical Activities (OCAs) are activities that organizations must carry out continuously for success in the industry. Besides, OCAs are deemed factors for industrial short-, mid-, and long-term success. Moreover, Organizations will invest a lot of resources in OCAs, and executives will monitor and guide OCAs.

In this study, there is also a comparison between organizational critical activity and corporate strategy since they are easily confused. Indeed, there were some differences between them. The research of strategy started from Chandler (1962) at the earliest. Chadler (1962) defined strategy as the actions to be taken and criteria of allocation of resources to decide and achieve long-term goals, and it highlights strategic thinking as the nature of action to achieve corporate objectives. Hitt et al. (2001) indicated that corporate resources and strategy interacted to produce positive returns. Casadesus-Masanell and Ricart (2010) indicated that strategy referred to the choice of business model through which corporations would compete in the marketplace. Grover (2016) defined strategy as a pattern of plan that integrated an organization's values, major goals, policies and action sequences into a cohesive whole. In contrast, organizational critical activities are the activities to be carried out continuously by an organization to achieve success. They are the activities and essential elements for an industry to achieve short-term, mid-term, and long-term success. It only emphasized whether the activity itself can achieve the organizational success.

2.2 Website evaluation

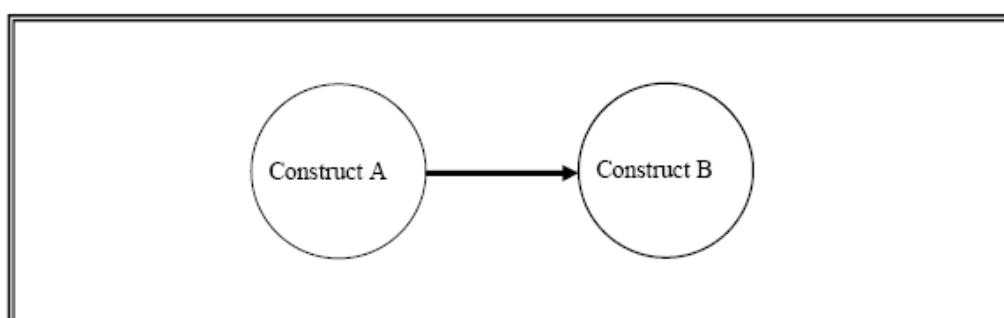
Various views of website evaluation were adopted in the literature. One is based on the evaluative standard of network type. Gregory and DiPietro (2010) proposed a conceptual model that can be used to evaluate the functional performance of hospitality and tourism websites. This model will evaluate the websites from the perspective of information provision, communication, transactions, relationships, and technological merit, and how those apply to the overall website.

Kaya (2010) proposed a multi-attribute e-business website quality evaluation methodology based on a modified fuzzy TOPSIS method. In the proposed methodology, weights of the evaluation criteria are generated by a fuzzy AHP procedure. Wani et al. (2017) proposed and tested an evaluation model for retail travel websites that combined the traditional utility-based measures with hedonic measures which collectively create a more comprehensive measure for the IS evaluation of consumers' focused websites. Zahran et al. (2014) indicated that website evaluative methods included user-based usability evaluation methods (UEMs) such as users' testing and think aloud, evaluator-based usability evaluation methods (UEMs) such as heuristic evaluation, and automatic website evaluative tools.

2.3 The concept of OCAWSEM alignment

OCAWSEM (Hung, 2006) is a website evaluation method focused on finding the alignment between websites and organizational critical activities. Tallon and Pinsonneault (2011) indicated that strategic information technology alignment remains a top priority for business and IT executives. The feature of this method is one-way alignment (see Figure 2), which is defined as Construct B offering the alignment for Construct A, while Construct A must be equipped with driving force and the capability of adjusting the alignment mode. Yet, Construct B must support the driving force of establishing Construct A. For example, Pyburn (1983) tried to align MIS plan with organizational strategies. Tavakolian (1989) aligned information technology architecture to enhance the strategy and competitiveness of organization. Ruzza et al. (2017) indicated that information architecture (IA) is an essential

component of a website. Within the complex, large-scale organizational environment, the practice of information architecture must deal with a number of critical management issues.



Source: Hung (2006).

Figure 2: One-way alignment.

The two-way alignment is to establish the relationship between two objects, while both of them are equipped with driving force. Baets (1992) suggested that the information system strategy can be included in the organizational strategy, and it must be ensured that they are parallel to each other. Tallon and Kraemer (1998) questioned to what extent the strategic alignment should support the strategy of organization. Luftman et al. (2000) thought that alignment was related to how to coordinate with organizational structure, and how the organization should respond to achieve the harmony. Kearns and Sabherwal (2006) highlighted the importance to consider the planning and implementation of IT projects when the effects of business–IT strategic alignment were examined and to share domain knowledge and planning behavior when the effects of contextual factors on business–IT strategic alignment were examined. Managers can use these results to develop more comprehensive action plans for achieving greater business–IT strategic alignment, and for translating alignment into enhanced IT effects on business performance. Ullah and Lai (2011) presented an organizational goal-oriented required elicited approach which will allow the IT department to better understand the business goals of the organization to enable them to develop an IT system which will meet business expectations.

This study emphasized the critical success factors of the maturity of alignment between websites and organization critical activities. This structure is based on the fact that the website has driving force and is capable of adjusting the alignment mode. Therefore, the two-way alignment and other alignment concepts proposed by various aforementioned studies are not applicable to this study. In this study, the one-way alignment mode has been adopted to explore the maturity of the alignment between websites and organizational critical activities, and the critical success factors can help websites and organizational critical activities to achieve higher maturity of alignment.

2.4 Critical Success Factor (CSF)

There were fewer studies on critical success factors before 1979, and there were different ideas about the name of critical success factors. Some called them strategic factors, key-result areas, strategic variables, or key activities. As more experts were dedicated to this field after 1979, the names and views on the critical success factors have been gradually consistent.

Scholars have proposed methods for finding critical success factors. For example, Hofer and Schendel (1978) in “Strategy Formulation: Analytical Concepts” indicated that critical success factors can be confirmed by the following five steps: (1) factors related to the competitive environment in the industry should be confirmed; (2) different weights should be granted in accordance with the importance of each factor; (3) the competitive situation in the industry should be evaluated; (4) the weight score of each factor needs to be calculated; (5) each factor should check the current situation of the enterprise to compare the priority and to determine whether the result is reasonable. Chow and Cao (2008) proposed a survey study on the critical success factors of Agile software development projects using the quantitative approach. Based on the existing literature, a preliminary list of potential critical success factors of Agile projects were identified and organized. Subsequently, reliability analysis and factor analysis were conducted to consolidate this preliminary list into a final set of 12 possible critical success factors for each of the four project success categories – Quality, Scope, Time, and Cost. Zhou et al. (2017) proposed a new method called D-DEMATEL which combines D number theory and decision-making trial and evaluation laboratory (DEMATEL) to identify the critical success factors (CSFs) in emergency management.

Saaty (1980) proposed that the confirmation of critical success factors can be analyzed by the “Analytic Hierarchy Process” (AHP), which is to collect opinions from scholars, experts, and participants via group discussion, and to simplify the complicated problem assessment data into concise element hierarchy system. The contribution or priority of the composition elements of each level on a certain element of the previous level can be calculated in accordance with experts’ assessment result; the AHP method provides an effective structure for group decision making in order to regulate the process of group thinking. A numerical value must be

assigned to every variable of the related problem to help the decision maker maintain a cohesive thinking style to get a conclusion and to enhance the reliability of AHP by group decision making. For example, Sambasivan and Fei (2008) explored the factors and sub-factors critical to the successful implementation of ISO 14001-based environmental management system (EMS) and benefits that can be reaped from the implementation. An empirical study using the analytic hierarchy process (AHP) was carried out to find the relative weights and priorities of these critical success factors and benefits. Garg et al. (2012) has used analytic hierarchy process (AHP) in order to evaluate the identified 14 critical factors of customer experience (CE) and to find their priorities for success in banking organizations. Saaty (1980) believed that there were four steps in the use of AHP for dealing with the decision-making problem: to establish hierarchy, to establish paired comparison matrices, to calculate priority and eigenvalue, and to examine the consistency of matrices.

Bullen and Rockart (1981) proposed by interview to find out critical activities from practical operations of organizational management in different levels. Objectives and tasks of department managers can be confirmed in accordance with management procedure after objective interviews of related department managers, and then individual critical success factors can be provided in accordance with their practical experiences and needs. The corporate critical success factors for achieving this goal can be organized via analysis and screening, and they can be prioritized to determine the development of corporate activities and information so that corporate resources can be effectively distributed among critical activities, and evaluation indicators can be established in allusion to the implementing effect.

In literature, it has been revealed that methods of AHP, interview, market analysis, and so on can be used for the research of critical success factors. Most methods emphasize industrial and environmental related factors, and different scores must be given in order to obtain critical indicators on different scores. They must be compared with the current situation of the company to confirm the rationality. The advantageous activities will be regarded as the source of critical success factors.

In accordance with the aforementioned perspectives of critical success factors proposed by many scholars, this study adopted Rockart' (1979) definition on critical success factors: "A set of finite elements, which can be confirmed to achieve the success if these conditions are satisfactory. It also provides senior managers with the most important information source, and this information can provide decision-makers to make effective judgement and decision". Rockart (1979) also thought that critical success factors only exist in certain limited items in an enterprise, and the competitive edge of this enterprise can be assured if these items are satisfactory. Critical success factors belong to special categories in an enterprise, and the success of these categories can help enhance organizational performance. The so-called special categories also mean that an enterprise must focus on the correct key area in order to succeed. The continuous growth of an enterprise will rely on its effort dedicated to these key areas, otherwise the expected goals cannot be achieved.

RESEARCH DESIGN AND METHOD

This study adopted the design of qualitative research, in which the methods of the data collection and analysis of case study, AHP, and so on were adopted. Current research process could be divided into three main stages, including revision of assessment methods, search of research cases, and analysis of critical success factors. The main objective of revision of the assessment method of the first stage was to establish a method to help manufacturing industry identify and list organizational critical activities. The OCAWSEM assessment methodology was adopted by this study, so it must be modified to be applied to helping manufacturing industry search for organizational critical activities and the list of the organizational critical activities. The following steps were adopted in this study for revision of the assessment method in the first stage, and the detailed content of each step was described as follows:

Step 1 was about semantic correction. Organizational critical activities are the activities to be implemented continuously by the organization for the success in the industry. In this study, the organizational critical activities of manufacturing industry were discussed by interview to find organizational critical activities of manufacturing industry. Supervisors of manufacturing industry were respondents for the interview. The semantic correction of OCAWSEM assessment methodology was carried out with two experts on OCAWSEM assessment methodology to discuss and correct item by item in order to confirm the assessment process and interview questions, and then it was converted into the OCAWSEM assessment methodology of manufacturing industry.

Step 2 was about industrial modification. In this step, the in-depth case study on manufacturing industry was carried out, and we did the interview with two experts in this field. The case study was conducted via the semi-structural approach to achieve the following objectives: to correct the definition and the list of organizational critical activities to be applicable to the manufacturing industry, and to modify the interview questions of organizational critical activities. As for the case selection, we found out the contact information of two companies in the manufacturing industry. The interview was carried out after contacting these companies to explain the objective of this research and to obtain the consent of these companies. As for the data collection, in-depth data collection was carried out on each case company. The list of organizational critical activities was corrected as the list of organizational critical activities of manufacturing industry after senior members of the managerial team were interviewed.

Step 3 was about the correction of ease of use. This step was to test and correct the definition of organizational critical activities and the list of organizational critical activities of manufacturing industry developed by the previous step. The main content of correction included whether the wording of the interview was in line with the professional standard of industry, whether the list of organizational critical activities was complete, and so on to make the result generated by the content of organizational critical activities more complete and rigorous.

Step 4 was about personnel interview. This step was mainly the preliminary interview of the supervisors in manufacturing industry on the corrected list of OCAs. On personnel interview, a huge amount of contact information of domestic manufacturers was found from the Internet, news, and magazines, and so on. Then, convenience sampling in the same area was adopted to select objectives of research. Researchers contacted supervisors one by one by phone or in a written way and inquired their consent. These supervisors were notified about the procedure, importance, and the purpose of this research when they were contacted. The time of interview, their consent to voice recording, and the guidelines of interview would be confirmed.

In this stage, there were a total of 15 supervisors who participated in this interview with voice recording from 14 domestic manufacturing companies. The corporate basic information, corporate background, and personal information of respondents were shown in the following table. Researchers interviewed these 15 supervisors, asked them to provide organizational critical activities of their companies, and to correct and confirm the lists of OCAs.

Table 1: Basic information of Respondents.

Respondents' Code	Years of Service	Position	Industry
I1	7	Chief of Safety, Health, and Environmental Protection Section	Electronic Parts and Components
I2	10	Section Chief of IT Department	Retail Sale of Motor Vehicles, Motorcycles and Related Parts and Accessories in Specialized Stores
I3	16	Manager of R&D Center	Retail Sale of Motor Vehicles, Motorcycles and Related Parts and Accessories in Specialized Stores
I4	9	Group Leader of IT Department	Storage/Transportation Logistics Industry
I5	12	Assistant Vice President of Procurement Department	Machinery and Hand-tool Industry
I6	13	Manager of Business Department	Chemical Raw Material Manufacturing Industry
I7	10	Manager of Sales Department	Electronic Parts and Components
I8	8	Section Head of Production Department	Electronic Parts and Components
I9	12	Deputy Section Manager of R&D Department	Manufacture of Chemical Raw Material
I10	15	Manager of Management Department	Electrical Machine Manufacturing and Repair Industry
I11	6	Section Chief of General Affairs and Procurement Department	Storage/Transportation Logistics Industry
I12	8	Assistant Manager of Business Department	Chemical Raw Material Manufacturing Industry
I13	9	Manager of Sales Department	Chemical Raw Material Manufacturing Industry
I14	9.5	Section Chief of Production Management	Electronic Parts and Components
I15	9.5	Section Chief of Factory Affairs	Chemical Raw Material Manufacturing Industry

Step 5 was about the process of interview. In this study, the one-to-one interview was adopted with the semi-structural interview topic and open questions. Before start of the interview, the research objective was introduced again, the related things of interview were explained, and the consent of voice recording was confirmed before the start of voice recording. During the interview, the researchers didn't provide information related to OCAs, asked respondents how his/her company defined success, gradually guided respondents to describe OCAs of the company, and asked respondents to respond the content and practice of OCAs of the company. After receiving the answer, the researchers provided the list of OCAs to be confirmed and corrected by respondents in order to obtain the updated list. The interview of the following respondents would be carried out via this approach, so the list of this study

was corrected according to the opinions of 15 respondents to ensure reliability and validity. After the interview was completed, researchers appreciated respondents again, told respondents that a face-to-face or phone interview would be conducted if necessary, and informed that the result would be notified to respondents after the research was complete.

Step 6 was to organize verbatim transcription. After the interview was complete, researchers listened to the content of voice recording detailedly and repeatedly and wrote verbatim transcription according to the content of voice recording and the notes. The parts which were unclear or questionable in verbatim transcription were confirmed with respondents by phone interview in order to obtain the most complete and correct data.

Step 7 was about the subject analysis. The content of verbatim transcription was detailedly and repeatedly read, and the key words related to the research subject in the verbatim transcription were marked by a fluorescent pen as the important descriptive sentences. The marked content was numbered and classified before coding. The digital way was adopted as the coding way to find out OCAs mentioned by respondents during the interviews.

Step 8 was about an expert's correction. There was a preliminary list of OCAs after the interviews of 15 respondents were finished. However, for the completeness of this study, there would be an expert assigned to confirm whether the content and texts of this list of OCAs needed to be corrected. After the correction was finished, there would be a discussion with another OCAWSEM expert on this list of modified OCAs in order to ensure the completeness of this list and the method of OCAs.

The list of OCAs was corrected and confirmed after the aforementioned interviews of 15 supervisors. Then, there would be the suggestions and corrections of two experts to ensure that we could obtain the most appropriate list of OCAs of manufacturing industry.

The second stage was to find out the research case. In this stage, the corrected assessment methodology in the first stage was used to be applied to looking for the cases of successful alignment between websites and organization critical activities in the manufacturing industry. In this stage, preliminary interviews would be conducted on several companies in the manufacturing industry, and three companies with successful alignment between websites and organization critical activities would be selected as the objects of case analysis of critical success factors in the third stage.

The following steps were adopted in this study in the stage of finding research cases: selection of the research case and confirmation of the research case. Three appropriate cases at least would be selected in this study for the analysis of critical success factors of the case in the third stage. The selection of the research case was based on the following selection standards: (1) willing to cooperate and participate in the interview; (2) websites had a certain amount of investment and the scale; (3) companies was above small and medium-size enterprises (SMEs); (4) there was operation of websites; (5) better performance of alignment between websites and organizational critical activities in the manufacturing industry. In this study, manufacturers in southern Taiwan with more successful E-ops were found out, and the CEO or executives in the company were the targets of preliminary interviews. The data of preliminary interviews would be organized and assessed to see whether they were suitable for this study.

The third stage was the analysis of critical success factors. The main purpose was to carry out analysis of critical success factors of the case according to the three proper successful cases found in the second stage. In this stage, there would be in-depth analysis of each successful case to obtain CSFs on the alignment between websites and organizational critical activities.

This study adopted the following four steps to analyze critical success factors in the third stage. The detailed content of each step was described as follows. Step 1 was collection and analysis of secondary data. In this step, the related secondary data collected according to each research case, such as industrial monographs, newspapers and magazines, and corporative quarterlies, would be analyzed separately in order to find out the initial possible critical success factors with high alignment between websites and organizational critical activities. Step 2 was on selection of respondents. The main purpose of this step was to find out respondents adopted for the in-depth interview in this stage, such as the personnel related to the alignment between corporate websites and organizational critical activities. In this step, initial interviews were expected to be carried out on Chief Information Officer and webmasters of the research case separately, and then in-depth interviews would be carried out on a few recommended employees. In the end, the research data of in-depth interviews of each case would be collected and organized. Step 3 was on triangulation. This step was mainly on mutual comparison between both data to provide the reliability and validity of the research result in this stage. This step would generate secondary data and analytical result of each case, and triangulation among data was conducted in order to enhance the reliability and validity of the results generated in this stage of this study. Step 4 was on integrated analysis of data. The main purpose of this step was to find out the critical success factors, subfactors, and aspects of factors of the research case effectively. The coding in this step was carried out via thematic analysis proposed by Boyatzis (1998). Reading original data carefully and repeatedly was to look for the themes which appeared again and again and were closely related to respondents' lives, and the methods proposed by Kvale (1996) were used to find out critical success factors of the case effectively.

This study adopted Thematic Analysis on verbatim transcription of the interview to find out the critical success factors affecting the alignment between websites and OCAs. In-depth interviews would be implemented in accordance with aforementioned structure of interviews, and critical success factors would be divided into three categories, which are CSF aspect-personage aspect, CSF aspect-organizational aspect, and CSF aspect-technical aspect according to the views of Wang et al. (2016). The critical success factors of alignment between websites and OCAs were discussed via aforementioned three aspects.

RESEARCH RESULTS

4.1 Organizational Critical Activities of Manufacturing Industry

The result of interviews of this study in the initial stage reveals a total of 12 organizational critical activities of manufacturing industry. The content is as follows. The first organizational critical activity is to develop new products. The respondents indicated that the development of new products is a very important activity for the domestic manufacturing industry. The timely development of new products and new technologies can make the company expand its business scope for corporate continuous operation. The detailed implementation methods of such activities in the manufacturing industry are different in different companies. Some companies adopt the industry-university cooperative method; some companies develop new products by proposing sample tests via monthly new product R&D seminars.

The second organizational critical activity is to develop new technology. It is also one of the very important activities for domestic manufacturing industry. New technology can decrease the production cost of the company, reduce the process cost, make customers get products in the shortest time, and create more profits for the company in order to reach the goal of helping organizations succeed.

The third organizational critical activity is to conduct market survey, which is also an important activity in the manufacturing industry. The unit price of the product in the manufacturing industry is usually not very high, so mass production must be adopted. Improper production of products due to failure in understanding market demand will result in products which need to be scrapped and the loss of the company. Respondents indicate that consumers' demand changes continuously, so companies must understand the variation of the purchase trend of the market and customers' actual demand in the fastest way. Therefore, market survey, cooperation of stores, and customized products are implemented to understand consumers' demand, create more profits for the company, and achieve organizational success.

The fourth is to expand domestic and foreign customer bases. Most companies of manufacturing industry focus on domestic customer bases. In addition to maintaining existing customers, companies must also aggressively expand their customer bases. The range which products of companies can reach is relatively broad by expanding customer bases, and companies can gain more market information by expanding customer bases.

The fifth organizational critical activity is to maintain existing customers. It is also very important for the manufacturing industry. The recommendation through existing customers can not only expand new customers but also acquire new business opportunities at the same time in this way, and can also save the cost of developing new customers and reduce unnecessary expenditures for the company. For the manufacturing industry, the advantages to maintain existing customers also include that existing customers already knew and understood the company and both had tacit understanding on cooperation, thus leading to higher probability of success for promotion of new products. And it can be easier for new customers to accept products of the company via introduction of existing customers, which can create more sales for the company. This is also a way leading to organizational success.

The sixth is to provide differentiated services. The market competition varies drastically, and only satisfying customers' demand can compete in the market. The differentiated services by make-to-order is also one of the strategies adopted by the company. The real-time personal service and product differentiation strategy create more advantages for the company to achieve organizational success.

The seventh is to guarantee product quality. Most companies strictly check every product via quality control department and quality control process, and the aforementioned step is carried out via a system to guarantee product quality. Some companies adopt their own quality control processes to guarantee product quality to make customers have more confidence in their products. Product quality is vital to a company, and good and stable product quality can contribute to organizational success.

The eighth is to control the quality of raw material. The quality of raw material has impact on corporate products. Poor quality of raw material has an influence on the quality of corporate products. Therefore, it is also an important critical activity for manufacturers. To select suppliers is based not only on price but also on coordination and quality stability.

The ninth organizational critical activity is to enhance product production efficiency. The product production efficiency is related to the shipment speed and also has an influence on whether delivery is as scheduled. If the delivery of products cannot be on time as promised, returning and destroying goods can happen in addition to failure in collecting payment. Good product production

efficiency can be approved by customers, and the higher customers approve, the more possibly organizational success can be achieved.

The tenth is to provide employee training. The quality of employees is related to the professional skill on products and the attitude of dealing with various situations. The better the professional knowledge of employees is, the lower the probability of errors is, and the company is still the biggest beneficiary. The lower probability of errors will result in higher production efficiency of the production line, faster shipment speed, and thus better profitability. Therefore, the higher the personnel quality is, the faster the organizational expected success is achieved.

The eleventh is to enhance the working efficiency of internal staff. The working efficiency of internal staff has an influence on the overall work flow. Higher working efficiency will shorten the finished time of products and the time of delivery of products, and customers' confidence on the company will be improved. Therefore, the enhancement of working efficiency of internal staff is vital to companies in this industry.

The twelfth is to control cost. The gross profit margin of the product of manufacturers is usually not high, so they must reduce cost via mass production. Therefore, the cost control is the decisive factor for profitability. Better cost control will lead to increase of profit, so cost control is a very important organizational critical activity for manufacturers.

4.2 Introduction of Companies of Case Study

Company A is the leader in production of EMI (Electromagnetic Interference) shielding material, which is applied to the soft composite laminated packaging materials of cables and wires, 3C products (computer, communication, and consumer electronics), food packaging, and medical equipment. Main products are all developed by R&D department of company, which can also customize products via its own production line in accordance with customers' demand. This company has innovative capability on products. In addition to the corporate websites, internal staff also use the ERP (Enterprise Resource Planning) system and forum to carry out procurement and production management activities of the company. Company B is in the upstream of electronic technology industry. Company B got the technical support from the parent company in Japan since the plant was built and operated. Besides, the management system of Company B is based on international business management system of AlliedSignal, Inc. in US and Asahi Kasei in Japan. Because of the effort of the entire staff, the performance, quality, and productivity of Company B have been dramatically improved and well recognized by customers and the investing parent company. Company C is a professional OEM (Original Equipment Manufacturer) and ODM (Original Design Manufacturer) production company. Company C has established a scientific, bio-technological, and digital production and sales platform connected to the international market and synchronized with the world, and the platform provides the strong support for product development of Company C. Company C currently owns three major plants. Company C owns an excellent management team and maintains the operation philosophy, "Product Quality of Naturalization, Manufacturing Technology of Scientization, and Healthy Food of Popularization" to pursue corporate continuous operation and growth.

4.3 Result of Website Alignment of Companies of Case Study

These three companies are all in the manufacturing industry. However, the degree of emphasis of each company on 12 organizational critical activities of the manufacturing industry is different due to different product categories, and the result of alignment between OCAs and websites in each company is different. Website evaluation of Company A, Company B, and Company C is in Table 2 below.

Table 2: Website Evaluation of Company A, Company B, and Company C.

Item No.	OCA	Website Support / Interview Company / Difference		
		Company A	Company B	Company C
1	Develop New Products	3/7/-4	9/9/0	7/1/6
2	Develop New Technology	6/5/1	6/10/-4	6/2/4
3	Conduct Market Survey	10/6/4	10/7/3	10/8/2

4	Expand Domestic and Foreign Customer Bases	5/12/-7	3/3/0	1/7/-6
5	Maintain Existing Customers	4/11/-7	4/2/2	2/6/-4
6	Provide Differentiated Services	2/10/-8	1/12/-11	3/12/-9
7	Guarantee Product Quality	1/1/0	5/4/1	5/4/1
8	Control Quality of Raw Materials	8/4/4	7/5/2	4/3/1
9	Enhance Product Production Efficiency	7/3/4	8/6/2	8/11/-3
10	Provide Employee Training	12/8/4	11/11/0	12/9/3
11	Enhance Working Efficiency of Internal Staff	9/9/0	2/1/1	9/10/-1
12	Control Cost	11/2/9	12/8/4	11/5/6

On the results of alignments of these three companies, there are different reasons why they failed. Some factors are based on technical consideration, some factors are based on consideration of risk management, and some factors indicate that website support is not the most appropriate method. The following factors have been found out after induction and collation:

The first factor is due to the difficulty in breakthrough of current technology. Organizational critical activities about products, such as guaranteeing product quality, controlling quality of raw materials, enhancing product production efficiency, and so on, are supported by internal system. The website only shows the result of this kind of information, but the internal entire operational process is not shown on the website. The second factor is consideration of risk control because cost control belongs to important confidential information of the company. The third factor is that some activities cannot be carried out via virtual methods, such as conducting market survey, accepting an order of customers' customized products, or understanding variation of the current market. The effectiveness that websites support OCAs is not significant. The fourth factor is that the market technology is not mature. The displayed information and support technologies on the website are based on most customers' demand and can't provide differentiated services on different customers. The fifth factor is that some activities cannot be implemented by adopting the same method. Different customers have different needs, and the methods to provide customers services are diversified, such as email, phone call, FAX, face-to-face, and so on communication. Websites cannot conduct different strategic services on new and old customers so the customer service via the website is usually not very effective.

DISCUSSION OF RESEARCH RESULT

5.1 Research Discussion

In this study, interviews are conducted on three manufacturing companies in southern Taiwan, and research methods are in-depth interviews and literature analysis. How can websites be aligned with OCAs? What are factors of successful alignment? These issues can be discussed from personage aspect, organizational aspect, and technical aspect. The common factors of these three companies are shown in Table 3.

Table 3: The common parts of three companies.

Item No.	CSF Aspect	Common part
1	Personage Aspect	Support of Executives
2	Personage Aspect	Excellent and Professional Team
3	Organizational Aspect	Full Communication
4	Technical Aspect	Harmonic Website Build Process

5	Technical Aspect	Technical Support
6	Technical Aspect	Complete Information System Architecture

First of all, these three companies have two common parts on personage aspect: Support of Executives and Excellent and Professional Team. On Support of Executives, all executives of these three companies attach importance to Website Build Process, but their attitudes are different. Executives of Company A prefer to authorize internal staff to deal with things of Web Build; executives of Company B dominate while employees assist executives; executives of Company C also prefer authorization, but the difference from Company A is that executives of Company C only care about the result while executives of Company A provide guidance in time during the build process.

The main purpose is to make customers find out us by website hopefully. For example, one American big company recently found out us. After we contacted it, we realized that it found out us by website (executive of Company B).

The second common factor of Personage Aspect is Excellent and Professional Team. Instructors or leaders of websites of these three companies are all executives, who often discuss current progress and offer suggestions and website build directions via meetings during website design process, but frequencies of participation are different. The degree of participation of executives of Company A is very high in the early stage of website design, and the website team includes personnel of Administration Dept. and MIS; executives of Company B participate in the entire build process, and the website team includes executives and personnel of MIS; the degree of participation of executives of Company C is high only in the early stage of design, and the website team includes employees of Planning Department and IT Department. Therefore, the degree of emphasis of executives of these three companies on the website build is that Company B is highest, Company A is medium, and Company C is lowest.

In the design stage, there are meetings for discussion with Planning Department regarding markets, plans, and sales methods of new products because the main purpose of websites is to interact with consumers. After websites are online, the information on the website is adjusted in time in accordance with market reaction to make consumers be able to get the latest information (executives of Company C).

The common factor in the organizational aspect, the CSF aspect of the second category of these three companies, is Full Communication. The communication of Company A is via face-to-face discussion, the communication of Company B is via E-mail, and the communication of Company C is via video, E-mail, information sharing of Intranet, and regular meetings. On the communication frequency, Company B is highest, Company C is medium, and Company A is lowest.

This activity is carried out mainly by discussion via video, E-mail, information sharing of Intranet, and regular meetings. However, these methods are only to assist personnel to develop and to make us update data or speed up and achieve the goal of control and management during the process of development of new technology. If control and management in this aspect is proper, the company will have profits (executives of Company C).

The common factors of the technical aspect in the CSF aspect of the third category are: Harmonic Website Build Process, Technical Support, and Complete Information System Architecture.

First, on Harmonic Website Build Process, when employees of these three companies build websites, build directions emphasize current and future operational needs, corporate operational directions, expected goals, and making consumers find out companies quickly, but details vary. Company A emphasizes that the most competitive products are online; Company B hopes to advocate the philosophy and contribution of this company to the society via the websites; Company C emphasizes making customers purchase products online. These three companies have different expectations on websites. Company A emphasizes the part of the products, Company B makes people understand this company, and Company C emphasizes consumers' shopping convenience.

The company mainly hopes to emphasize various dimensions. It is not only on customers but also hopes to have contribution to this society. Information about rewards to the community is shown on websites, and we hope that websites can show this thought. Websites of the company not only have information of products but also market other dimensions of the company. (Assistant Manager of IT Department of Company B).

The second common factor is Technical Support. Intranet and Website Build of these three companies are all complete. On Intranet, Intranet of these three companies all has ERP, but there are differences on other systems. Intranet of Company A is mainly on employee training and improvement of working efficiency of internal staff. Intranet of Company B is to make customers understand order progress and data access via encrypted VPN (Virtual Private Network). Intranet of Company C is based on SAP and PDM systems. In addition, Intranet of these three companies emphasizes different parts. Company A is on improvement of personnel quality, Company B emphasizes customers' need, and Company C emphasizes cost control.

The internal staff of the company uses ERP more frequently than forums, and ERP has built-in customers' data. Salespeople often place orders in accordance with built-in customers' data (IT personnel of Company A).

The third common factor is Complete Information System Architecture. The system architecture of Company A includes knowledge management system, and different business groups can share via this way; Company B emphasizes security to make customers' information gain effective protection and security; Company C built a complaint system on problems of customers' complaints about products to understand and respond on customers' problems and to improve products. These three companies emphasize different points. Company A builds the system on corporate internal personnel use, Company B is on convenience and security of customers' data, and Company C is to understand customers' problems.

To trade with customers by encrypted VPN is mainly based on the consideration of Internet Security. Of course, the company also hopes to provide this kind of service directly by Internet without the consideration of security. On MIS, we decided to adopt such mechanism according to security concerns (Assistant Manager of IT Department of Company B).

5.2 Discussion of Differences between This Study and Literature

Prior research is mainly on BS IT Alignment, and the content of the literature is on how BS is aligned with IT. There is no literature on website alignment. Only Hung (2006) proposed four perspectives of website evaluation. These four perspectives are discussed from users' and evaluators' perspectives but different from WWW OCA Alignment. Differences are as follows:

After integration, literature of BS IT Alignment organizes 21 factors, which are divided into four aspects: systematic aspect, communication aspect, organizational aspect, and environmental aspect. The four major perspectives of website evaluation proposed by Hung (2006) are organizational providers' perspective, customer providers' perspective, organizational users' perspective, and customer users' perspective. WWW OCA Alignment is divided into three aspects: CSF aspect-personage aspect, CSF aspect-organizational aspect, and CSF aspect-technical aspect.

BS IT Alignment is to discuss the impact of business strategy on alignment of information technology. The literature reveals that corporate competitive strategies, business plans, and ways of cooperation (alliances, horizontal alliances, and so on) all influence IT Alignment. The communication method of commercial and IT managerial personnel has a significant influence. Good business communication also influences IT Alignment. The competitive strategies and business plans also influence WWW OCA Alignment, but alliances, horizontal alliances, and so on do not have a significant influence on WWW OCA Alignment. The four perspectives of website evaluation proposed by Hung emphasize increasing organizational and customers' value, and the range of discussion emphasizes evaluating website performance and how websites support organizational internal operation to increase value. WWW OCA Alignment discusses how websites are aligned with OCAs and what CSFs of the alignment are. Therefore, it is different from evaluating website performance and how websites support organizational internal operation to increase value. The differences between this study and literature are in Table 4.

Table 4: Differences between this study and literature.

Type	BS IT Alignment	Hung	This study
Aspect	Systematic Aspect, Communication Aspect, Organizational Aspect, and Environmental Aspect	Organizational Providers' Perspective, Customer Providers' Perspective, Organizational Users' Perspective, and Customer Users' Perspective	CSF Aspect-Personage Aspect, CSF Aspect- Organizational Aspect, and CSF Aspect- Technical Aspect
Research Topic	Impact of Business Strategy on Alignment of Information Technology	Increase Organizational and Customers' Value	How Websites are Aligned with OCAs and What CSFs of the Alignment are

CONCLUSION

This study discusses how websites are aligned with OCAs and what factors of successful alignment between websites and OCAs are. Although this study emphasizes these three companies which produce different products and have different degrees of emphasis on corporate websites, they have some common CSFs. After data analysis, the following suggestions are given to other companies which plan to build websites in the future:

The finding and suggestion of the first point is: the attitude of executives is a critical factor on the success and failure of website build, and executives' strong support can make alignment between websites and OCAs more successful. Executive's strong support and domination can make website build process go well, and the difficulty can be solved immediately if the emergency situation happened. The second point is the importance of the excellent professional team. Website build personnel must be middle

managers who are very familiar with the operating procedure of the company and cooperate with senior operators and IT personnel. This is because such personnel can understand the operating procedure of the company and the real problems and make website build meet requirements of the company. The third finding and suggestion is that the company must have clear objectives and planning before introducing websites. When websites are built, the internal staff of the company can carry out face-to-face discussion via meetings. When the prototype of websites is formed, the internal staff of the company can try out websites to examine convenience of websites for users. There should be periodic reviews and modification during the website build process in order to ensure the optimal performance of websites. The fourth is on the importance of full communication. The higher degree of communication among internal staff during website build process will result in better understanding of the purpose of the company to build websites and the effect to be achieved to enhance centripetal force and cohesion of the company. The fifth is that the rigorous process of website build will result in better alignment between websites and OCAs. In addition to attracting new customers and improving the operating process, it also has a long-term positive impact on the company. The IT Alignment factor proposed by the academia is modified by this study as the WWW OCA Alignment factor. After this study conducts case studies on three companies, it is found that a more rigorous planning process, stronger support by executives, better execution, better personnel involvement, and so on during website build process are all factors affecting the alignment between websites and OCAs, and they should be emphasized by website build personnel. The sixth is that internal staff must accept employee training. All respondents in this study all have the background of the manufacturing industry, and employees have a certain level of quality and have a high degree of acceptance and cooperation on websites and Intranet build. However, after the Intranet is built, some difficulties need to be overcome on use, such as personnel changes and changes of business process. The earlier or longer the time of employee training is, the higher the degree of the acceptance of the system is. Users can accept different employee training according to the different unit and department. Before the system is officially online, internal staff must first understand the operation of this system and propose questions immediately if having any to avoid the system modification due to inconformity with operational procedure after the system is officially online to result in extra costs.

The factors of successful alignment between websites and OCAs are related to people. Especially, whether executives give support decides whether the alignment between websites and OCAs succeeds. Thus, executives' strong support, correct policy, and cooperation of internal staff make the alignment between websites and OCAs more successful, and consequently make the company in the industry achieve the expected success later.

The research contribution can be divided into academic aspect, governmental aspect, and corporate aspect, and the contribution is described as follows. On the academic aspect, this study organized related factors of strategic alignment and IT alignment from previous literature and modified them into the factors of website alignment to make the following researchers have a research foundation on website alignment and provide issues of the future research. On the governmental aspect, this study helps the government know the current operational situation of domestic manufacturing industry more, and the government can be based on this study to propose useful public policies to help companies in the manufacturing industry succeed. On the corporate aspect, this study provides CSFs of successful alignment and gives other corporations guidance on website build by successful cases of alignment between OCAs and websites.

REFERENCES

- [1] Baets, W. (1992). Aligning information systems with business strategy. *Journal of Strategic Information Systems*, 1(4), 205-213.
- [2] Boyatzis, R. E. (1998). *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, C.A.: Sage Publications.
- [3] Bullen, V. L. & Rockart, J. F. (1981). *A Primer on Critical Success Factors*. Working paper, CISR, MIT, Cambridge, MA, USA, June.
- [4] Casadesus-Masanell, R. & Ricart, J. E. (2010). From strategy to business models and onto tactics. *Long Range Planning*, 43(2-3), 195-215.
- [5] Chandler, A. D. (1962). *Strategy and Structure*. Cambridge, MA: MIT press.
- [6] Chen, L., Ng, E., Huang, S. C., & Fang, W. T. (2017). A self-evaluation system of quality planning for tourist attractions in Taiwan: an integrated AHP-Delphi approach from career professionals. *Sustainability*, 9(10), 1-18.
- [7] Chow, T. & Cao, D. B. (2008). A survey study of critical success factors in agile software projects. *Journal of Systems and Software*, 81(6), 961-971.
- [8] Garg, R., Rahman, Z., Qureshi, M. N., & Kumar, I. (2012). Identifying and ranking critical success factors of customer experience in banks: An analytic hierarchy process (AHP) approach. *Journal of Modelling in management*, 7(2), 201-220.
- [9] Gregory, A., Wang, Y., & DiPietro, R. B. (2010). Towards a functional model of website evaluation: A case study of casual dining restaurants. *Worldwide Hospitality and Tourism Themes*, 2(1), 68-85.
- [10] Grover, V. M. (2016). Alignment of Business Strategy and Innovation Strategy: Strategic Benefits. *Imperial Journal of Interdisciplinary Research*, 3(1), 544-547.
- [11] Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management journal*, 44(1), 13-28.

- [12] Hofer, C. W. & Schendel, D. (1978). *Strategy Formulation: Analytical Concepts*. St. Paul, M.N.: West Pub. Co.
- [13] Hung, W. H. (2006). *Supporting organizational critical activities from Web sites: An evaluation methodology development* (Doctoral dissertation, University of Waikato, Hamilton, New Zealand).
- [14] Kaya, T. (2010). Multi-attribute evaluation of website quality in E-business using an integrated fuzzy AHPTOPSIS methodology. *International Journal of Computational Intelligence Systems*, 3(3), 301-314.
- [15] Kearns, G. S. & Sabherwal, R. (2006). Strategic alignment between business and information technology: A knowledge-based view of behaviors, outcome, and consequences. *Journal of management information systems*, 23(3), 129-162.
- [16] Kvale, S. (1996). *InterViews: An Introduction to Qualitative Research Interviewing*. Thousand Oaks, C.A.: Sage.
- [17] Luftman, J. (2000). Assessing Business-IT Alignment Maturity. *Communications of the Association for Information Systems*, 4(14), 1-51.
- [18] Pyburn, P. J. (1983). Linking the MIS plan with corporate strategy: An exploratory study. *MIS Quarterly*, 7(2), 1-14.
- [19] Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard Business Review*, 57(2), 81-93.
- [20] Ruzza, M., Tiozzo, B., Mantovani, C., D'Este, F., & Ravarotto, L. (2017). Designing the information architecture of a complex website: A strategy based on news content and faceted classification. *International Journal of Information Management*, 37(3), 166-176.
- [21] Saaty, T. L. (1980). *The Analytical Hierarchy Process: Planning, Priority Setting, Resource Allocation*. New York, N.Y.: McGraw-Hill.
- [22] Sambasivan, M. & Fei, N. Y. (2008). Evaluation of critical success factors of implementation of ISO 14001 using analytic hierarchy process (AHP): A case study from Malaysia. *Journal of cleaner production*, 16(13), 1424-1433.
- [23] Tallon, P. P. & Kraemer, K. L. (1998). A process-oriented assessment of the alignment of Information Systems and business strategy: Implications for IT business value. In *Proceedings of the Fourth Americas Conference on Information Systems* (pp. 1-10). AMCIS, Maryland, USA, August 14-16.
- [24] Tallon, P. P. & Pinsonneault, A. (2011). Competing perspectives on the link between strategic information technology alignment and organizational agility: Insights from a mediation model. *MIS Quarterly*, 35(2), 463-486.
- [25] Tavakolian, H. (1989). Linking the information technology structure with organizational competitive strategy: A survey. *MIS Quarterly*, 13(3), 309-317.
- [26] Ullah, A. & Lai, R. (2011). Modeling business goal for business/it alignment using requirements engineering. *Journal of Computer Information Systems*, 51(3), 21-28.
- [27] Wani, M., Raghavan, V., Abraham, D., & Kleist, V. (2017). Beyond utilitarian factors: User experience and travel company website successes. *Information Systems Frontiers*, 19(4), 769-785.
- [28] Wang, Y. S., Li, H. T., Li, C. R., & Zhang, D. Z. (2016). Factors affecting hotels' adoption of mobile reservation systems: A technology-organization-environment framework. *Tourism Management*. 53(4), 163-172.
- [29] Zahran, D. I., Al-Nuaim, H. A., Rutter, M. J., & Benyon, D. (2014). A comparative approach to web evaluation and website evaluation methods. *International Journal of Public Information Systems*, 10(1), 20-39.
- [30] Zhou, X., Shi, Y., Deng, X., & Deng, Y. (2017). D-DEMATEL: A new method to identify critical success factors in emergency management. *Safety science*, 91(1), 93-104.