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Measuring the alignment of websites and organisational critical activities

Wei-Hsi Hung^a, Robert John McQueen^b, David C. Yen^{c*} and Patrick Y. K. Chau^d

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Organisational critical activities (OCAs) are activities which must receive constant and ongoing management attention in order for that organisation to be successful in its industry. These activities may not be well supported by an organisation's website, or the website not well aligned to the organisation's OCAs. This research first develops the notion of OCAs and then reports on the development of an evaluation methodology to measure the alignment of websites with an organisation's OCAs. The methodology was tested across the university sector in New Zealand which comprises eight separate organisations. The results of the research found that measuring the alignment of OCAs elicited from key executives against an evaluation of the organisation's website is an effective way to determine what action needs to be taken to improve website support for OCAs.

Keywords: organisational critical activities; organisational success; website evaluation methodology; case study

1. Introduction

Websites are being integrated into many organisational and inter-organisational activities in order to provide support for key functions such as marketing and sales, and collaboration between partners. Websites are an important tool and communication channel in business because they give organisations global reach, and are far more effective and less expensive than other alternatives. Yet, the failure of many web initiatives shows that the design of website functionality should be a serious undertaking, carefully aligned to the organisation's key goals.

Websites should contribute to an organisation's success. Jain, Zhao, and Chinta (2004) suggested that the organisational nature of web services allows managers to identify the web services that achieve their organisational success. Studies have shown that companies receive value from employing a website including, for example, cost reduction (Kraemer and Dedrick 2002; Pant,

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Sim, and Hsu 2001), maintenance of long-term customer relationships (Geissler 2001), and reshaping of relations with public (Kent, Taylor, and White 2003). The main focus in this view is on how well the website supports the organisation's success.

However, knowing what type of support websites should provide and how to measure effectiveness of that support are key to understanding how they can best contribute to an organisation's success. While a group of studies have shown that websites positively support a number of value-added activities (Chatterjee and Sambamurthy 1999; Lin, Sheng, and Wu 2005; Palmer and Griffith 1998), a different group has found that websites often do not support objectives that are strategically important to organisations (Boudreau and Watson 2006; Dann and Dann 2001; Hung, McQueen, et al. 2012b; McNaughton 2001).

Part of the reason for these contradictory findings may be that it is difficult to clearly establish what success of a website really means, in the context of a similar difficulty in understanding how organisational success itself can be measured. To link the website designs with organisational success, we adopted the notion of organisational critical activities (OCAs) to identify collectively this set of activities in an organisation that are important to its success, and survival. OCAs are activities that must receive constant and ongoing management attention in order for that organisation to be successful in its industry. After the OCAs are elicited, this research aims to develop a methodology which can be utilised to measure the alignment between OCAs and websites.

Adopting the notion of OCAs may help overcome the difficulty of understanding whether the website can best contribute to an organisation's success. The intent is not to introduce another abstract theoretical term which may overlap with many previous concepts, but to identify something concrete which can be effectively and accurately elicited from the members of the organisation and from the website in order to measure the strategic alignment of the website.

2. Literature review

2.1. *The notion of OCAs*

The term 'critical activity' is not new in management literature. In project management, activities within the critical path are called critical activities (Son and Kim 2001). Critical activities will have a pronounced effect on the progress of the project if a deviation occurs (Ettinger and Frank 1981). Other management areas also use this term to describe important activities in particular areas within organisations, such as forecasting (Rothe 1978), public relations (Slatter 1980), strategy formulation (Cauwenbergh and Cool 1982), and the recruitment and selection of qualified personnel (Barringer and Greening 1998). Understanding the effect of government objectives and programmes was identified as a critical activity of private institutions in the business environment (Davis and Roberts 1970).

There are other terms that have been used in the past to describe similar concepts. Rockart (1979) originally proposed the concept of critical success factors (CSFs), which he defined as the few key areas where 'things must go right' for the business to flourish. Later, the definition of CSFs became widely accepted as meaning those few things that must go well to ensure success for a manager or an organisation (Boynton and Zmud 1984). As presented by Rockart (1979), the original intention of CSF methodology was to identify 'those areas of activities' rather than the 'factors' in the CSF name.

However, in Rockart's study, both factors and activities were included as CSFs. A mix of factors and activities in the CSF list can also be found in later CSF studies (e.g. Sabherwal and Kirs 1994). There is therefore a lack of preciseness in previous research as to whether CSFs

include both factors and activities. Factors are defined as ‘a circumstance, fact or influence contributing to a result’ (Soanes and Stevenson 2004, 509) and ‘one of the elements, circumstances, or influences which contribute to produce a result’ (Factor 2004, 2013). Activity is defined as ‘vigorous action’ (Soanes and Stevenson 2004, 13) and ‘something done as an action or a movement’ (Activity 2013).

In addition to CSFs, few more overlapping concepts may lead to confusion over what is the best or most effective way to characterise organisational priorities that include value-added activities (e.g. Porter 1985), critical business activities (e.g. Sethi and King 1994), and strategic activities (e.g. Croteau and Bergeron 2001). The previous concepts may also be difficult to identify, and very difficult to measure. The brass plaque in the lobby which states the vision and mission adopted by the organisation may be great as inspirational goals, but may not be well aligned with both the organisation’s success and priorities of the senior executives and managers directly.

Prior studies on OCAs are few as the concept is relatively new in the strategic and information systems (IS) fields. Hung, McQueen, et al. (2012b) proposed the notion of OCAs to measure how websites support enterprises’ primary business activities based on the importance–performance analysis technique. Yet, the approach employed is useful for analysing smaller websites rather than larger websites (e.g. the university’s website). Hung, Lin, et al. (2012a) studied high-tech companies in Taiwan, and they found that organisations adopting different typologies perform OCAs differently.

Prior OCA studies reveal that the concept is tied directly to the perceptions of the organisation’s executives and senior managers about what is important for the organisation’s success, and to which activities they allocate their scarce time (Hung, Lin, et al. 2012a; Hung, McQueen, et al. 2012b; Hung, McQueen, and Yen 2010). OCAs are measurable, and relatively easily elicited with a simple interview process. Hopefully, OCAs will serve as a benchmark against which website alignment can be evaluated.

2.2. Website evaluation and measurement

The literature suggests two main perspectives for evaluating websites – whether the evaluation is conducted by the provider or whether the evaluation reflects the opinion of the user (Collings and Pearce 2002). The evaluations made from the provider and user perspectives represent different interests, and the provider cannot fully understand what the user has perceived, and likewise, the user cannot understand what the provider expects to achieve.

Linked to these provider–user perspectives is assessing whether the website adds value to the organisation that provides it or adds value for its customers. The organisation is the party that provides the website, whereas the customer represents the party that uses the website. In order to add value to the customer, an organisation should consider what benefit the website intends to provide to the customer; likewise, in order to add value to the organisation, it should consider what benefits it receives from its website (Auer and Petrovic 2004). Quayle (2003) argued that customers may have focused simply on products and not the process, and this implies that customers are more concerned with utilising websites to gain better quality, pricing, reliable products, services, and support, instead of areas that create greater value to organisations such as developing new technology and research and development. Since the main purpose of this study is to develop a methodology which can be used by organisations to assess the alignment between their website and OCAs, this study chose the organisation provider perspective to develop the evaluation mechanism.

2.3. *Organisation provider perspective of website evaluation*

What criteria are appropriate for the website evaluation when the perspective of the provider and how value can be added to the organisation are considered? Informativeness is the amount of information flown between the user and the website when the user conducts activities over the website (Bhatt and Emdad 2001). Two aspects are associated with evaluating informativeness in this regard – information intensity (Lane and Cavaye 1999; Porter and Millar 1985) and relevancy (Fitzgerald and Galloway 2001; Goel and Prokopec 2009; Wang and Soergel 1998). The amount of information needed in supporting an activity can be measured by the amount of information required to develop the activity, and the amount of information utilised by users when conducting the activity. Relevance is judged by a person in consideration of the relationship between a need and a document.

Interactivity is the extent to which the interactive nature of the website allows the user to control the dialogue needed to transfer information associated with conducting an activity (Dann and Dann 2001; Lane and Cavaye 1999). Two approaches to evaluating the interactivity level of websites are interaction approach and feature approach. The interaction approach sets the levels of interactivity from an overall perspective. The levels of the interactivity of websites can be static, dynamic, and transactional (Hamilton and Selen 2003; Lane and Cavaye 2000). The feature approach identifies the levels of interactivity based on the features of the website (Karakaya and Khalil 2004; Quelch and Klein 1996). The interaction approach seems to be more flexible and leaves room for adding new features associated with each website level and therefore seems more appropriate for measuring the interactivity of websites in supporting OCAs.

There is also another issue about website evaluation: whether the data collection approach is person-based or automated (Bauer and Scharl 2000; Clausen 1999). The person-based approach employs one or more evaluators to analyse the website manually, whereas the automated approach employs software to analyse the website automatically. When adopting the organisation provider perspective, the manual approach is appropriate, since the evaluation of the informativeness criteria requires human judgement on the relevancy of the information.

3. **A new methodology for eliciting OCAs and evaluating website alignment**

The review of the literature identified a set of concepts about organisational priorities that in some ways are confusing, overlapping, and difficult to accurately and reproducibly measure. If we are to be able to assess whether websites or even IS align with where the organisations want to go, a simpler, overarching concept is needed, and we believe the notion of OCAs fits this need. In this section, we introduce the concept of OCAs as a measurable benchmark against which website alignment might be evaluated. OCAs are operationally defined in this research as:

OCA is the activity which must be conducted by the organisation constantly in order to be successful in the industry. It represents an organisational priority that is recognised as being essential to short-, medium-, and long-term success in that industry, has been significantly resourced, and receives regular senior management monitoring and direction.

With this concept in hand, a methodology for eliciting OCAs and evaluating the alignment of websites to those OCAs was needed, and developing, refining, and testing that methodology is the main purpose of this research. A methodology that was developed, tested, and enhanced through this research consists of nine steps (Table 1). The nine steps were based on the approach

used for improving the IS design methodology (e.g. Milton et al. 2005) and IS evaluation forms (e.g. Hung and McQueen 2004). Milton et al. (2005) suggested employing a series of case studies to develop an initial methodology for designing situational systems. Through the iterative developing process, extra guidelines and appropriate representational analytical tools are added to improve the methodology. Hung and McQueen (2004) also confirmed that the iteration between cases helped improve the guidelines in the prototype website evaluation forms.

The initial prototype methodology was built on the insights of previous research. Eight universities in New Zealand were the field research cases, the entire population of universities in the country. Eight cycles of field testing were then undertaken, consisting of seven cycles in which the methodology was tested and refined, and a final eighth cycle where the methodology was formally evaluated. Each cycle comprised the nine steps of the methodology indicated in Table 1.

In each university, all senior members of management team were approached for their willingness to participate in the research. The interviewees were asked to participate in face-to-face interviews, and if that was not possible, a telephone interview was offered as an option. The interview process was performed in a period of six months. In total, 43 management and professional staff members were willing to be interviewed including 14 from senior management, 15 from middle management, and 14 from the professional ranks. The shortest interview was 30 minutes, while the longest was 90. More than 2000 web pages were also evaluated over the eight cycles.

Overall, each cycle comprised three groups of activities: the OCA elicitation from management through interviews; the analysis of the apparent website support for OCAs on a standard repository list and analysis of the alignment of the two lists of OCAs; and reflection on the efficacy of the whole process and refinement of the tools (interview guides and forms) and processes used to improve the methodology for the next cycle. More details about each stage are discussed in the following.

The OCA elicitation stage for each cycle comprised steps 1–3 of the 9 steps (Table 1). An interview guide of six questions (Table 2) was used to elicit the OCAs from the participants and priority ranks them.

During the interviews, interviewees were first asked to describe their competitive environment and their university's strategies. Second, a working definition of OCAs was given to them and they were asked to comment and confirm their understanding of the concept.

Table 1. Steps in the methodology to measure OCA-website alignment.

Step	Activities and guides used
1	Identify management views about OCAs (interview guide)
2	Analyse interview data
3	Create consensus management OCA ranked list
4	Review website background (Form 1)
5	Identify pages supporting the general repository list of OCAs on the organisation website (Form 2)
6	Identify how well each page supports each repository OCA (Form 3)
7	Group the identified website OCAs into five groups (Form 4)
8	Prioritise and compare the alignment priorities of the OCAs generated from management interviews with those found as supported on the website
9	Identify management OCAs that could be better supported on the website, and apparent website OCAs that are not management priorities

Table 2. The OCA elicitation questions and the sequence they are asked.

Order	Questions and definition posed
1	Please describe your role, your job, and how long you have been in this job
2	Operational definition of OCAs: OCA is the activity which must be conducted by the organisation constantly in order to be successful in the industry. It represents an organisational priority that is recognised as being essential to short-, medium-, and long-term success in that industry, has been significantly resourced, and receives regular senior management monitoring and direction. An activity which must be conducted by the organisation constantly in order to be successful in the industry
3	Please describe what this organisation's OCAs are
4	What is their priority?
5	How do you support and enable these OCAs?
6	Would you suggest other people who know about the OCAs in this organisation and I can have interviews with them?

Next, they were asked to generate and prioritise a list of OCAs for their university. Finally, they were asked to describe how they supported and enabled the OCAs. If necessary, some follow-up questions were also posed to clarify the interviewee's answers.

Both face-to-face and telephone interviews were digitally recorded. Extra data revealed by the interviewee through the pictures, diagrams, and supporting materials during the interview were collected. All recorded data were subjected to a data analysis process which included transcribing, categorising, category exploration, category reduction, category integration, and reflection phases. NVivo computer software and thematic coding techniques were utilised to assist the data analysis.

The website analysis stage of each of the eight cycles consisted of steps 4 to 9 as given in Table 1.

A prototype evaluation methodology was first developed based on the review of other evaluation methodologies. The intent was to evaluate how well a website supports and aligns with the organisational OCAs that were elicited from its executives and managers. The website evaluation process was guided by several evaluation forms (see Appendices), grounded in the key theoretical foundations discussed in Section 2, to ensure repeatable and consistent results.

Previous studies have called for shifting the focus from individual web pages to topics (also called communities) that represent a group of web pages that share a common theme and made clear decisions on what sub-site levels they would evaluate (Gillenson, Sherrell, and Chen 2000; Thelwall 2003). In this research, we chose to evaluate the content down to the second level of sub-pages from the homepage, which include all the content and links on the homepage, and on the first and second levels of sub-sites. It is because the low level of pages only supports very low-level activities.

The evaluation of each website used a standard, evolving repository of OCAs to code against. This repository was developed initially from the literature and then refined after each cycle, by adding, splitting, and combining the OCAs based on what had been discovered in the interviews and the website evaluations. The final version of OCA repository is shown in Appendix 8.

The final stage in each cycle was reflection and refinement of the tools (guides and forms), OCA repository, and the processes used in that cycle, and making improvements for the next field case iteration.

In addition to the three stages described earlier which were performed in the first seven cycles, a fourth stage was added to the eighth and final cycle, and this stage assessed the quality of the OCA-website alignment methodology based on five testing criteria: validity (Churchill 1979), reliability (Churchill 1979), usability (Hix and Schulman 1991; Hung and McQueen 2004), extensibility (Hix and Schulman 1991), and adaptability (Hix and Schulman 1991). The components of the final version of evaluation methodology are shown as Appendices.

4. Findings from the field trials of the OCA-website alignment methodology

4.1. Alignment and misalignment of the OCAs

The following sections will present the results of the final case. The ordered set of OCAs that resulted from the eighth and final cycle of the research is shown in Table 3, while the apparent

Table 3. The elicited OCAs from participants in cycle 8 ranked by their aggregated perceptions of importance.

No.	OCAs
1	Efficient teaching and learning
2	Developing research
3	Financial management
4	Recruiting domestic students
5	Recruiting international students
6	Facility management
7	Recruiting staff
8	Retaining staff
9	Enhancing internal administrative efficiency
10	Developing and providing strategic plans
11	Communication with businesses and local community
12	Providing student services
13	Student learning support
14	Developing new courses

Table 4. The apparent OCAs from the analysis of the organisation website in cycle 8.

Priority	OCAs
1	Providing student services
2	Enhancing internal administrative efficiency
3	Retaining staff
4	Providing student learning supports
5	Communication with businesses and local community
6	Recruiting international students
7	Developing research
8	Recruiting domestic students
9	Facility management
10	Recruiting staff
11	Efficient teaching and learning
12	Developing and providing strategic plans
13	Financial management
14	Developing new courses

OCA's as ranked from the analysis of the website for the organisation in cycle 8 is presented in Table 4.

Tables 3 and 4 are different in several aspects. For example, recruiting domestic and international students are reasonably well aligned between the perceptions of the OCA's from participants (positions 4 and 5, respectively) with the apparent website rank positions (8 and 6, respectively). However, the number 2 ranked OCA, developing research, is only ranked at 7 on the website analysis of OCA's, and financial management only appears as number 13. The disparity of the alignment of the website support for these OCA's which comes from this analysis should then lead to constructive dialogue about why this is the case, and perhaps lead to projects to enhance website capability to better support these OCA's which are viewed by senior managers as very important to the success of the organisation.

4.2. Assessment of the efficacy of the OCA-website alignment evaluation methodology

The OCA-website alignment evaluation methodology was efficient in both the elicitation of the OCA's from management, through an average of six interviews in each organisation, and the

Table 5. Assessment of the quality of the OCA-website alignment evaluation methodology.

Criterion (source)	Question(s) concerned	Assessment outcome
Validity (Hix and Schulman 1991)	How well is the OCA-website alignment evaluation methodology used to extract a list of OCA's that are supported by the website?	The Testing Case Study shows that the OCA-website alignment evaluation methodology is capable of extracting a list of OCA's that are supported by the website
Reliability (Hix and Schulman 1991)	Is OCA-website alignment evaluation methodology a standardised approach?	The Evaluation Process Instructions enable evaluators to take a standardised and systematic approach to measure the website
Usability (Hung and McQueen 2004)	How easily can the OCA-website alignment evaluation methodology be utilised by inexperienced and experienced users?	Critical instructions, principles, and columns have been added into the methodology in order to enhance its usability for inexperienced and experience users
Extensibility (Hix and Schulman 1991)	Is the OCA-website alignment evaluation methodology sensitive to the new web technologies?	The methodology is extensible in the future, because any sophisticated feature found during the website evaluation can be added into the degree of support description in the Website Evaluation Form 3B
Adaptability (Hix and Schulman 1991)	Is the OCA-website alignment evaluation methodology adaptable to the specific environment in which it is used?	Modifications can be made in the future in order to apply the OCA-website alignment evaluation methodology in other environments

manual, but structured evaluation of the OCAs as apparent through the analysis of the organisation's website. The materials that were developed to support the methodology, such as the interview questions, and the guides and forms for the website evaluation, proved to be effective in gathering the data of this research, and would seem to be easily adapted and refined for use in other industry and country environments.

4.3. *Quality of the developed OCA-website alignment methodology*

Five criteria were used in the eighth and final cycle, to assess the quality of the OCA-website alignment evaluation methodology: validity, reliability, usability, extensibility, and adaptability. We can see how well the OCA-website alignment evaluation methodology meets the requirements of these criteria (Table 5).

5. Conclusions

This research adopted the notion of 'OCAs' and developed a methodology to evaluate OCA-website alignment. The results produced from this research regarding the notion of OCAs provide practical contributions. The methodology can be used by organisations to understand how well their OCAs are aligned with the environment and their strategies. They can develop a list of OCAs based on the operational definition of OCAs, steps in Table 1, questions in Table 2, and OCA repository in Appendix 8. Then, the web developers can evaluate how well the presentation of their website is aligned with these OCAs. Identifying OCAs also gives organisations the opportunity to think about whether or not their current operations, both Web-based and through other activities, are well aligned with their organisational strategies and environment.

Ideally, the alignment between the website and OCAs is an assurance to ensure that the investment on the website design supports the organisation's priorities. However, for those organisations that are comfortable with low alignment due to limited resources and budget for IT investment, good alignment between OCAs and what is available on the organisation's website seems to be a more desirable goal. Perhaps more importantly, the process of eliciting OCAs, discussing them, and deciding if important OCAs should be better represented on the organisation's website will initiate a dialogue in which both the relative priorities of OCAs and their place on the website can be argued and better understanding achieved. This is where the proposed evaluation methodology can provide value to.

5.1. *Filling the gap in the strategic management field*

Implementing strategy is not an easy task in comparison with performing activities or processes, and the strategy seems to be an academic term for lower level management due to its difficulty of understanding and carrying out (Fenton and Langley 2011; Meskendahl 2010; Treyer 2009). Prior studies found that the performance measurement of strategy is hard to be done accurately on a longitudinal basis (Szyliowicz, Kennedy, and Nelson 2004). The alignment between IT initiatives and the business strategy is frequently missing among small- and medium-sized enterprises (Raymond and Bergeron 2008). To solve such problems in the strategy implementation and performance measurement, various approaches including the views of activities and process, CSFs, and project portfolio management have been proposed to fill the gap in both the academic and practical realms (Jarzabkowski 2005; Meskendahl 2010). Among them, the approach of CSFs is most relevant to the organisation's success. However, several studies have suggested that the

CSF approach is too conceptual to be applied in the practical world, and it may not bring success to organisations from time to time (Ram, Corkindalea, and Wu 2013; Remus and Wiener 2010).

Studies in the past addressed how important activities play a role in managing strategy, and an appropriate approach to understand the strategy itself and its connection with performance is to analyse and measure the business strategy from the view of activities (Bergek, Berggren, and Tell 2009; Jarzabkowski 2005). This research proposed the notion of OCAs which defines those important activities conducted in the organisational level that can provide the strategic direction and objectives for management to pursue. The notion helps create effective communications between the management when implementing the strategy for achieving organisational success. Moreover, the methodology proposed for website evaluation can assist in evaluating whether the website development is aligned with the organisational strategy and whether the organisation strategy is reflected on the website for achieving organisational success. Hence, the notion of OCAs and the website methodology instruments developed in this research become important tools for organisations to develop, implement, and evaluate their strategy. They provide not only a new perspective to understand the strategy, but also an innovative approach to manage the strategy.

5.2. *Research and practical contributions*

Prior literature of website evaluation mainly takes the user's perspective on website evaluation (e.g. Agarwal and Venkatesh 2002; Chen and Macredie 2005; Kumar and Benbasat 2006; Palmer 2002) and is unable to assess the website from the provider's perspective. This research took the perspective of an organisational provider on website evaluation, and it particularly gives web researchers a balanced view on the issues relating to the provider's view of the value of websites and gives organisations an opportunity to evaluate their own websites to seek better support for organisational priorities.

Prior studies adopting manual approach to website evaluation (e.g. Hung and McQueen 2004; Nielsen 1995; Palmer 2002) are unable to evaluate a large website and to what extent the website is aligned with OCAs. Although Hung, McQueen, et al. (2012b) assessed how OCAs were reflected on a small website, the study on systematically evaluating how a large website supports OCAs is missing. This research fills the literature gap by providing a systematic evaluation process guided by forms and process descriptions in order to assess how the website can support OCAs.

The methodology gives organisations an opportunity to evaluate their websites themselves, at a relatively low cost. For example, the organisation can adopt relevant components in the methodology to elicit views on the OCAs across the senior management and then to examine whether the web team has a coherent view on the organisation's OCAs. If not, perhaps composing an OCA statement and disseminating it to the web team is an effective way to create coherent views internally. Then, the methodology can assist web teams in understanding how their current practices and designs support OCAs and help guide investment into those areas which create more support to the OCAs chosen by the senior management.

Moreover, the evaluation methodology can be a training tool for the evaluator to gain experience on eliciting OCAs from management. This is similar to the suggestion made by Boynton and Zmud (1984) on applying CSF methodology, which means that the elicitor will gain experience and knowledge on utilising CSF methodology properly through applying the methodology. Thus, the elicitor can be more experienced on eliciting OCAs after applying the methodology sometimes.

In order to claim adaptability, the methodology must be adaptable to the specific environment in which the methodology is used (Hix and Schulman 1991). While this research has developed and tested the methodology in all universities in New Zealand, for being adaptable to other countries or industries, some modifications can be made in the future in order to apply it in other contexts based on the current structure. For example, the OCA repository and the features used to differentiate the levels of criterion 'interactivity' can be extensible. Then, these two components can be adaptable to extract specific OCAs from management and to evaluate specific web features in other environments (e.g. insurance industry). This research claims that the methodology is adaptable to other specific environments by adding some simple modifications.

5.3. Limitations and future research

In terms of website evaluation, it is possible to continue advancing the knowledge and methods of adopting the three evaluation criteria (informativeness, interactivity, and consistency). In regard to informativeness, there must be more research done on the measurement method to determine how informatively the files and documents on the website support OCAs. In regard to interactivity, there needs to be continuous awareness of new web features and the categorisation of these new features into the three levels of interactivity from other state-of-the-art websites. In regard to consistency, further research needs to measure the impact made on the organisation's brand image from a consistent or inconsistent web design.

While this research adopted the provider perspective, future research might help us better understand how the organisation provider and website user perspectives might be integrated. For example, an organisation can assess how effectively and efficiently their website supports advertising and marketing activities by utilising the OCA-website alignment evaluation methodology. However, one can also apply those 'user-centred' evaluation criteria to evaluate how effectively and efficiently the website supports advertising and marketing activities.

This research has narrowed its focus to those management activities that contribute to OCAs and illustrated this new concept by using it to measure the alignment of organisation websites to those elicited OCAs. There are other perhaps even more powerful uses of this notion of OCAs beyond just website alignment evaluation that could reach into the areas of organisational strategy development and measurement of the effectiveness of management activities. It is hoped that this research will become the 'jumping off' point for further work on how the notion of OCAs can be used in a broad range of management and organisational research.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix 1. Evaluation process instructions

Evaluation Process Instructions

Stage 1 – Investigate Web Background:

1. Browse through the website, and answer following questions:
 - Does the website comprise Internet, intranet(s), and extranet(s) Homepages?
 - Is password required to access into Internet, intranet(s), and extranet(s)?
 - What are intended user groups of the website?
2. Then, complete Evaluation Form 1

Stage 2 – Confirm and Generate Organisational Critical Activities:

1. Start from the centre of the university Homepage, click one hyperlink and follow the hyperlink to the first level of sub-site.
2. Based on the purposes of the hyperlink and the sub-site, identify the organisational critical activities listed in the OCA Repository which this sub-site is supporting.
3. Record the name of the sub-site and how to find it in Evaluation Form 2.
4. If the organisational critical activity supported by the hyperlink is not listed in OCA Repository, add it into the OCA Repository and repeat step 3.
5. Repeat steps 1 to 4 to quick links on the top, on the side, and then to the bottom until all the hyperlinks on university Homepage are evaluated.
6. Applied steps 1 to 5 to the second level sub-pages of the Homepage.
7. Repeat steps 1 to 6 on the Homepages of intranet and extranet.

Stage 3 – Analyse Effectiveness and Efficiency:

1. Choose one organisational critical activity in Evaluation Form 3A.
2. Conduct evaluation on how effective and efficient the activity is supported by referring the results in Evaluation Form 2 and the criteria in Evaluation Form 3B.
3. Record the result onto Evaluation Form 3A.
4. Repeat steps 1 to 3 on the rest of organisational critical activities in Evaluation Form 3A.

Stage 4 – Group:

Appendix 2. Website Evaluation Form 1

Website Evaluation Form 1			
Does the website comprise the Homepages of following domains (see *)?			
<i>Domain (Yes/No)</i>	<i>Password protected?</i>	<i>Name of the Homepage</i>	
Internet			
Intranet			
Extranet			
What are the intended user groups of the website?			
<p><i>*Definitions of Web Domains are:</i></p> <ul style="list-style-type: none"> • <i>Internet: The Web pages can be accessed by any users and are password free.</i> • <i>Intranet: The Web pages can only be accessed by employees of the organisation and are password protected.</i> • <i>Extranet: The Web pages can only be accessed by suppliers or buyers of the organisation and are password protected.</i> <p><i>**The sub-site level:</i></p> <ul style="list-style-type: none"> • <i>If the sub- site only presents questions, this is not counted as one level of sub- sites.</i> <p><i>***The Web domain:</i></p> <ul style="list-style-type: none"> • <i>If the sub- site belongs to the domain of the university website, it must be fully or partially owned by the University.</i> • <i>Departmental sub- sites will not be evaluated unless they support any university level activity.</i> 			

Appendix 3. Website Evaluation Form 2

Website Evaluation Form 2						
No	Organisational Critical Activity	Internet Domain	Extranet Domain	Intranet Domain	Title of the Sub-site and How It Was Found?	Specific Features?
1						
...						

Appendix 4. Website Evaluation Form 3A

Website Evaluation Form 3A			
No	Organisational Critical Activities	Effectiveness	Efficiency
1			
...			

Appendix 5. Website Evaluation Form 3B

Website Evaluation Form 3 B	
Levels of Effectiveness A*	
Degree of Support	Description
High	More than 10 sub-sites** and in each sub-site contains information three times the length of the screen (with 1024 x 768 resolution screen display) on average to support the organisational critical activity.
Medium	Include 5 to 10 sub-pages or more than 10 sub-pages but with information less than three times the length of the screen on average in each sub-site to support the organisational critical activity.
Low	Less than 5 sub-pages to support the organisational critical activity.
Levels of Effectiveness B***	
High	No more than 2 sub-pages are designed inconsistently
Medium	More than half of the sub-pages are designed consistently
Low	More than half of the sub-pages are designed inconsistently
Levels of Efficiency	
Degree of Support	Description
Level 1	The feature provides static information to support conducting the organisational critical activity.
Level 2	Not only information provision, the feature also provides at least one-way communication between users and the university when conducting the organisational critical activity, for example, online form, and FAQ.
Level 3	Not only information and communication functionality, the feature also provides data transaction between users and the university when conducting the organisational critical activity, for example, search feature****, online payment, change of passwords, or exchange of personal information.
<p>* This criterion is used to evaluate how the website is supporting all organisational critical activities except for branding.</p> <p>** A sub-site is the composition of Web pages which can be accessed through the linkage of a hyperlink on another Web page. It is different from sub-page. A sub page is only a page of information.</p> <p>*** This criterion is used to evaluate how the website is supporting branding activity. For evaluating branding, both Levels of Informativeness A and B are required to complete. Then, record both results to Evaluation Form 3A.</p> <p>**** The search feature is the feature which supports the organisational critical activity rather than the general search feature of the website.</p>	

Appendix 6. Website Evaluation Form 4

Website Evaluation Form 4		
Category	Description	List Activities in this Level Alphabetically
Category 1 (the website provides effective and efficient support)	High and Level 3 in Evaluation Form 3	
Category 2 (effective or efficient support)	High and Level 2 or Medium and Level 3 in Evaluation Form 3	
Category 3 (General support)	The rest supported by the website and is not Low and Level 1 in Evaluation Form 3	
Category 4 (Poor support)	Low and Level 1 in Evaluation Form 3	
Category 5 (Non-support)	The activity is not supported by the website.	

Appendix 7. Website Evaluation Form 5

Website Evaluation Form 5	
No	Web Prioritising Principles
1	The organisational critical activity in higher category has higher priority than the one in the lower category.
2	The activity, which is supported by more sub-sites, has higher priority.
3	If two or more than two organisational critical activities are supported by the same number of sub-pages and ranked in the same levels of Interactivity, the one supported by more sophisticated Web features will have higher priority.
4	If two or more than two organisational critical activities are supported exactly by the same sub-sites, the one supported by more information will have higher priority.

Appendix 8. OCA Repository

OCA Repository	
1	Advertising
2	Assuring teaching quality
3	Buying supplementary material
4	Communication with businesses and local community
5	Communication with the government
6	Conducting marketing research
7	Creating university culture
8	Developing and providing strategic plans
9	Developing new courses
10	Developing new services
11	Developing new technology
12	Developing research
13	Developing staff
14	Efficient teaching and learning
15	Enhancing internal administrative efficiency
16	Expansion on enrolment branches
17	External communication
18	Facility management
19	Financial management
20	Increasing the branding
21	Internal communication
22	Maintaining partnership with other institutions
23	Maintaining relationships with previous students
24	Providing library services
25	Providing scholarships
26	Providing student learning supports
27	Providing student services
28	Recruiting domestic students
29	Recruiting international students
30	Recruiting staff
31	Retaining staff
32	Sustaining educational funding and extra funding
33	Timely provision of student personal and academic records