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Linking organisational critical activities with business typology

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ABSTRACT

This research aims to discover the connection between strategic typologies and organisational critical activities, and focuses on the organisational critical activities in three functional areas in high-tech organisations: 'research and development', 'marketing' and 'manufacturing'. Research methods used include semi-structured interviews with 11 firms and 15 interviewees. And 34 participants were surveyed with analytic hierarchy process (AHP) questionnaires in Taiwan. The results show that organisations adopt different typologies tend to perform organisational critical activities differently to achieve success. Prospectors place more emphasis on 'research and development' related activities, Defenders focus on activities of 'manufacturing and production related fields', and Analysers care more about activities in 'marketing related fields'. Defenders tend to pay more attention to activities relating to the manufacturing domain than Prospectors and Analysers. This research establishes a linkage between organisational critical activities and corporate strategy, and it could be useful for high-tech organisations to better manage their strategies.

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Strategy typology; organisational critical activities (OCAs); high-Tech industry; analytic hierarchy process (AHP)

Introduction

'The Typologies of Corporate Overall Strategies' presented by Miles and Snow (1978) has been widely adopted by researchers in the field of information system (IS) strategic alignment (e.g. Gerow et al. 2014; Kearns 2005; Sabherwal and Chan 2001). The typology classifies organisations into four strategy types: Prospectors, Analysers, Defenders and Reactors. Organisations of each type conduct activities with guidance from their own strategy, which in turn is classified as one of the four generic types. Under different combinations of conducted activities and strategy type, organisation performances are varied (Da Silva, Hutcheson, and Wahl 2010).

'Critical activities' are commonly the most important activities in terms of resource allocation and management time in the project management. Son and Kim (2001) suggest that lagging in any critical activity of an organisation will affect its capability to complete projects on schedule. However, critical activities mentioned in that research were not at the organisational level and there is no discussion on the interrelationship between these activities and the success of an organisation. Accordingly, Hung (2006) presented the concept of 'organisational critical activities' (OCAs) and defined OCAs as a specific type of organisational activity in a business. Such activity has strategic importance to the business achieving success. The research results suggest that the alignment between investment and OCAs in information technology may enhance the success of an organisation. It is also

suggested that the investment of website should be aligned with OCAs in order to obtain the organisation's success (Hung et al. 2015).

Given that OCAs directly affect an organisation's capability to achieve success, an organisation must set up a positioning strategy and align its OCAs in order to achieve success in the highly competitive environments (Hung et al. 2012). Although organisation strategies affect the priority given to OCAs, prior study (Hung 2006) did not test the interrelationship between the two.

This research will uncover sets or lists of OCAs from real business world perspectives. This will then allow businesses adopting the same type of strategy (e.g. Prospector) to learn from other OCA lists in order to establish proper weights (priorities and resource allocation) on their OCAs, and to monitor if the business's current resource allocation and strategy direction are appropriate and if adjustments should be conducted accordingly. This research uses the Taiwan high-tech industry as its research context and examines the interrelationship between OCAs and strategy types.

Literature review

The typologies proposed by Miles and Snow

The strategic typology chosen by organisations is an important topic for strategic management scholars to advance our knowledge on maintaining competitive strategies (Robinson and Pearce 1988). Miles and Snow (shortened as M&S) typology is recognised as one of the most complete typologies (Hambrick 2003; Hrebiniak and Snow 1980; Kabanoff and Brown 2008; Massa and Testa 2009; Da Silva, Hutcheson, and Wahl 2010), and it fits into industries and organisations well (Shortell and Zajac 1990). It has been applied to the banking industry (James and Hatten 1994), human resources (Delery and Doty 1996) and cross-industry research (Smith, Guthrie, and Chen 1989). This research adopts M&S typology, in which there are four types of strategies: Prospectors, Analysers, Defenders and Reactors. The Reactor type is excluded from this study as later research questioned its research value (Fiss 2011; Miles and Snow 1978; Snow et al. 2011).

Prior research has used the M&S typology to study the strategic actions of many types of organisations in various industries (Kabanoff and Brown 2008; Kearns 2005; Kim et al. 2016; Olson, Slater, and Hult 2005). For example, Laing (2013) examined the viability of different strategic types operating in the same industry in Australia. He used the M&S strategic typology to identify companies that were the Defender, Prospector and Analyser types, and used the multiple case studies to compare between them. He found that different types can successfully exist in the same industry by adopting different performance priorities, different control systems and different approaches to react environmental contexts. In addition, Jenster and Søylen (2013) conducted research on the relationship between strategic planning and company performances in Chinese companies, and found that there was indeed a distinction between the different strategies selected and company performance. The type named Reactors performed less well than the others.

Organisational critical activities (OCAs)

The notion of organisational critical activities (OCAs) was proposed by Hung (2006), and it is related to guiding organisations' success. OCAs are organisational priorities that are recognised as being essential to short, medium and long-term success in that industry, and being significantly resourced and received regular senior management monitoring and direction. Organisational strategies can influence the activities conducted by organisations and the resources allocated (Hung et al. 2012). Hence, different strategic typologies may correspond to different activities which also imply different priorities of OCAs.

There are several other concepts that operate in this same area of organisation strategy, such as critical success factors (CSFs) (Aaker 1984; Trkman 2010), value-added activities (Porter 1985; Turney 1994), and organisational routines (Deken et al. 2016; Stene 1940); yet, they are different from OCAs.

Both factors and activities can be considered as CSFs, but OCAs are just activities which are the activities that organisations undertake to create value for themselves, customers and suppliers (Turney 1994). Value-added activities are only related to increasing value and decreasing cost while OCAs are related to the question of how to achieve organisational success (Hung 2006). The concept of organisational routines is considered as the standard which organisations must complete rather than creating strategic impact like what OCAs do.

Comparing the terminologies as mentioned above shows that both organisational routines and OCAs are categorised as organisational activities. Organisational routines are concerned with the efficiency of organisational activities, which has no direct impact on organisational success. Core capacity is organisational competence, and is contributing to create organisational competitive advantages, but might not have a direct relationship with organisational success as well as core competency. Core capacity, core competence and core resource are not activities. Hence, the meanings of above discussed terminologies are different concepts with OCAs.

The relationship between OCAs and organisational strategy

Previous research suggests that organisation strategy is closely related to organisation activity. For instance, Mintzberg (1978) considered that strategy is involved in a series of decisions and actions. Croteau and Bergeron (2001) considered organisational strategies as a series of organisational activities. For success, organisations will adopt different strategies but this needs different management structure, organisational procedure and organisational activities (Rudberg 2004). Thus, organisations tend to conduct specific activities to match with their strategies. Consequently, in order to solve organisation adaptation issues for the three strategy types (i.e. Prospectors, Analysers, and Defenders), organisations with different strategy need to conduct marketing and strategy behavior analysis in order to seek the most appropriate solution to support organisation operations. Success and operation performance can be achieved through this way (Olson, Slater, and Hult 2005).

By conducting the activities that fit with the strategic goals, the best performance should be achieved (Apigian, Ragu-Nathan, and Ragu-Nathan 2006; Rogers and Bamford 2002). Compared with both Analysers and Defenders, Prospectors care more about organisation internal integration and collaboration and they also tend to emphasise the scope and width involved in problem analysis when developing the strategic plan (Rogers and Bamford 2002). Prospectors also perform the most critical activities relating to market research, followed by Analysers and Defenders (Fiss 2011; Frambach, Fiss, and Ingenbleek 2016).

Compared with Defenders, both Prospectors and Analysers tend to focus more on the activities of cost reduction and financial information analysis during their decision making (Boulianne 2007; Lin, Tsai, and Wu 2014). Moreover, Defenders pay more attention to the plan control, with Analysers trailing behind, and Prospectors in the last (Kachouie and Sedighadeli 2015; Rogers and Bamford 2002). Unlike Defenders, Prospectors are not control-oriented, but invest resources on numerous strategic planning related critical activities to solve critical business problems in advance. As for Defenders, they focus more on controls over costs and resources.

While the literature supports a linkage between OCAs and organisational strategy, how OCAs are matched with different strategies is missing from the literature.

Research method

This research employed both qualitative and quantitative methods in two stages to study the high-tech industry in Taiwan. In stage 1, semi-structured interviews were carried out with middle- and senior-level managers in order to elicit a list of OCAs of the industry. The semi-structured interview requires the interviewer to ask identically questions to assure comparable findings as well as posing more open questions which allows the interviewer an opportunity to explore the social

phenomenon in depth. Thus, the semi-structured interview is appropriate to achieve the objectives of data collection in this study because it helps identify a list of OCAs through a list of structured questions and more open ones.

In stage 2, a series of surveys using AHP was utilised to generate the priorities of OCAs for organisations with different typologies. The purpose of the AHP questionnaire was to carry out a bilateral comparison of OCA and then analyse the priority of the OCAs as chosen by each type of organisations under M&S typology. Saaty and Vargas (1991) suggested that AHP is appropriate for setting the priority of a list of criteria based on the weighting system. Adopting AHP to prioritise a list of factors or criteria is frequently seen in the literature (e.g. Salmeron and Herrero 2005; Schniederjans and Garvin 1997). More details of these two stages are discussed in the following sections.

Stage 1 – semi-structured interviews

In total, there are 11 Taiwan high-tech companies participated in this research, and 15 managers were interviewed who had long-term working experiences and had a great understanding on the environments of their companies and high-tech industry. Since the notion of OCAs is new, the interview guide, interviewing skills and qualitative analytical skill utilised in this research were based on organisation critical activity web support evaluation methodology (OCAWSEM) as developed by Hung (2006). During the interviews, interviewees were requested to nominate the OCAs of their companies. The definition of OCAs was given first without offering extra OCAs information. If the interviewee had hesitation to give more OCAs, examples of OCAs would then be revealed and confirmed with the interviewee. A list of OCAs was summarised and revised from the 15 interviews, and after revision and confirmation, the results were tabulated. After each interview, the interviewee also filled out the questionnaire regarding their overall organisational strategies based on Conant, Mokwa, and Varadaraian (1990) instrument (details will be discussed in the next section). In order to ensure the completeness of the list OCAs, the later version of OCAs list of Taiwan high-tech industry was subsequently confirmed by another two senior managers in the industry (one has later become the IT Executive for Taiwan Government).

In order to increase accuracy and reliability, this research incorporates several principles. A list of examples of OCAs was shown to and confirmed with the interviewees only after the interviewees provided their OCAs first. A word-by-word transcription was used to convert the recorded interview data. The cross-checking of results and interpretation among different coders during the analysis process reduced subjectivity errors. To ensure the accuracy of the crucial statements in the word-by-word transcript, the interviewee was asked in a second interview to confirm our preliminary analysis results. The interviewees were asked to check the accuracy of data transcription and analysis. In the final part of the eliciting process, the OCA list is double-checked and revised by an additional two senior managers in the industry for further confirmation and its completeness.

Stage 2 – AHP questionnaire

After generating a list of OCAs, an AHP questionnaire was designed to complement and confirm the findings from the interviews, make a bilateral comparison of OCAs, and then check the priority of OCAs chosen by the participants from each organisation. The questionnaire consisted of four major sections: basic information, strategy typology, organisational critical activities, and suggestion on the questionnaire. Figure 1 below shows the hierarchical structure of comparing the OCAs.

The second section of strategy typology in the questionnaire is based on the analytic method proposed by Conant, Mokwa, and Varadaraian (1990). Their nominal scale is used in the questionnaire, which have a total of 11 questions with four choices each corresponding with the four strategic types:

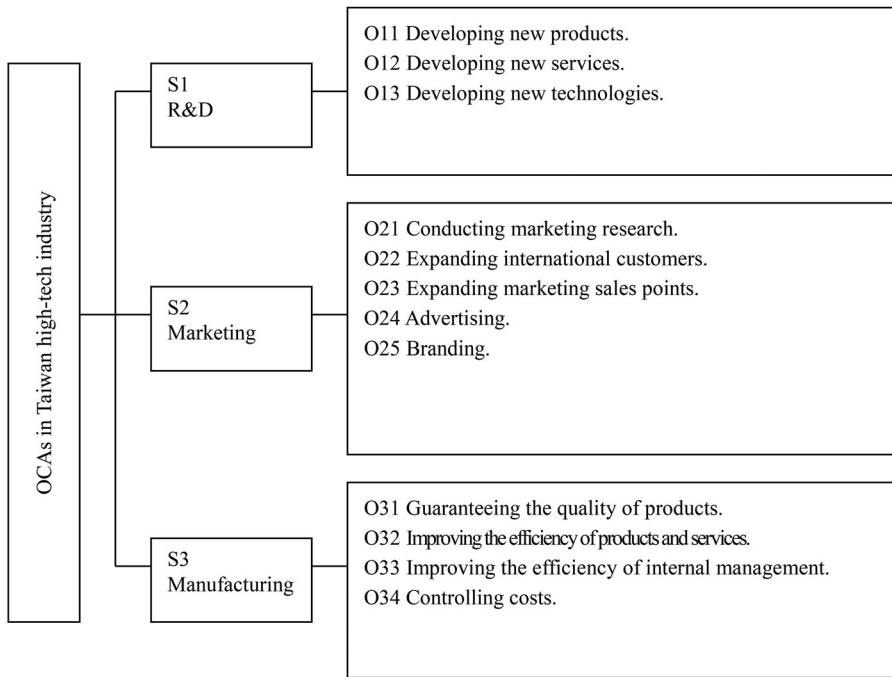


Figure 1. Structure of hierarchical comparison.

Prospectors, Analysers, Defenders and Reactors. The questionnaire respondents can choose one best answer in compliance with the real situation of their companies. Following with majority-rule, a corporate can be categorised into one of four strategy typologies.

The third part employs AHP analytic procedures to identify priorities on the OCAs performed by each strategy typology (Reactors are excluded here). We go through a 'group strategic analysis' among the same strategy types by using AHP questionnaire and the Expert Choice software. The samples which do not pass the consistency test ($C.R. \leq 0.1$) (Saaty 1980) will be resampled by emailing or calling those interviewees to explain clearly the terms and the meaning of the questions in the questionnaire, or be deleted directly if they could not be contacted.

This research collected the perceptions of the top and middle managers in the high-tech industry in Taiwan by using AHP survey. To recruit participants, we posted our request on the web discussion forums of high-tech organisations and required them to send their willingness of joining our research. After the researchers confirmed that they were willing to join, the Internet Uniform Resource Locator (URL) where the questionnaire was located was given to qualified respondents for completion on-line. Responses were received during a period of one month, and a total of 47 Analytic Hierarchy Process (AHP) questionnaires were received. This is sufficient to conduct an AHP study.

Results and discussions

The interview results

As presented earlier, 15 interviewees and 11 companies participated in this research. For privacy reason, the interviewees are numbered by I1 to I15 and their companies are A to K (see Table 1). For reliability, this research adopts the OCAs only when they are mentioned by more than two interviewees. The results found out twelve OCAs and they are grouped into three functional areas (S1~S3, see Table 2).

Table 1. Basic information of interviewed companies and interviewees.

Company (Strategic type) ^a	Type of industry	Employee number	Interviewee (Year of experience)	Current position
A(R)	Electronic parts	140	I1(5.5)	Team Leader (Environment and Safety)
B(D)	Chemical	187	I2(13)	Head (Working Environment)
C(D)	Transportation Equipment	1750	I3(22)	Team Leader (General Manager Office)
D(A)	Transportation Equipment	250	I4(15)	Head (Project Management in R&D)
			I8(30)	Head (Project Planning in Human Resource)
			I9(16.5)	Head (Engine Test in R&D)
E(P)	Transportation Equipment	1539	I5(10)	Manager (Customer Assistance)
F(D)	Computer, Communication, Audio & Video Electronics	150	I6(10)	Assistant Manager (R&D)
G(A)	Electronic Parts	3483	I7(9)	Project Manager (Design & Planning)
H(A)	Computer, Communication, Audio & Video Electronics	3300	I10(6)	Assistant (General Manager Office)
I(A)	Electronic Parts	8438	I11(16)	Deputy Factory Manager (Manufacturing)
			I12(6)	Assistant Manager (General Manager Office)
			I13(4.5)	Assistant Manager (Manufacturing)
J(P)	Computer, Communication, Audio & Video Electronics	3524	I14(7)	Deputy Lead Manager (Project Management)
K(D)	Transportation Equipment	416	I15(8)	Chief Officer (Information Technology)

^aBusiness strategic typologies: R = Reactors, D = Defenders, A = Analysers and P = Prospectors.

Hypothesis development

There are four propositions developed after the literature review in this research. After interviews, the OCAs were obtained, and the propositions were converted into hypotheses. The interview results revealed 12 OCAs which are separately categorised into three functional areas defined in the research

Table 2. OCAs Mentioned by the interviews.

Functional area	OCA	Mentioning interviewee
S1 R&D	O11 Developing new products.	Interviewee I ₁ , I ₂ , I ₃ , I ₄ , I ₅ , I ₆ , I ₇ , I ₈ , I ₉ , I ₁₀ , I ₁₁ , I ₁₂ , I ₁₃ , I ₁₄ , I ₁₅
	O12 Developing new services.	Interviewee I ₃ , I ₅ , I ₉ , I ₁₁
	O13 Developing new technology.	Interviewee I ₁ , I ₂ , I ₃ , I ₈ , I ₉ , I ₁₄ , I ₁₅
S2 Marketing	O21 Conducting marketing research.	Interviewee I ₃ , I ₅ , I ₅ , I ₇ , I ₈ , I ₉ , I ₁₀ , I ₁₁ , I ₁₃ , I ₁₅
	O22 Expanding international customers.	Interviewee I ₁ , I ₂ , I ₃ , I ₅ , I ₇ , I ₉ , I ₁₀ , I ₁₁ , I ₁₂ , I ₁₃ , I ₁₄ , I ₁₅
	O23 Expanding marketing sales points.	Interviewee I ₁ , I ₄ , I ₁₄ , I ₁₅
	O24 Advertising.	Interviewee I ₃ , I ₅ , I ₇ , I ₉ , I ₁₄
	O25 Branding.	Interviewee I ₁ , I ₃ , I ₄ , I ₁₄
S3 Manufact-uring	O31 Guaranteeing the quality of products.	Interviewee I ₁ , I ₂ , I ₃ , I ₄ , I ₅ , I ₆ , I ₇ , I ₉ , I ₁₀ , I ₁₁ , I ₁₂ , I ₁₃ , I ₁₄ , I ₁₅
	O32 Improving the efficiency of products and services.	Interviewee I ₁ , I ₃ , I ₆ , I ₇ , I ₉ , I ₁₁ , I ₁₅
	O33 Improving the efficiency of internal management.	Interviewee I ₁ , I ₃ , I ₆ , I ₉ , I ₁₀ , I ₁₁ , I ₁₂ , I ₁₃ , I ₁₅
	O34 Controlling cost.	Interviewee I ₁ , I ₅ , I ₇ , I ₉ , I ₁₀ , I ₁₂ , I ₁₄ , I ₁₅

Note: 1. The total of three functional areas in OCAs list is numbered by S1 to S3; 2. The total of 12 OCAs is displayed by Oxy. 'x' is the number of functional area as, 'y' is the number of OCA in a certain functional area such as the 1st OCA in the 1st functional area are shown as O11; 3. There are total of 15 interviewees, which will be represented by I₁ to I₁₅.

Table 3. Converting proposition into hypotheses.

Proposition	Hypothesis developed from the position	Supporting references
Proposition 1: Prospectors have the highest priority on OCAs of R&D.	H1a: Prospectors set up 'O11 developing new products' as the highest priority. H1b: Prospectors set up 'O12 developing new services' as the highest priority. H1c: Prospectors set up 'O13 developing new technology' as the highest priority.	Hambrick (1983); Shortell and Zajac (1990)
Proposition 2: Prospectors have the highest priority on OCAs of Marketing.	H2a: Analysers set up 'O21 conducting marketing research' as the highest priority. H2b: Analysers set up 'O22 expanding international customers' as the highest priority. H2c: Analysers set up 'O23 expanding marketing sales points' as the highest priority. H2d: Analysers set up 'O24 advertising' as the highest priority. H2e: Analysers set up 'O25 branding' as the highest priority.	Hambrick (1983); Hrebiniak and Snow (1980); Shortell and Zajac (1990)
Proposition 3: Defenders have the highest priority on manufacturing.	H3a: Defenders set up 'O31 guaranteeing the quality of products' as the highest priority. H3b: Defenders set up 'O32 improving the efficiency of products and services' as the highest priority. H3c: Defenders set up 'O33 improving the efficiency of internal management' as the highest priority. H3d: Defenders set up 'O34 controlling costs' as the highest priority.	Gao et al. (2008); Miles and Snow (1978); Parnell and Wright (1993)
Proposition 4: Different business strategy typologies have different priorities of OCAs.	H4a: Prospectors, Analysers and Defenders have different prior sequences of OCAs.	

purpose (S1, S2, S3), and 13 hypotheses are produced. The literature supported and the hypotheses converted from the propositions are listed in [Table 3](#).

Hypothesis test

Among the 47 AHP questionnaires received, six indicated a Reactors type, and seven had inconsistent results with a low consistency ratio (CR) value, and they were removed. The total number of valid respondents was 34, including 10 Prospectors, 11 Analysers and 13 Defenders. The results of the AHP questionnaire were utilised to test the 13 hypotheses, and the results are shown as [Table 4](#).

After analysis of the interviews and AHP questionnaires, the relationship between OCAs and business strategic typologies emerged. Through the analytic result of AHP questionnaire, H1a, H1b and H1c are tested as positive. This result is consistent with what the literature demonstrates that Prospectors take the OCAs of R&D as a higher priority than Defenders and Analysers. Compared with Analysers and Defenders, Prospectors pay more attention on 'O11 developing new products', 'O12 developing new services' and 'O13 developing new technology', and also set these up as their highest priority.

The organisations that adopted the strategy of Prospectors often expand and improve their products and services, and also tend to focus on innovation and flexibility. Prospectors focus more on the strategies of developing new services and new markets, which demonstrate a crucial characteristic of an innovative organisation to devote itself to handling changes and renovation. Therefore, Prospectors will have high expenses in R&D, and are willing to take higher risks, invest more effort on new technologies and provide services incorporating higher technologies.

Table 4. Results of hypothesis testing.

Hypothesis	OCA's involved	P Weight %	A Weight %	D Weight %	Comparison of Weights	Hypothesis tests
H1a	Developing new products.	25.95	25.43	14.12	P > A > D	+
H1b	Developing new services.	14.74	12.72	10.01	P > A > D	+
H1c	Developing new technology.	17.11	10.95	9.57	P > A > D	+
H2a	Conducting marketing research.	7.40	7.45	6.86	A > P > D	–
H2b	Expanding international customer base.	10.32	6.20	5.49	P > A > D	+
H2c	Expanding marketing sales points.	3.70	5.13	3.98	A > D > P	–
H2d	Advertising	3.37	5.10	4.16	A > D > P	–
H2e	Branding	2.82	5.93	5.99	D > A > P	–
H3a	Guaranteeing the quality of products.	4.77	7.60	11.13	D > A > P	+
H3b	Improving the efficiency of products and services.	3.36	3.80	7.66	D > A > P	+
H3c	Improving the efficiency of internal management.	2.39	5.06	9.14	D > A > P	+
H3d	Controlling costs.	4.07	4.66	12.01	D > A > P	+

Note: 'P' means Prospectors, 'A' means Analysers, 'D' means Defenders; '+' means supported, '–' means not supported.

However, the hypothesis H2a~H2e are partially positive (H2a Analysers with the highest proportion is negative, H2b is positive, H2c Analysers with the highest proportion is negative, H2d Analysers with the highest proportion is negative and H2e Defenders with the highest proportion is negative). This indicates that the OCAs in the 'marketing' domain are inconsistent with the hypotheses proposed in this research. Prospectors do not tend to focus on this domain more than Defenders and Analysers.

Analysers have the highest weights on the three activities: 'conducting marketing research', 'expanding marketing sales points', and 'advertising'. The result shows that Analysers possess the characteristics of both Prospectors and Defenders (Henderson 1973; Frambach, Fiss, and Ingenbleek 2016; Miles and Snow 1978). Because Prospectors concentrate on the OCAs of R&D more, there are limited resources available to use in the 'expanding marketing sales points' domain (Shortell and Zajac 1990). This is why Analysers set up the highest priority in those three domains.

However, Prospectors are the typology that focuses on 'expanding international customer base' the most. This means that Prospector often expand and improve their products and services, and are always aggressive to be 'the first' in the market Miles and Snow (1978). In addition, the organisations categorised as Prospectors appears to be an innovative organisations (Andrews, Boyne, and Walker 2006). Prospectors are interested in actively discovering the potential and fast-growing markets (Henderson 1973), and they must also unceasingly survey their external environments in order to position themselves and expand the markets of new products (Shortell and Zajac 1990).

Concerning the OCAs of 'branding', Defenders are the one which focus on it the most among the three typologies. This may be due to the characteristic of Defenders which emphasise protecting the current market share of their products (Henderson 1973). Miles and Snow (1978) also revealed that Defenders provide a series of stable services in the markets. They are seeking a stable and transparent environment (Parnell and Wright 1993), and favour narrow and stable markets (Frambach, Fiss, and Ingenbleek 2016; Gao et al. 2008).

Results show that H3a, H3b, H3c and H3d are all supported. Defenders tend to focus on the OCAs of 'manufacturing' domain more than Prospectors and Analysers. They seek stable ways to control their operation in order to reach the highest efficiency, and use the core technologies with cost-saving way to improve their current operation. That means Defenders have to devote themselves to improve the manufacturing activities in the sense of decreasing production cost and increasing efficiency.

Concerning H4a, the results show that the three strategic typologies give different priorities to their OCAs lists. It can be said that Hypothesis 4a is supported. However, some of the proportion comparisons within typologies are at a small level of difference such as in the OCAs of 'O11 developing new products'. Although Prospectors set up a higher proportion of priority to this activity than

Analysers, the difference is not large (Prospectors set up 25.95% and Analysers set up 25.43%). However, the result of comparisons for some OCAs shows large differences, such as 'O31 guaranteeing the quality of products', the Prospectors set up 4.77%, Analysers set up 7.60% and Defenders is 11.13%, there are certain level of differences existed among each type. These research results show that different typologies of overall strategies will generate different priorities to OCAs of organisations.

Analysis of OCA priority

Five most important OCAs out of 12 OCAs for the high-tech industry are shown as Table 5. The order of them and how they are prioritised by each typology are also given in the table.

'O11 developing new products' is the most important OCA in organisations falling into the three typologies and its prior proportion is also the highest, placing the 1st order. Concerning 'O12 developing new services', it is ranked the 2nd place by Analysers, 3rd by Prospectors and 4th by Defenders. And 'O13 developing new technology', which is the same to be categorised in 'R&D' domain, is put into the 2nd place by Prospectors, 3rd by Analysers and 5th by Defenders. The OCAs in the first three places all come from the R&D domain, and this implies that all three strategic typologies in the Taiwan high tech industry pay more attention to the R&D domain, particularly on the corresponding OCAs. But concerning the view from each type, Prospectors is the one to emphasise on this domain more than other two. Regarding 'O31 guaranteeing the quality of products', Defenders ranked it at the 3rd place, 4th by Analysers and 6th by Prospectors. 'O34 controlling costs' is emphasised more by Defenders, which is at the 2nd place. Relatively speaking, Prospectors and Analysers put it at the 7th and 11th places separately, which means this activity is not paid particularly high attention than the others.

Comparing the priorities of OCAs, the three typologies share the same and different perspectives. The OCAs with the least difference in rank across the three typologies are 'O11 developing new products', 'O12 developing new services' and 'O24 advertising'. 'O11 developing new products' is ranked in the 1st place by the three typologies and is perceived as the most important one. 'O12 developing new services' is put into the 2nd place by Analysers, 3rd by Prospectors and 4th by Defenders. There are only two rank differences among the highest and lowest. 'O24 advertising' is ranked the 9th by both Analysers and Prospectors, but 11th by Defenders. It is the same with a difference of two ranks only. The results above demonstrate that regardless which typology adopted by the Taiwan high-tech companies, 'O11 developing new products' and 'O12 developing new services' are considered as the critical OCA. However, 'O24 advertising' is relatively low importance in consideration. Results of above discussions are shown in Table 6.

The three OCAs with the largest difference in ranks are 'O34 controlling costs', 'O33 improving the efficiency of internal management' and 'O22 expanding international customers' (see Table 7). 'O34 controlling costs' is ranked number 2 by Defenders but number 11 by Analysers, and they have 9 ranks in difference. 'O33 improving the efficiency of internal management' is ranked number 6 by Defenders but number 12 by Prospectors, which is the last, and their difference is 6 ranks. 'O22 expanding international customers' is ranked number 6 by Analysers but number 10 by Defenders,

Table 5. The top five OCAs in the list.

OCAs	P rank (proportion) (%)	A rank (proportion) (%)	D rank (proportion) (%)
O11 Developing new products.	1(25.95)	1(25.43)	1(14.12)
O12 Developing new services.	3(14.74)	2(12.72)	4(10.01)
O13 Developing new technologies.	2(17.11)	3(10.95)	5(9.57)
O31 Guaranteeing the products of quality.	6(4.77)	4(7.60)	3(11.13)
O34 Controlling costs.	7(4.07)	11(4.66)	2(12.01)

Note: Each strategic typology in List 50 is represented by its initial: 'P' is Prospectors, 'A' is Analysers, and 'D' is Defenders.

Table 6. OCAs with the least difference among the three typologies.

OCA	P rank (in proportion) (%)	A rank (in proportion) (%)	D rank (in proportion) (%)	Difference in ranks
O11 Developing new products.	1(25.95)	1(25.43)	1(14.12)	0
O12 Developing new services.	3(14.74)	2(12.72)	4(10.01)	2
O24 Advertising.	9(3.37)	9(5.10)	11(4.16)	2

Note: Each strategic typology in List 5 is represented by its initial: 'P' is Prospectors, 'A' is Analysers, and 'D' is Defenders.

and there is a difference of 6 ranks. In a conclusion, different strategic typologies will have different consideration and attention on certain OCAs.

As shown in Table 8, the AHP results show that Prospectors have the largest difference in the allotment of proportions out of the three typologies with 23.56%. This is also represented the even levels on resource allocation. Prospectors are the type with the most uneven resource allocation. A large amount of resource will be invested in the high ranked OCAs by Prospectors. On the other hands, the OCAs with less importance can be supported with less resource. Relative speaking, Defenders are the type with the smallest difference in allotment of proportions, which is only 10.14%. In other words, Defenders tend to be more even on resource allocation, and pays certain amount of attention on 'marketing' and 'R&D' domains while focusing on 'manufacturing' the most. Analysers have a difference of 21.5% on allotment of proportions, which is ranked the middle between Prospectors and Defenders. This result is consistent with the definition and characteristics of Analysers revealed in prior studies.

After analyzing the AHP questionnaire results, Prospectors tend to emphasise more on research and development related OCAs as compared with Defenders and Analysers. Defenders tend to emphasise more on manufacturing and production related OCAs. As for marketing related activities, there is no single type that specifically emphasises them. This shows that the three strategy types have different priorities of OCAs in these three fields. This result supports the hypothesis proposed earlier in this research: different strategy types possess different priorities over OCAs. That is, organisations with different strategy types have different priorities towards OCAs.

The strategic literature in the past has mentioned that Prospectors focus on R&D activities more. Shortell and Zajac (1990) suggested that Prospectors will focus on new services and new strategies of market development more whereas Defenders focus more on manufacturing activities. Miles and Snow (1978) also suggested that Defenders concentrate on tightly controlling and continually seeking lower costs in operation (Miles and Snow 1978). Gao et al. (2008) also further confirmed that Defenders devote themselves to the improvement of efficiency on production and cost control. In consistent with prior literature, this research also found that Prospectors focus more on the OCAs related to R&D domain while Defenders emphasise more on the OCAs related to manufacturing domain.

Previous strategy literature revealed that Prospectors focus on marketing activities more, and organisations categorised into Prospectors, in comparison with other typologies, invest more efforts to strengthening their marketing researches (e.g. Shortell and Zajac 1990). Others also suggested that Prospectors are market forerunners (trailblazer, explorer), leaders or innovation award winners in the professional field while Defenders tend to have narrower and more stable definitions on their markets (Andrews, Boyne, and Walker 2006; Gao et al. 2008; Parnell and Wright 1993).

Table 7. OCAs with the Largest Difference in Ranks Set up by the Three Typologies.

OCA	P rank (proportion) (%)	A rank (proportion) (%)	D rank (proportion) (%)	Difference in ranks
O34 Controlling costs.	7(4.07)	11(4.66)	2(12.01)	9
O33 Improving the efficiency of internal management.	12(2.39)	10(5.06)	6(9.14)	6
O22 Expanding international customers.	4(10.32)	6(6.20)	10(5.49)	6

Note: P = Prospectors, A = Analysers, and D = Defenders.

Table 8. The first and last ranked OCAs in the three typologies.

Business strategic typology	Rank #1 OCAs		Rank the last OCAs		Difference in proportions
P(Prospectors)	O11 Developing new products	25.95%	O33 Improving the efficiency of internal management.	2.39%	23.56%
D(Defenders)	O11 Developing new products.	14.12%	O23 Expanding marketing sales points.	3.98%	10.14%
A(Analysers)	O11 Developing new products.	25.43%	O32 Improving the efficiency of products and services.	3.80%	21.5%

Hrebiniak and Snow (1980) and Hambrick (1983) also proposed that Prospectors will allocate more resources to the activities related to marketing domain than Defenders. However, this research has shown that Analysers focus more on the OCAs related to marketing domain rather than Prospectors (Hambrick 1983; Hrebiniak and Snow 1980). Concerning this inconsistency with prior literature, further research to confirm this finding may be worthwhile.

Conclusion

This found that different strategic typologies will give different focuses on OCAs. This research also establishes a linkage between OCAs and corporate strategy. It was found that Prospectors place more emphasis on 'research and development' related OCAs, while Defenders focus on OCAs of 'manufacturing and production related fields', and Analysers care more on OCAs of 'marketing related fields'. Defenders tend to pay more attention to the OCAs relating to manufacturing domain than Prospectors and Analysers.

This research has also found 12 dominant OCAs in the three fields of R&D, marketing and manufacturing production. The results shows that, for OCAs in the field of R&D, high-tech companies adopting Prospectors strategy focus more on new service and new market development activities. Prospectors also emphasise more on the three OCAs of 'development of new product', 'development of new services' and 'development of new technology'. Analysers possess characteristics of both Defenders and Prospectors as for OCAs in the field of marketing. Analysers tend to emphasise more on the three activities of 'conducting marketing research', 'expanding of marketing sales point' and 'advertising'. The activity of 'brand image building' is most emphasised by Defenders. Compared to the other two, Defenders tend to emphasise more on OCAs related to manufacturing and production including 'guaranteeing the quality of products', 'improving the efficiency of products and services', 'improving the efficiency of internal management' and 'controlling costs'.

Implications

Contributions of this research can be divided into three aspects. Regarding the academic aspect, the notion of OCAs is new, and an investigation into more details is necessary. For the time being, these sets of OCAs can be called 'high-level OCA', which can provide a more systematic future research base for study focused on Miles and Snow's (1978) corporate overall strategy, and provide new directions for future empirical research. Regarding industry aspect, this research finds the linkage between OCAs and strategy types. The results help firms determine their strategic type, for example: assessing their own environmental conditions, conducting self-assessment, and to determine the list of OCAs that are most relevant to their firm and industry.

Furthermore, the results can help other high-tech firms make decisions on adopting certain strategy type by investing limited resources on the best OCAs. This research also provides suggestions to allow firms which intend to conduct new OCAs, or which have already conducting them but with little success, to re-assess their own conducting strategy. It is hoped that this research helps government understand the high-tech industry's current operating environments and the OCAs for success, and assist in developing funding strategy based on what is needed most.

Limitations and future research

Given the fact that the scope of research focuses solely on OCAs and overall corporate strategy in the Taiwan high tech industry, the results may not be applied to studying other levels of strategy (e.g. the development of department strategy), other strategy types, and other industries. Additionally, information obtained from the participants could be limited to the extent of company information they were willing to disclose, especially for those strategic information.

This research has several suggestions for future research. First of all, future research could explore whether the results regarding the relationship between OCAs and organisation typology are applicable in other countries and different industries. Secondly, future research can explore in more depth, perhaps through case studies, how OCAs are being successfully used in real world organisations. Finally, future research could study the performance impact of well managed OCAs on success in different types of typologies.

Disclosure statement

No potential conflict of interest was reported by the authors.

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