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Capability snow model for business model innovation

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Abstract: This article sheds light what are the capabilities needed for expansion and mature stage enterprise to innovate their business model. Authors originally designed a capability snow model that emphasis dynamic and ordinary capability in sensing, seizing and transforming aspects. This research employs 6 case studies with 22 interviews through UK, US and China. The results are inductively coded and analyzed from empirical data. The capability snow model, which concluded business model innovation capabilities under ordinary and dynamic dimension. Three groups dynamic capabilities are uncovered to instruct companies 'do the right thing' and each capability corresponded with 8 ordinary capabilities to help companies 'do the things right'. In theory, this research identifies the capabilities of business model innovation for manufacturing companies. In practice, this paper bridges the gap between theory and practical result in capability dimension.

1. Background

Learned et al. (1969) argue that the real key to a company's success and future development relies on the ability to find or create 'a competence that is truly distinctive'. This ability to acquire truly distinctive competence is identified as capability. Previous research shows that capability has a direct relationship with industry's brand value and innovate current business model is a way to make sustainable profit for a company (Teece, 1986). Hence, identifying the capabilities for business model innovation is noteworthy for enterprise sustainable development. This paper aims to explore what are the capabilities needed for business model innovation and how the capabilities model can instruct enterprise strengthen their acquired capability and attain their required capability. According to Teece's (2014) research, authors also design a capability snow model to help industries nurture their business model competence at dynamic and ordinary levels.

1.1 Capability theory

1.1.1 Definition of capability

Prahalad (1990) manifested that enterprise should focus on developing core competitiveness to create continuing customer satisfaction. This core competitiveness should be unique and difficult to replicate (Teece, 2007). The unique and distinctive competence is described as the ability to make an organization apart from its competitors, and provide tangible benefits for customers and thus competitive advantage for the business (Boons, Spekkink, & Mouzakitis, 2011). To acquire the competence, capability is the fundamental strategic skill for enterprises (Dalkir, 2005).

1.1.2 Distinctive between "competence", "capability" and "skills"

In some cases, 'competence', 'capability' and 'skills' are used as synonyms. Nevertheless, the difference of these words is critical and worth to distinguish. Among the three words, 'competence' and 'capability' classified as a group and skills is another category. The difference between 'competence' and 'capability' is discovered initially.

In a broader sense, competence means the necessary skills to achieve a certain (high) level of performance while capability is the necessary strategic skills to integrate and apply competencies (Dalkir, 2005). In Watts et al.'s (1993) perspective, "competence and capability correspond to secondary flexibility and primary flexibility." This perspective helps managers identify which capabilities are critical to their customers and which competencies support those capabilities. In other words, the role of competence is to support capabilities. While in Dalkir's (2005) view, capabilities are potential core competencies. In this distinguish research, a number of scholars discuss the definition of competence and capability, as well as the differences.

Teece (1997) defined competences are a firm's fundamental business core. Comparing with competitors and investigating the firm's product and service should derive it. Stalk et al. (1992) also emphasized that competence refers to the firm's technological and production expertise at specific points along the value chain. It could be thought of as existing at many levels in an organization's hierarchy (Prahalad and Hamel, 1990).

To explain the difference clearly, an example of Canon is used. Canon's 'core competence' is explored as "diverse production technologies" (Prahalad and Hamel, 1990). Specifically, the precision mechanics, fine optics and microelectronics are Canon's 'core competence' (Mills et al., 2003). Combining the appropriate complementary assets enhances the value of core competences. Furthermore, the distinctive degree of core competence is related to how difficult it is for competitors to replicate its competences (Teece, 1997). In contract, Stalk et al. (1992) explicated that Canon's 'capability' is the superior business process such as supplier management, new product introduction, rather than principally related to product technologies. Capability reflects an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions (Leonard-Barton, 1992). The divergence in these famous authors view of what the Canon capability is illustrates a key challenge in this subject.

As to 'skills', there are no simple definitions (Moon, 2004). In broad, 'skill' is an ability to do something (Shawcross & Ridgman, 2014). In Tether's et al. (2005) definition, a skill is ability or proficiency at a task that is normally acquired through education, training or experience. In addition, most definition includes a qualifying statement on how a skill is acquired or performed (Shawcross & Ridgman, 2014). Knight and Yorke (2004) prefer the term 'skilled practice' than 'skill' to expose that skills are context-specific and not easily transferable. For example of "making tea", it needs a kitchen or fire when it happens in the wild. The kitchen, fire and availability of matches are the context and the ability to make a cup of tea is the skills. Therefore, "the activity and the context that determines the skills required for a particular situation. Skills can only be specified when the context is known and transferability will depend on the degree of similarity between contexts (Shawcross & Ridgman, 2014)". Figure 1, illustrates the relationship.

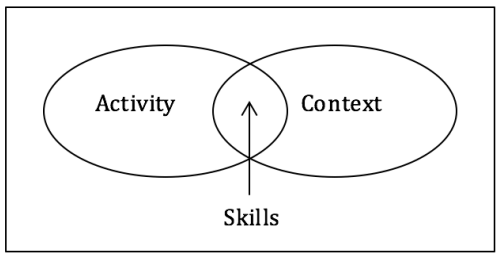


Figure. 1 Skills illustration Idea: (Shawcross & Ridgman, 2014.); Source: Author

In conclusion, the concept of 'skills' is more about individual ability acquired through education or training. 'Competence' or 'capability' is the ability for organization or industries of improving their core competitiveness in the market. Capabilities are visible to the consumer while the competencies represent the core competitiveness.

1.1.3 Dynamic and ordinary capability

Teece (1997) defined dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". The foundation of dynamic capabilities is the skills, processes, procedures, organizational structures, decision rules, and disciplines (Teece, 2007). Another well-accepted definition of capability is proposed by Winter (2000), which is "a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type". Meawhile, Eisenhardt and Martin (2000) defined dynamic capability is the firm's processes that use resources, which is integrating, reconfiguring, gaining and releasing resources to match or even create market change.

In contract, ordinary capabilities (Teece, 2014) represents the performance of administrative, operational, and governance-related functions that are (technically) indispensable to accomplish targets. It also has been called as zero-level capability (Winter, 2003), static capability (Collis, 1994), or first-order capability (Danneels, 2002). Teece (2014) emphasis that ordinary capabilities are fundamental and could support competitive advantage for decade-long periods. However, on their own, ordinary capabilities cannot bring long-run success if companies don't work on innovation in higher level. The following Table 1. illustrates the comparison between dynamic capability and ordinary capability.

Table 1. The comparison between dynamic and ordinary capability

	Ordinary capabilities	Dynamic capabilities
Purpose	Technical efficiency in business functions	Achieving congruence with customer needs and with technological and business opportunities
Mode of attainability	Buy or build (learning)	Build (learning)
Tripartite schema	Operate, administrate, and govern	Sense, seize, and transform
Key routines	Best practices	Signature processes
Managerial emphasis	Cost control	Entrepreneurial asset orchestration and leadership
Priority	Doing things right	Doing the right things
Imitability	Relatively imitable	Inimitable
Result	Technical fitness (efficiency)	Evolutionary fitness (innovation)

Moreover, scholars attempted to identify capabilities in a hierarchical structure. Ordinary capabilities are the foundation to support industries day to day routines and dynamic capability is identified as higher level and able to direct ordinary activities. Following Table 2. are the most cited capability hierarchy proposed by researchers.

Table. 2 Capability hierarchical structure

Level	Collis (1994)	Winter (2003)	Pavlou and Sawy (2011)	Teece (2014)
Higher ↑ Lower	Creative capability	Higher-order capability	Second order capability	Dynamic capability
	Dynamic capability	First-order capability	First order capability	
	Functional capability	Zero-order capability	Underlying routines	Ordinary capability

1.2 Business model innovation

1.2.1 Introduction to business model

Business model aims to translate strategies into business activities and market competitiveness to create customer values and public benefits (Lüdeke- Freund, 2010). In recent years, business model has been referred to as a statement (Stewart & Zhao, 2000), a description (Weill & Vitale, 2001), a representation (Shafer, Smith, & Linder, 2005), architecture (Dubosson-Torbay & Osterwalder, 2002;), a conceptual tool or model (George & Bock, 2009) and a framework (Afuah, 2004; Zott, Amit, & Massa, 2011).

The business model has three core components: the value proposition, the value creation and delivery system, and the value capture (Richardson, 2008; Zott & Amit, 2009). Identifying these core components, as well as four pillars (value proposition, customer interface, infrastructure and financial aspects) (Lüdeke- Freund, 2010) , would help industry to build a successful business model. An effective business model leads to a successful company. It refers to the business model analysis, executives identify all of the constituent parts and understand how the model fulfils a potent value proposition in a profitable way (Johnson & Christensen, 2008). The economic value of a technology will not be fully generated until it's commercialized with a business model (Chesbrough, 2010).

In Chesbrough's (2007) research, business model performs two important functions: value creation and value capture. It defines a series of activities, from procuring raw materials to satisfying the final consumer, which generates a new product or service. In such a way, net value will be created throughout the various activities (Chesbrough, 2007). The key of most successful business models is the development of a 'powerful, focused customer value proposition'. In turn, this requires 'a comprehensive understanding' of your target customer's 'job-to-be-done' (Leavy, 2010). A strength of business model as a planning tool is that it focuses on how the elements fit into a whole system (Magretta, 2002).

1.2.2 Business model innovation

Innovation is a concept as core of the process of economic change and development (Schumpeter, 1934). DTI (2003) defined innovation as "the successful exploitation of new ideas". Business model innovation is a set of interrelated decisions helps the firm create sustainable competitive advantage in defined markets (Morris et al., 2005). It can create huge opportunities while threatening traditional by means of generating revenue. As a consequence, fortunes can create for some firms while kills some other firm's market position (Velu & Khanna, 2013).

The reason for innovating a business model is to capture more value. Every new product development should be joined with the development of a business model, which is defined as 'going to market' and 'capturing value' strategies (Teece, 2010). Björkdahl and Holmén (2013) emphasized that business model innovation refers to creating or reinventing something new or different in doing business. In other words, at least one constitution element of current business model is changed (Eurich et al., 2014). At this stage, Velu (2014) explained business model innovation can "redefine what a product or service is, how it is provided to the customer, and how it is monetized". Therefore, business model innovation can change the mode of competition through altering the performance metrics (Daneels, 2004).

Amit, R., & Zott, C. (2012) introduced three ways to innovate a business model:
1.The first way is to add novel activities such as forward to backward integration;
2.Second way is to link the activities in novel ways, which they argued as activity system structure;
3.Third way is to change one or more parties that perform any of the activities.

The major source of innovation is entrepreneurs (Schumpeter 1942). Existing firms are also attracted by business model innovation in order to increase their competitiveness. Giesen et al. (2007) identified three main types of business model innovation, which is in industry models, in revenue models and in enterprise models. They proved that each of the three types of business model innovation could lead to success. Among the three types, innovation in enterprise is most popular, because of this model focus on network plays (i.e. external collaborations, partnerships etc.).

1.2.3 Barriers to innovate business model

Business model seems easy to imitate in a superficial level. Nevertheless, in practical, implementing a business model may need systems, processes and assets, which is difficult to replicate. Furthermore, a level of opacity may exist that makes it difficult to understand how a business model works in detail. Thirdly, incumbents in the industry may reluctant to cannibalize existing profits or upset other necessary business relationships (Teece, 2010).

Chesbrough (2010) identified that experimentation can help identify the data needed for business model innovation. Whereas, managers are likely to resist the experiments when it conflicts with traditional configurations of firm assets. Clayton and Michael (2003) also proposed when the business model innovation conflict with existing business model or asset configuration, business model innovation would face challenges. One of the solutions is to construct maps of business model to clarify the processes, which then allows them to become a source of experiments alternative combinations of process (Chesbrough, 2010).

1.3 Research gap identification

Through the literature review of capability, a distinctive study of "capability", "competitiveness" and "skills" has been proposed. In addition, capability as an abstract word, the biggest challenge is how the capability can be proposed in practical level. In business model review, it shows that majority of the publications on business model discussed value. Also, business model research is still emerging and much research is requiring conducted. For this study, it's clear that there is very little previous research into how to integrate and implement business model innovation.

In summary, the business model review identifies this research field is an emerging research area, which needs better understanding of how to integrate and implement business model innovation. Also, no current research identifies what are the capabilities needed to innovate business model effectively.

2. Methods

The target of this research is to explore the capabilities to help industry build an effective business model. There exist two main activities in theory development, which is "the formulation of propositions" and "testing whether they can be supported" (Dul & Hak, 2008). This research uses a qualitative case study to explore knowledge inductively (Eisehardt, 1989). Hence, this research is based on the exploration for theory to discover the capabilities and develop the empirical capability data to a framework, which instructs practitioners identify their acquired capability and required capability.

There are three justifications to select case study as the main research method. Firstly, case study is one of the most flexible methods, which provides a plenty of detailed description of a particular phenomenon (Hakin, 2000). Secondly, this research focuses on the contemporary event, which is identical to the conditions of case study method (Yin, 2014). Thirdly, According to Eisenhardt (1989) and Hagg et al. (1979), many single-case are criticized, as they cannot provide any basis for generalization, while multi-case construct a stronger basis for knowledge building. This research uses both single-case and multiple-case study.

The data collection method of the research is case study. 6 cases include 22 interviews are conducted (2 from UK; 2 from US; 2 from China). Case study are selected to focus on mature manufacturing companies. Because of mature manufacturing companies already has significant market share and existing consumers. To make sustainable profit, these companies have strong desire to innovate their current business model and capture more value.

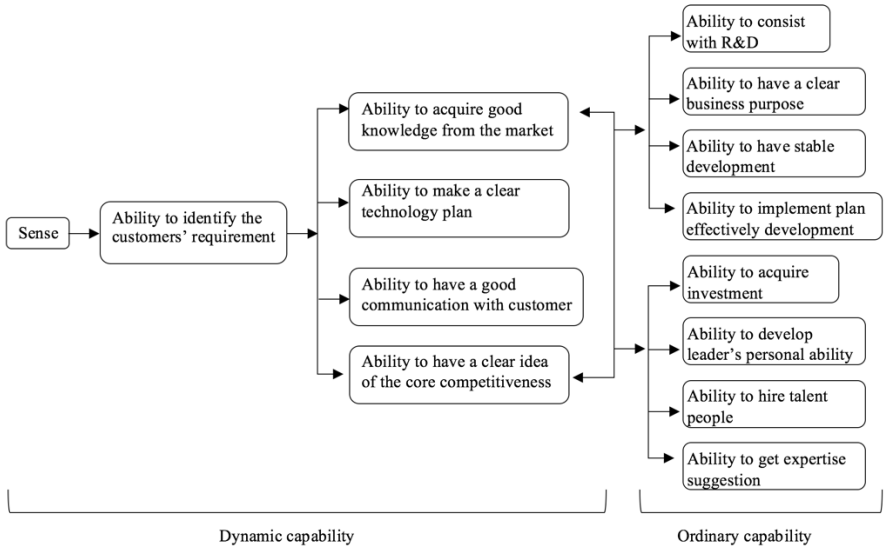
3. Empirical case study

These 6-case study is categorized as three group by geographical factors. The two companies in US (named as US1 and US2) are based on Silicon Valley. US1 is a worldwide leading company producing computer and mobile device. US2 is a leading company in software and their current business is mainly focuses on software, hardware, consulting and service. Both the US companies are in mature stage, they have stable cash flow and occupy significant market share. These companies are seeking to innovate their current business model to generate sustainable profit. Another key factor of these company is: they have a strong sense of disruptive to competitors. Because in Silicon Valley's history, many mature companies are extruded by emerging unicorns. The second group are the companies based in UK (named as UK1 and UK2). UK1is the company producing aircraft. Although they have significant market share and has a monopoly in aircraft trading, they still have challenges from the smaller competitors, because some of the competitors has geographical advantage and they can concentrate on the single market. UK2 is a long-life furniture manufacturing company. This company has more than 50 years' history and they recently reduced the dealer and service to the customers directly. Both these UK companies are occupied stable market share, they are facing challenges from competitors and have strong desire to innovate their business model or expanding their market. The third company is from China (named as China1 and China2). China1 is a state-owned company produce blower. The traditional business model of China1 was based on direct product sales. Currently, this company not only sells products but also provides services to its consumers. China2 is mainly produce numerical machine tool part; energy equipment; and miner equipment. China2 is expanding their business to new areas such as chemical and biomedical engineering, but casting still takes the largest market share of their products. These two Chines industry are traditional manufacturing industry. Instructed by 'Made in China 2025' Strategy, these company need to conduct upgrading and transformation of their current business model to make their product eco-friendly.

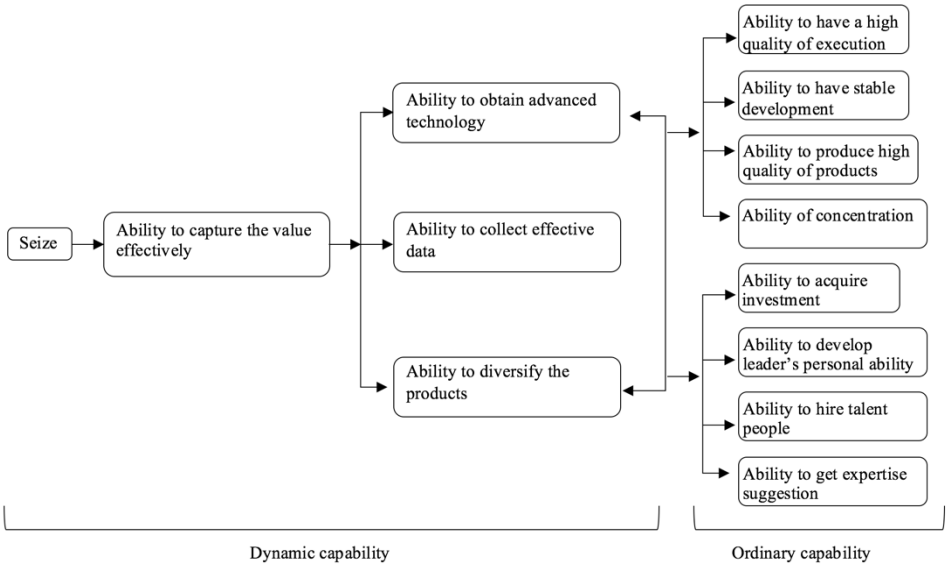
4. Research findings

Interview results are analyzed to identify cross case capabilities, and then grouped into three core themes. As dynamic capabilities are the highest-level capability that determines the enlargement of the company, the core themes of the snow model are based on Teece's (2007) theory, which is sense, seize and transform. Corresponding to sensing, the capability acquired from empirical data is 'ability to identify the customers' requirement'. Likewise, the matching capability of 'seizing' and 'transforming' is 'capture the value effectively' and 'innovative internally and identify innovation ideas externally' respectively.

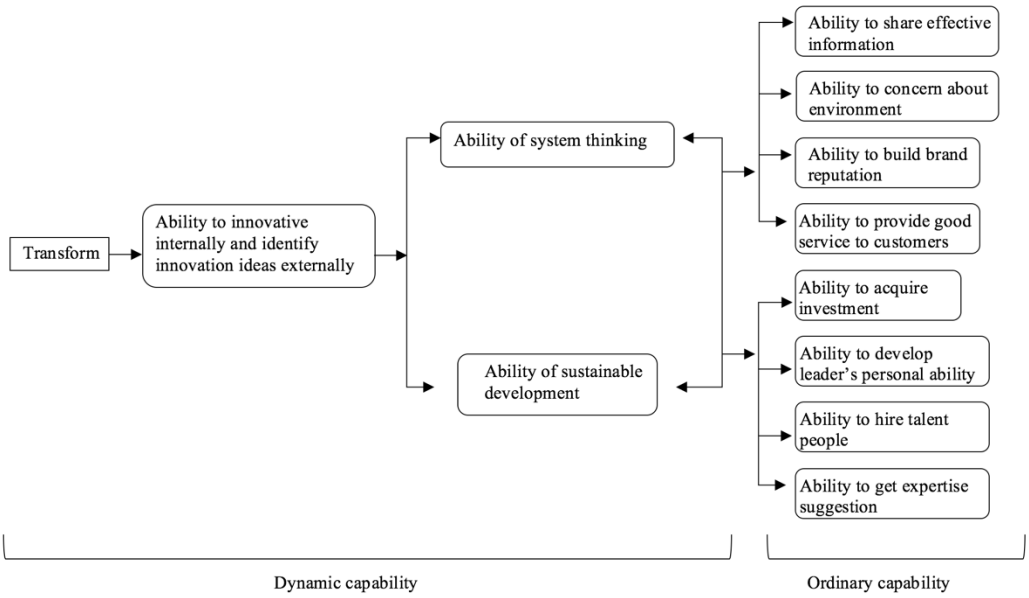
In detail, obtaining the capability of 'identify the customers' requirement', companies need to build up 4 kinds of dynamic capability, which is 'ability to acquire good knowledge from the market', 'ability to make a clear technology plan', 'ability to have a good communication with customer' and 'ability to have a clear idea of the core competitiveness'. Corresponding to the dynamic capabilities, companies need to have their fundamental ordinary capabilities to 'do the things right'. The hierarchical structure is:



Similarity, attaining the capability of 'capture the value effectively', another 3 kind of dynamic capability need to be identified: 'ability to obtain advanced technology', 'ability to collect effective data' and 'ability to diversify the products'. There are 8 ordinary capabilities consistent to the dynamic capabilities. The hierarchical structure is:



Likewise, achieving the capability of 'innovation internally and identify innovation ideas externally', 2 kind of dynamic capability need to be recognized: 'ability of system thinking' and 'ability of sustainable development'. Meanwhile, 8 ordinary capabilities are corresponded with the dynamic capability. The hierarchical structure is:



To synthesis the above finding from case study. A snow model is designed by authors. See Figure 2. The concentric hexagon with bigger contour line are dynamic capabilities identified from empirical results. The breaches of each theme are the correspondent ordinary capabilities, which follows with the principles proposed by Teece (2014), which is operate, administrate and govern. The arrow point into the core hexagon represents the extra capability need to be acquired from outsource (i.e. money, talent people). The arrow points out the hexagon symbolizes the capability that the company need to be acquired at intra level.

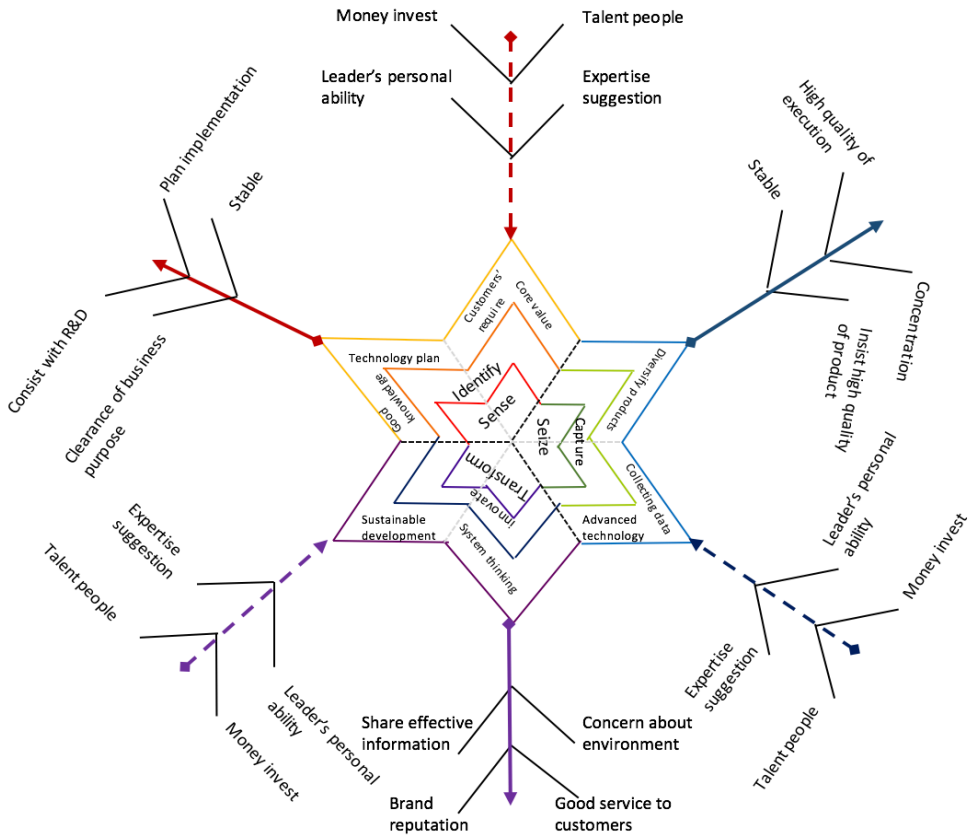


Figure 2. Capability snow model for business model innovation

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