Evolution of Shared Cognitive Structures in Entrepreneurial Teams and their Impact on Opportunity Identification and Exploitation

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Abstract

In the pursuit of opportunity identification and exploitation, entrepreneurs develop cognitive structures. Although the classical view in entrepreneurship suggests that these cognitive structures are mainly developed by a single individual, they oftentimes span across the entire entrepreneurial team [1, 2, 3]. West [4] recently examined collective cognition in entrepreneurial teams.

This paper analyzes the differences in team members' cognitive structures and their contributions to a shared cognition of the entrepreneurial team. Furthermore, this study is interested in the evolution of cognitive structures. In this respect, the paper responds to calls for more entrepreneurial process research (e.g., [5]). Finally, this study examines the relationship between the change in shared cognition in the entrepreneurial teams and the identification and exploitation of entrepreneurial opportunities. Hence, the research questions are: (1) How do shared cognitive structures of entrepreneurial teams evolve over time? (2) How do these shared cognitive structures relate to opportunity identification and exploitation?

Keywords: Entrepreneurship, teams, shared cognition, cognitive map.

Introduction

Shared team cognition has been understood in many different ways. In this paper, shared cognition is conceptualized as overlapping causal maps as shown by Laukkanen [6]. More generally, shared mental models are "beliefs that shape inferences, predictions, and decisions about what actions to take" [7: p. 228]. In management, shared mental models were discussed in the form of "dominant logic" [8] and other frameworks of social cognition [9, 10]. Levine, Resnick and Higgins [9] pointed out that "outside the laboratory and the school, cognition is almost always collaborative" (p. 591). Walsh [10] argues that "when a group of individuals is brought together, each with their own knowledge structure about a particular information environment, some kind of emergent collective knowledge structure is likely to exist" (p. 291). There is plenty of empirical evidence that entrepreneurial teams are omnipresent. Kamm et al. [3] mention a number of empirical studies supporting this claim. Cooper and Bruno [11], for instance, found that over 80% of the high growth companies they surveyed had been founded by a team. Therefore, it seems reasonable to assume that "entrepreneurship is more likely to be plural" [12: p.17].

In order to better understand shared mental models of entrepreneurial teams, this study draws on insights from group research in management and organizational behavior (e.g., [13]). Particularly, Fiol [14] discusses the tensions between unified thinking and multiple interpretations. In addition, there is evidence of cognitive variance among team members [8, 15]. In the field of entrepreneurship, West [4] proposes a model where Entrepreneurial Team Collective Cognition (ETCC) is a mediator between the individual-level factors and the decisions and actions of new ventures. West finds an inverted U-shaped relationship between the new venture performance and the degree of differentiation and integration of strategic constructs within entrepreneurial top management teams. The current study builds on the insights gained from a limited number of studies on entrepreneurial teams [e.g., 1, 4] and from group research in management [e.g., 13].

Yet, the objective of this paper goes beyond understanding shared mental models of entrepreneurial teams. This paper focuses on the evolution of shared mental models and their impact on opportunity identification and exploitation. With the prominent exception of Barr, Stimpert and Huff [16] very few studies analyze cognitive maps over time. Barr et al. investigated cognitive maps of two railroad companies over a period of time in which only one stayed in business. Although both railroad companies recognized the decline in the rail industry, only the surviving firm adapted their mental models. While Barr et al.'s paper is extremely important and highly relevant, by design it cannot analyze the divergence among the different members of the management team, because it uses letters to shareholders as its data source rather than individual interviews, as used by the current study.

Methodology and Research Design

The research is designed as a comparative case study [17, 18, 19] of nine software ventures in the German-speaking area. The software industry is interesting for several reasons. First, the burst of the internet bubble (European Information Technology Observatory, 2004) and the economic downturn 2001/02 (OECD report, 2002/03) affected the software industry. This, of course, led to major change and new opportunities in this industry. In addition, many potential opportunities arose through merging with other industries, such as the telecommunications industry. Second, the software industry reaches maturity over the observation period (2004-2006) during which professionalization, standardization, and industrialization became relevant. The above arguments (together with the fact that this industry is characterized by little regulation by authorities, few standards and no patents) make it an interesting industry within which to study entrepreneurial opportunities.

The nine ventures investigated here are located in Munich, Germany, and Zurich/St. Gallen, Switzerland, and are comparable along a number of dimensions such as business, customers, size, structure and development of the company (Table 1).

At three equidistant time points between 2004 and 2006, semi-structured interviews of 90 minutes each were conducted with the three most influential individuals in each one of the nine ventures, resulting in 81 interviews.

The method used for data analysis is the cognitive mapping technique [20, 21, 14, 22, 10]. Specifically, the causal mapping technique [23] was used. The causal maps are analyzed on the individual level and on the collective level. For the collective level, the causal maps are aggregated with the focus on the diversity of team members' explanations [6, 24, 25]. As opposed to congregate maps, aggregate maps include dominant causalities and concepts of individual maps [24]. This is essential for this study because it preserves the diversity of concepts. In sum, the cognitive maps are

analyzed on three levels: (1) individual cognitive structures, (2) collective cognitive structures, and (3) collective cognitive structures over time. This analysis allows for comparing the collective cognitive structures over time and their impact on entrepreneurial opportunity identification and exploitation.

Table 1: Characteristics of the Ventures in the Sample

Firm	Origin	Country [1]	Industry focus	Function focus	Number employees	TMT size	Mgt. turnover	Expertise
Alpha-Tech	ETH	CH (US, H)	Banking	Security	100	5	Low	Technology Business
Beta-Tech	Tech Company	GER	None	None	100	5	Very low	Technology Business Philosophy
Gamma-Tech	Bain & Company	CH	None	Web design	70	8	Very high	Business Technology
Delta-Tech	Tech Corp.	GER	Public Sector	Information mgt.	20	3	Very low	Business Technology
Epsilon-Tech	McKinsey	GER	Building	Project mgt.	200	7	Low	Business Technology Building
Zeta-Tech	Business School	CH	None	HR processes	20	4	Low	Business
Eta-Tech	Technical University Munich	GER	None	Security	70	3	Very low	Technology Some Mgt.
Theta-Tech	Design/ Business School	CH	None	Marketing	120	7	Medium	Mgt. Design Technology
Iota-Tech	ETH	CH	Financial	Security	80	11	Low	Technology

Legend: Table 1 describes the nine software ventures constituting the sample of this study.

Regarding opportunity exploitation, an index was created from the actual opportunities that have been implemented by the company on a scale of 1 through 10. It is important to note that these measures are – as opposed to the shared cognitive maps described above - not subjective but objective. A multitude of internal and external documents from the nine ventures (e.g., internal reports, marketing reports, websites, reports about the company, sales figures, etc.) were triangulated to create an objective measure. In order to be comprehensive, a given venture's opportunity exploitation was examined along five dimensions: product innovation, service innovation, technology innovation, marketing innovation, and organizational innovation. The opportunity identification is constructed from additional information and interviews with people within and outside of the entrepreneurial team in order to get a sense of the number of opportunities identified at the time of the study.

In the interviews, a set of questions was asked relative to opportunities identified by each of the nine ventures. Exemplary questions are: "What is the goal of your company?", "What is your current business model?", and "How does your company differ from your competitors regarding your value proposition?" These questions were posed in the same way at each point in time, t_1, t_2, and t_3. This comprehensive set of questions covers the different areas of the company's business:

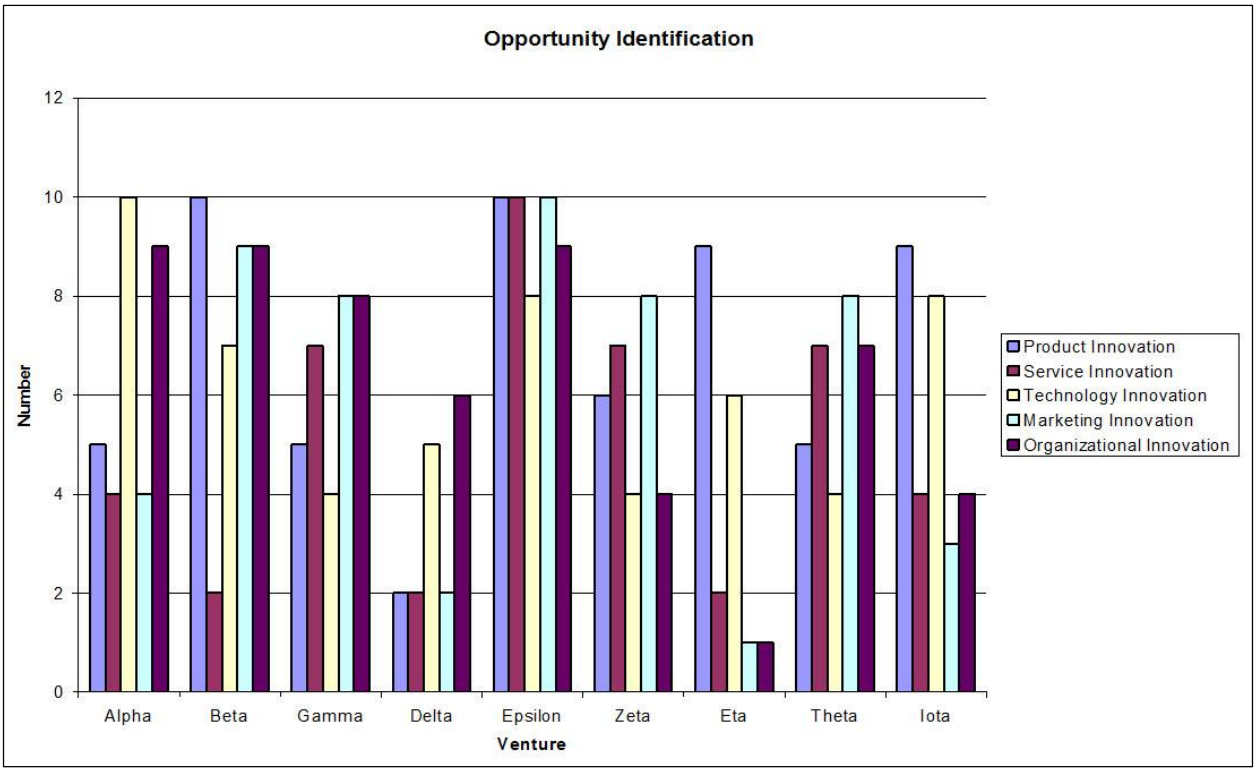
[1] Countries: CH=Switzerland; GER=Germany; US=United States; H=Hungary.

business model, learning and challenges, strategy and core competencies, customer focus and management, strategic alliances, perception of industry and competition and vision. While the focus of these interviews is intentionally broad, the set of questions is consistent over time. Based on these interviews at the three points in time, cognitive maps were developed. These maps were then aggregated into a comprehensive map representing the overlap and diversity of concepts and causalities. The aggregate maps were subject to an analysis of centrality, domain and cluster. Taken together, these three measures are indicators of cognitive complexity. These three measures together indicate the dominance of certain concepts based on different properties and therefore guarantee validity. The coding process for several randomly selected interviews was replicated by two independent researchers that are active in other disciplines. The inter-rater reliability was 87%.

Data Analysis and Results

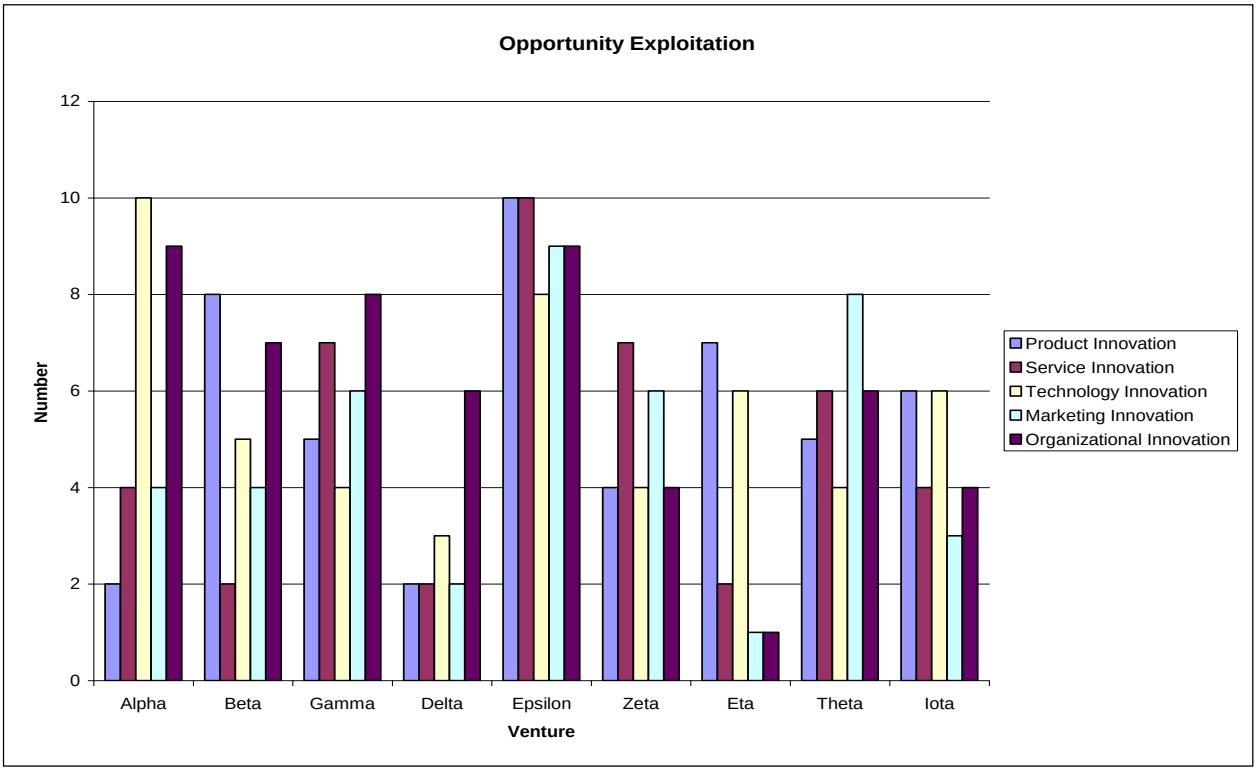
In the following, the analysis of the individual and the shared cognitive maps over time is presented. These are then associated with the number of opportunities that the ventures identified and exploited.

Figure 1: Opportunity Identification along five dimensions for the nine ventures



Legend: Figure 1 describes the opportunity identification at the nine software ventures in the five areas of innovation.

Figure 2: Opportunity exploitation along five dimensions for the nine ventures



Legend: Figure 2 describes the opportunity exploitation at the nine software ventures in the five areas of innovation.

Number of Shared Concepts and Causalities

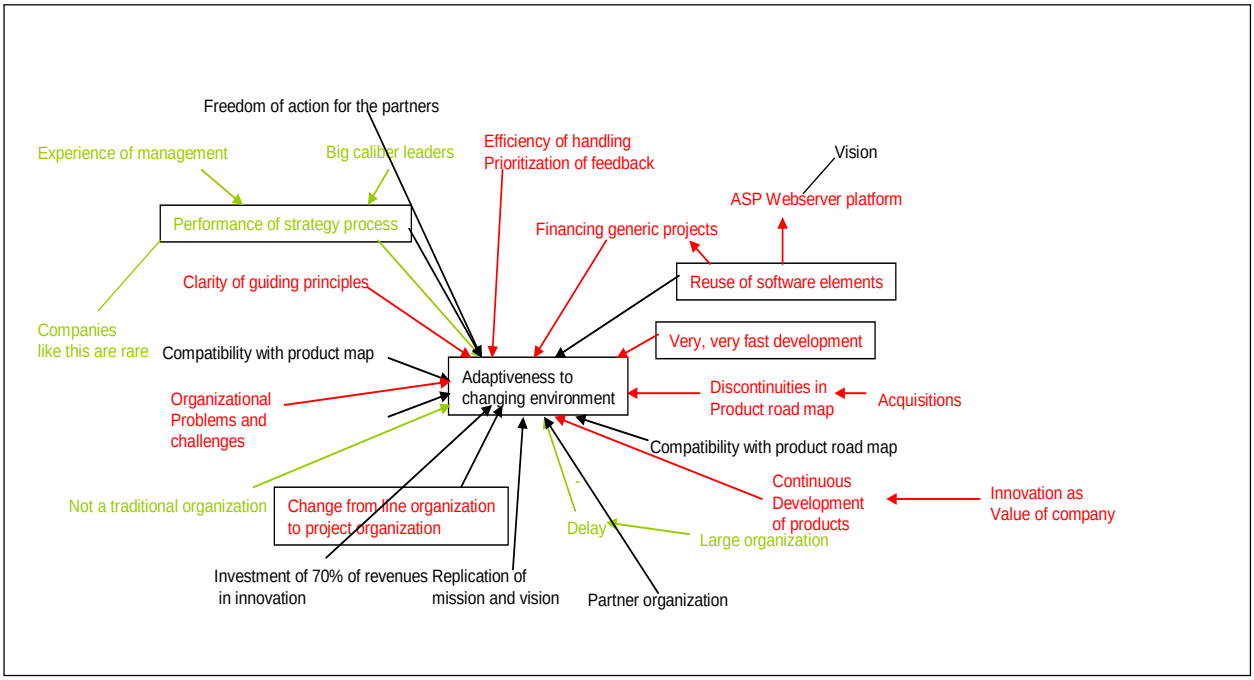
Fiol [14] investigated the new venture development process and found that organizational learning is really about the development of diverse interpretations. Fiol shows how the team members in the ventures that she analyzed developed unified ways of framing their arguments, while at the same time maintaining diversity through differences in the content of team members' interpretations. Similarly, Clarysee and Moray [26] relate knowledge diversity to team learning, which, is likely to lead to a greater number of opportunities. On the one hand, cognitive diversity promotes different ideas and creativity in the decision making process [27, 28] and avoids group think [29]. On the other hand, too much diversity may lack the ground for common understanding and hence may not be most effective for opportunity identification.

For the study of shared cognitive maps, this finding would translate into a high number of shared concepts of the maps and a low number of shared causality of the maps. Given that the constituent elements of cognitive maps are concepts and links, the following is proposed:

Proposition 1a: A high number of shared concepts with a low number of shared causal links results in the identification and the exploitation of many opportunities.
Proposition 1b: A high number of shared concepts and a high number of shared causal links results in the identification of many, but the exploitation of fewer, opportunities.

At Epsilon-Tech, for instance, “adaptiveness” was the most dominant concept for all three interviewees.

Figure 3: Cognitive Map for Epsilon-Tech at t_1

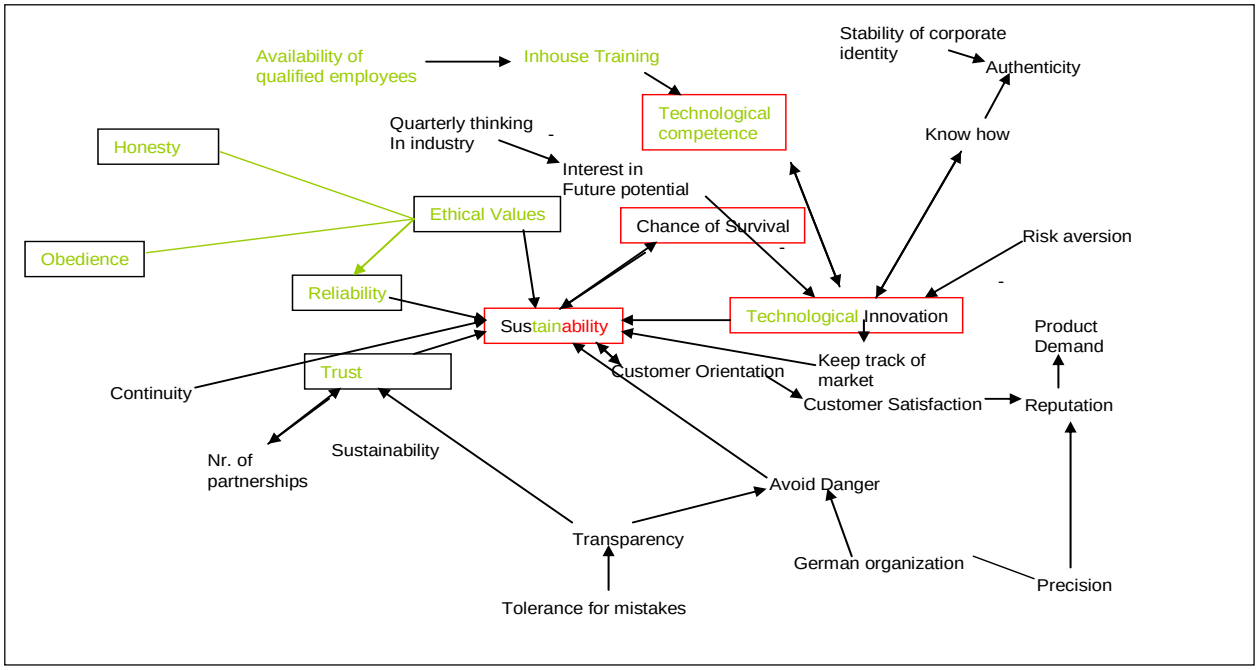


Legend: Figure 3 illustrates the aggregate map for Epsilon-Tech.

The dominant decision makers referred to different explanations as to how adaptiveness serves the company and how it may be reached. Yet, the different causal explanations all support the general concept of adaptiveness to the environment. The reasons provided by the team members are of different natures such as "freedom of the partners," "clarity of guiding principles," "performance of strategy process," or "compatibility of product roadmap." In the case of Epsilon-Tech, this constellation appears to guarantee a consensus about the main orientation or identity of the company while leaving room for interpretation as to how "adaptiveness" is reached. This could then explain how commitment at a strategic orientation can be combined with the flexibility necessary to make changes in how the adaptiveness is reached. Next, the map of Epsilon-Tech is contrasted with Beta-Tech. For Beta-Tech's cognitive map, refer to Figure 4.

Beta-Tech, by contrast, demonstrates the highest number of shared concepts and causalities in the sample. In other words, the maps of Beta-Tech are strikingly coherent and integrated; nearly every element in any of Beta-Tech's maps is connected with every other element in that map. The dominant concepts are consistent over time. Beta-Tech identifies quite a number of opportunities, such as developing a new product on a different technological platform and a new business model and organizational structure. Beta-Tech did have some interesting ideas, yet all the members of the team were so familiar with the company that they found many reasons why the opportunities should not be exploited at that time. In this sense, the shared cognition inhibited the exploitation of opportunities.

Figure 4: Cognitive map for Beta-Tech at t_1



Legend: Figure 4 illustrates the aggregate cognitive map for Beta-Tech at t_1.

Complexity of individual cognitive maps as moderator

Researchers have found that complex mental model structure increases both individual and organizational capacity to respond and perform successfully [15]. Bartunek, Gordon, and Weathersby [30] showed that cognitive complexity (understood as high capability to differentiate and integrate) leads to more accurate perceptions and more effective behavior. Cognitive complexity has been related to positive outcomes in various papers. Calori, Johnson, and Sarnin [31] found evidence that the cognitive complexity of the CEO should match the complexity of the environment. Although those authors could not show the relationship between the cognitive complexity and performance, they suggest that such a pattern exists. It is reasonable to assume that cognitive complexity positively impacts the relationship between the cognitive structure of the aggregate map and the identification and exploitation of opportunities. Therefore, the following is proposed:

Proposition 2a: Low complexity of individual cognitive maps negatively moderates the relationship between the cognitive structure of the aggregate map and the identification and exploitation of opportunities.
Proposition 2b: High complexity of individual cognitive maps positively moderates the relationship between cognitive structure of the aggregate map and the identification and exploitation of opportunities.

Table 2 informs about concepts and links contained in each one of the three individual cognitive maps. This table illustrates that ventures with a high average across the individual cognitive maps are associated with greater opportunity identification and exploitation (e.g., Alpha-Tech), whereas firms where the individual cognitive maps are less complex are associated with the identification and exploitation of fewer opportunities. In all cases, the first interviewee, one of the

founders/the founder and CEO has a more complex map. The complexity changes slightly over time.

Table 2: Cognitive Complexity of the nine ventures

Firm #	First interviewee		Second interviewee		Third interviewee		Average	
	Concept	Link	Concept	Link	Concept	Link	Concept	Link
Alpha-Tech	101	87	62	51	42	24	68.33	54.00
Beta-Tech	78	69	62	54	70	61	70.00	61.33
Gamma-Tech	78	70	67	56	40	35	61.67	53.67
Delta-Tech	54	40	36	29	41	35	43.67	34.67
Epsilon-Tech	79	66	55	38	78	55	70.67	53.00
Zeta-Tech	115	97	89	45	76	66	93.33	69.33
Eta-Tech	67	54	66	51	44	31	59.00	45.33
Theta-Tech	76	60	56	45	38	29	56.67	44.67
Iota-Tech	68	51	55	39	52	42	58.33	44.00
Avg.	79.6	66	60.9	45.3	53.4	42	64.6	51.1

Legend: Table 2 summarizes the complexity scores for each one of the three individual cognitive maps respectively.

Change of Shared Cognitive Maps over time

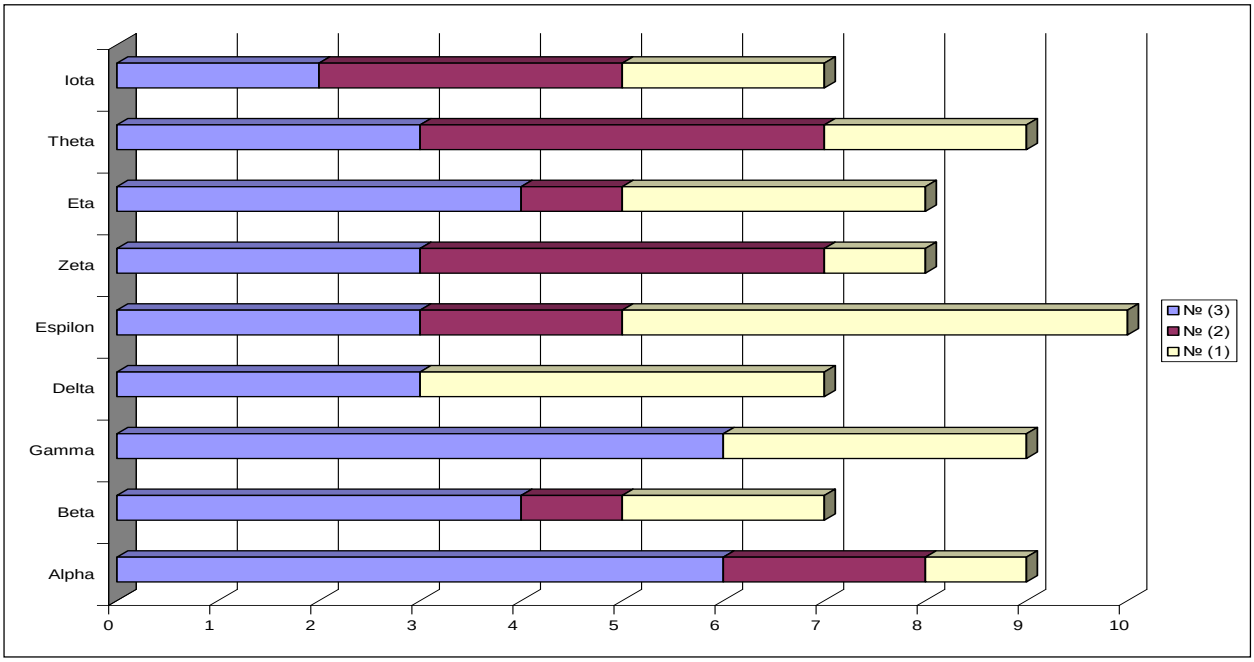
Only very few studies in the field of management investigate the change of cognitive maps over time. Barr et al. [16], the most prominent exception, looked at the concepts and links separately rather than as a combined measure of cognitive complexity which is the method used by the current paper. This study was able to compare the continuity of the concepts over time. In this regard, it seems plausible to argue that continuity of concepts is associated with less change in the strategy of the firm. If there is discontinuity of concepts, there is more change. Based on the identification of continuity vs. discontinuity of concepts from t_n to t_{n+1}, the following set of propositions was explored:

Proposition 3a: The continuity of concepts in shared cognitive maps (concepts and causalities) is associated with the identification of and hence exploitation of fewer opportunities.

Proposition 3b: The discontinuity of concepts in shared cognitive maps (concepts and causalities) is associated with the identification of and exploitation of more opportunities.

Figure 5 and 6 illustrate this relationship based on this study's data.

Figure 5: Comparison of the Evolution of dominant logic in the nine ventures



Legend: Figure 5 illustrates the continuity of the maps of the nine ventures (№(3)=major concepts & links are continued over all periods; №(2)=major concepts & links are continued over two periods; №(1)=discontinuity, i.e. major concepts and links only appear in one map, either at t_1,t_2, or t_3).

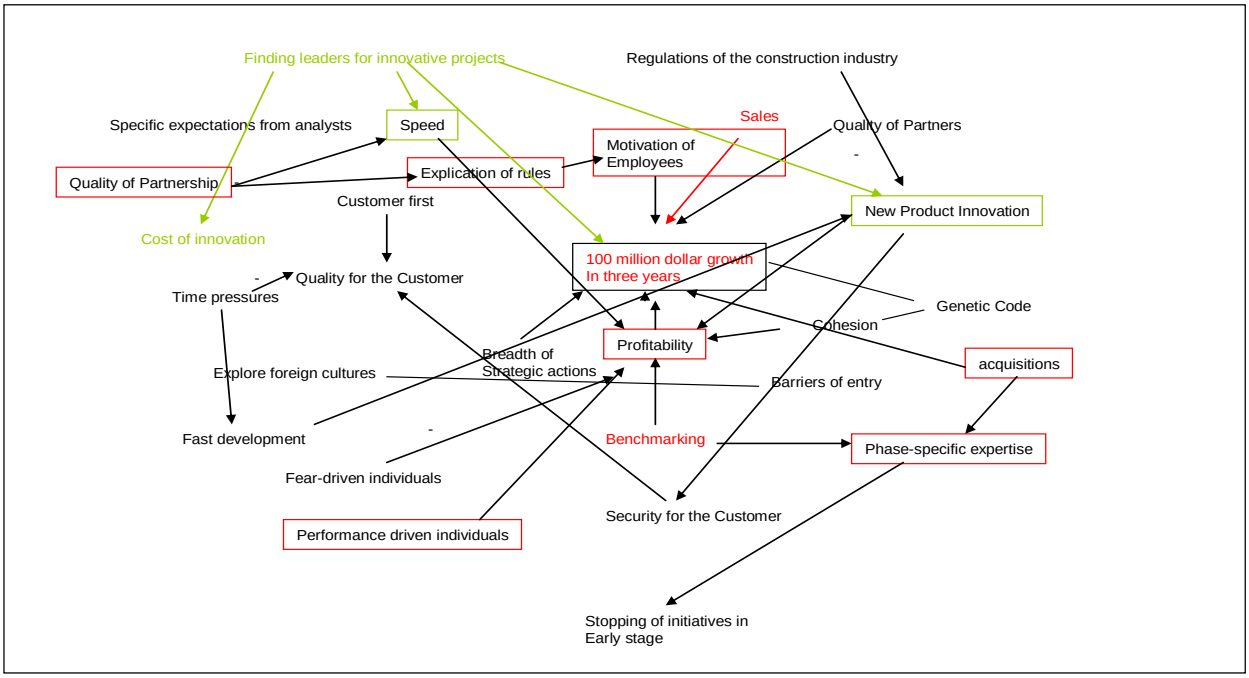
While the evolution of the shared cognitive maps at Alpha-Tech is characterized by the highest continuity (the maps at t_1,t_2, and t_3 remain highly consistent), the cognitive maps at Epsilon-Tech changed a lot over time. At t_2, the most dominant shared concept at Epsilon-Tech is a financial goal, i.e. "100 million dollar growth in three years" and at t_3 the most dominant shared concept is "profit" with acquisitions and, more precisely, the development of an acquisition capability being the main driver for profits.

Summary and Contribution

The objective of this study was to analyze the emergence of shared cognitive structures and their impact on opportunity identification and exploitation. As a result of the comparative case study of nine ventures in the German-speaking software industry a number of propositions were created.

While the total overlap between concepts and domains is negatively related to opportunity identification and exploitation, the partial overlap of concepts (but not causal links) is positively related to opportunity identification but negatively related to opportunity exploitation. Discontinuity of concepts contained in the shared cognitive map over time, is also positively related to opportunity identification and exploitation. This research also identified the overall cognitive complexity of the collective map as a moderator in this relationship.

Figure 6: Dominant concepts at Epsilon-Tech at t_2



Legend: Figure 6 shows an extract of the shared map of Epsilon-Tech at t_2. When comparing Figure 3 and Figure 6, the reader can see the development at Epsilon-Tech over time. This development over the three time periods at all nine ventures is then quantitatively summarized in a diagram in Figure 5.

There may be trade-offs between these variables that have not yet been fully explored in this study. It would be interesting to understand, for instance, whether a discontinuity of concepts (that could be generated through external consultants and/or industry outsiders) could mitigate the negative effect of limited cognitive complexity or exceeding overlap at a map at one point in time. Conceivably, an intervention in some companies that share too much knowledge in order to generate creative "follow-up opportunities" could be a valid basis for generating new ideas. However, the complexity of the maps needs to be increased through outsider input generating discontinuity. The propositions presented here invite researchers to undertake a rigorous large sample test and (entrepreneurial) teams to reflect on their current practices and shared cognition and how they fit this model.

This paper showed the evolution of shared cognitions for a selection of ventures located in German-speaking countries. It would be interesting to further investigate whether these results can be transferred to a different cultural context. For this, more case studies like this one are needed and, eventually, these propositions should be tested in a large scale survey across cultural contexts. This requires a modification in method, as the causal mapping method that is used here is not suitable to be executed across a large number of firms.

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English Abstract

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Abstract

In the pursuit of opportunity identification and exploitation, entrepreneurs develop cognitive structures. Although the classical view in entrepreneurship suggests that these cognitive structures are mainly developed by a single individual, they oftentimes span across the entire entrepreneurial team [1, 2, 3]. West [4] recently examined collective cognition in entrepreneurial teams.

This paper analyzes the differences in team members' cognitive structures and their contributions to a shared cognition of the entrepreneurial team. Furthermore, this study is interested in the evolution of cognitive structures. In this respect, the paper responds to calls for more entrepreneurial process research (e.g., [5]). Finally, this study examines the relationship between the change in shared cognition in the entrepreneurial teams and the identification and exploitation of entrepreneurial opportunities. Hence, the research questions are: (1) How do shared cognitive structures of entrepreneurial teams evolve over time? (2) How do these shared cognitive structures relate to opportunity identification and exploitation?

Keywords: Entrepreneurship, teams, shared cognition, cognitive map.

French Abstract*

Evolution of Shared Cognitive Structures in Entrepreneurial Teams and their Impact on Opportunity Identification and Exploitation

L'évolution des structures cognitives partagées dans des équipes entreprenantes et son impact sur l'identification et l'exploitation d'opportunités

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Résumé

Les entrepreneurs, lorsqu'ils tentent d'identifier et d'exploiter des opportunités, développent des structures cognitives. Alors que la théorie suggère que ces structures cognitives soient principalement développées par un seul individu, souvent elles sont développées par la totalité d'une équipe entreprenante. West a récemment examiné la cognition collective des équipes entreprenantes. Cet article analyse les différences dans les structures cognitives des membres d'une équipe entreprenante et leur contribution au partage de la connaissance. Cet article répond à une demande pour plus de recherche sur des processus entrepreneuriaux. Cette étude examine le rapport entre le changement dans la connaissance partagée dans les équipes entreprenantes, d'une part, et l'identification et l'exploitation des opportunités entrepreneuriales, d'autre part. Nos questions de recherche sont les suivantes. (1) Comment les structures cognitives que partagent des équipes entreprenantes évoluent-elles dans le temps ? (2) Comment ces structures cognitives partagées contribuent-elles à l'identification et à l'exploitation d'opportunités?

Mots clés : l'esprit d'entreprendre, équipes, connaissances partagées, modèles cognitifs.

*Translated by: Johannes Schaaper, Senior professor in International Management, BEM Bordeaux Management School

Spanish Abstract*

Evolution of Shared Cognitive Structures in Entrepreneurial Teams and Their Impact on Opportunity Identification and Exploitation

Evolución de las Estructuras Cognitivas Compartidas en los Equipos Empresariales y su Impacto en la Identificación y Explotación de Oportunidades

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Resumen

En la búsqueda de la identificación y explotación de oportunidades, los empresarios desarrollan estructuras cognitivas. A pesar de que la visión clásica del espíritu empresarial sugiere que estas estructuras cognitivas se desarrollan principalmente por un único individuo, con frecuencia se expanden a todo el equipo empresarial [1, 2, 3]. West, [4] examinó recientemente el conocimiento colectivo en los equipos empresariales.

Este trabajo analiza las diferencias en las estructuras cognitivas de los miembros del equipo empresarial y su contribución a un conocimiento compartido. Además, este estudio se interesa por la evolución de las estructuras cognitivas. En este sentido, el trabajo responde a las llamadas para profundizar en la investigación sobre el proceso empresarial (ej.[5]).

Por último, el presente estudio examina la relación entre el intercambio de conocimiento en los equipos empresariales y la identificación y explotación de oportunidades. Por todo lo anterior, planteamos las siguientes cuestiones de investigación: (1) ¿Cómo evolucionan a lo largo del tiempo las estructuras cognitivas compartidas de los equipos empresariales? (2) ¿Cómo pueden estas estructuras cognitivas compartidas relacionarse con la identificación y explotación de oportunidades?

*Translated by: María Avello. Ph.D. Universidad Complutense de Madrid. mavello@emp.ucm.es

German Abstract*

Evolution of Shared Cognitive Structures in Entrepreneurial Teams and Their Impact on Opportunity Identification and Exploitation

Die Entwicklung von geteilten kognitiven Strukturen in Entrepreneurial Teams und ihr Einfluss auf die Identifikation von Opportunities und deren Erschließung

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Zusammenfassung

Im Streben nach der systematischen Identifikation von unternehmerischen Chancen und deren Erschließung entwickelt ein Entrepreneur eigene kognitive Strukturen. Auch wenn die klassische Entrepreneurship-Perspektive davon ausgeht, dass diese Strukturen individuell ausgebildet werden, zeigt es sich, dass diese Strukturen auch das gesamte Gründerteam betreffen können. Dieses Papier basiert auf den Annahmen von West und einer Untersuchung zur kollektiven Kognition in Gründerteams. Im Rahmen dieses Artikels werden die Differenzen in den kognitiven Strukturen der Gründerteams analysiert and diskutiert, welchen Beitrag diese zu geteilten kognitiven Strukturen leisten. Des Weiteren will die vorliegende Studie die Entwicklung dieser Strukturen verstehen und erklären. Die leitenden Forschungsfragen hierzu lauten: (1) Wie entwickeln sich geteilte kognitive Strukturen in Gründerteams im Laufe der Zeit? (2) In welcher Beziehung stehen diese zu Opportunities und deren Erschließung?

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Italian Abstract*

Evolution of Shared Cognitive Structures in Entrepreneurial Teams and Their Impact on Opportunity Identification and Exploitation

Evoluzione nelle strutture cognitive condivise in squadre imprenditoriali ed il loro impatto sull'identificazione e utilizzo di opportunità

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Abstract

Nel perseguire l'identificazione e l'utilizzo di opportunità, gli imprenditori sviluppano strutture cognitive. Anche se la visione classica dell'imprenditoria suggerisce che queste strutture cognitive siano principalmente sviluppate da un singolo individuo, nella realtà spesso sono condivise da una squadra di imprenditori. West ha recentemente analizzato la cognizione collettiva in squadre imprenditoriali.

Questo studio analizza le differenze di strutture cognitive fra membri di una squadra di lavoro ed il loro contributo alla condivisione delle strutture cognitive all'interno della squadra. Inoltre, questo studio approfondisce l'evoluzione delle strutture cognitive. In relazione a questo risponde alla richiesta di fare ricerche aggiuntive sui processi imprenditoriali. Infine, questo studio esamina la relazione fra il cambiamento in cognizioni condivise all'interno della squadra di imprenditori e l'identificazione e utilizzo di opportunità imprenditoriali. Per questo i quesiti di ricerca sono: 1) come si sviluppano nel tempo le strutture cognitive di squadre imprenditoriali? 2) Come si rapportano queste strutture cognitive condivise all'identificazione ed utilizzo di opportunità.

Parole chiave: imprenditoria, squadre, cognizione condivisa, mappe cognitive.

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Arabic Abstract*

Evolution of Shared Cognitive Structures in Entrepreneurial Teams and Their Impact on Opportunity Identification and Exploitation

تطور البنية المعرفية المشتركة و فرق المشاريع الريادية وتأثيرها على تحديد الفرص وإستغلالها

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خلاصة

يركز الهيكل الإدراكي الريادي على تعريف الفرص و إستغلالها الذي يرى أن الهيكل الإدراكي يطور بشكل رئيسي على يد الفرد الواحد وفي بعض الأحيان يكون على شكل مجموعات ريادية [1, 2, 3] حيث قام الباحث 'ويست' [4] مؤخراً بدراسة الإدراك الجماعي للفرق الريادية.

وتركز هذه الدراسة على تطور الهيكل الإدراكي وفي هذا النطاق فإن هذه الورقة مسؤولة عن طلبات الباحثين الريادين. أخيرا تتناول هذه الدراسة العلاقة بين التغيرات المشاركة في إدراك الفرق الريادية وبين تحديد وإستغلال الفرص الريادية. وبالتالي فإن أسئلة البحث تدور حول: 1. كيف يتطور الهيكل الإدراكي للفرق الريادية عبر الوقت؟ 2. كيف يرتبط الهيكل الإدراكي بتحديد الفرص وإستغلالها.

الكلمات الرئيسية : الخارطة الإدراكية ؛ الإدراك المشترك ؛ الفرق؛ الريادية

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