



Paper to be presented at the DRUID Academy Conference 2017 at University of Southern Denmark, Odense, Denmark on January 18-20, 2017

Alumni as strategic university resource for innovativeness and competitiveness- Insights from a structured literature review on university and firm Alumni

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Abstract

Title: Alumni as strategic university resource for innovativeness and competitiveness- Insights from a structured literature review on university and firm Alumni Name: Sophia Bittner-Zaehr Year of enrollment: 2 Affiliation: Technische Universität Dresden Expected final date: 07/2018 E-mail-address: Sophia_barbara.bittner-zaehr@tu-dresden.de 1) State-of-the-Art Universities have, in comparison to firms, a relatively large number of Alumni (understood as successful graduates or former employees). Literature on former employees in firms shows that those can act as strategic resource for organizations (Somaya & Williamson, 2008). However, until now research in the context of universities often focused on monetary backflows after graduation (Weerts, Cabrera, & Sanford, 2010). With an increased focus on the "third mission" of universities and a trend to open up towards society, there is a rising interest of scholars and practitioners to further activate this resource, especially with the aim to access their knowledge and influence. 2) Research gap The literature on university alumni concentrates on direct effects in the form of monetary flows, which do not play a big role in the influence of former employees in the literature on firms. Conversely, in the firm literature indirect effects (e. g. social capital) are highlighted, which have not been considered much in universities and/ or are not actively managed. With an increasing competition between academic institutions and the proclaimed third mission, the question, if Alumni can be a (strategic) resource and how they can enhance universities competitiveness and innovativeness gains more and more relevance. My research question in this structured review is, in which functions alumni can benefit their Alma Mater. 3) Theoretical arguments The resource-based view (of the firm) locates the competitive advantage in unique resource configurations of firms and the capabilities to transform them into goods and services demanded by the market (Wernerfelt, 1984). Some of these resources may lie outside of the organization, in which case easy access becomes crucial. Research on social capital, for example, has shown that external social capital positively influences organizational performance (Leana & Pil, 2006). Taking a broad view on resources, former employees and Alumni at universities may constitute a strategic advantage if their previous relationship to the mother organization can be systematically exploited to enhance innovation performance through knowledge-flows (and other support). 4) Method For answering my research question I conducted a systematic literature review in 16 peer-reviewed journals from management, human resources, technology transfer (including entrepreneurship) and higher education research. Publication years

have been restricted to the time between 1995 and 2015. Combining the terms "Alumni" and "former employees" with other search criteria resulted in 521 papers of which only 29 met the criteria for consideration.

A backward search in those articles revealed another 59 papers. 5) Results Citation analysis shows no connections between university and firm alumni research. Nevertheless some findings are very similar, for instance the fact that identification with the mother organization influences the likelihood of activation after leaving. Content analysis allows me to develop a conceptual framework of alumni-functions: they can act as (direct or indirect) economic partner, transfer channel, employee/ boomerang, boundary spanner or signaling instrument. By bridging the gap between university & industry, university & politics and current & former student generations, they enable a unique and continuous knowledge backflow which can foster innovations within an uncertain environment. Therefore my contribution is an expanded understanding of Alumni and former employee functions and especially how they can foster innovativeness and competitiveness. Further research should study if and how organizations can systematically activate Alumni as resource. Key references Leana, C. R., & Pil, F. K. (2006). Social Capital and Organizational Performance: Evidence from Urban Public Schools. *Organization Science*, 17(3), 353–366. Somaya, D., & Williamson, I. O. (2008). Rethinking the 'war of talent'. *MIT Sloan Management Review*, 49(4), 29–34. Weerts, D., Cabrera, A., & Sanford, T. (2010). Beyond Giving: Political Advocacy and Volunteer Behaviors of Public University Alumni. *Research in Higher Education*, 51(4), 346–365. Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, 5(2), 171–180.

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---FIRST VERSION OF PAPER TO BE PRESENTED AT THE
DRUID ACADEMY IN ODENSE, JANUARY 2017---
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Abstract

Universities have, in comparison to firms, a relatively large number of Alumni (understood as successful graduates or former employees). Literature on former employees in firms shows that those can act as strategic resource for organizations (Somaya & Williamson, 2008). However, until now research in the context of universities often focused on monetary backflows after graduation (Weerts, Cabrera, & Sanford, 2010). With an increased focus on the “third mission” of universities and a trend to open up towards society, there is a rising interest of scholars and practitioners to further activate this resource, especially with the aim to access their knowledge and influence. Thus the purpose of this study is an overview in which functions alumni can benefit their Alma Mater. A structured literature review in 16 peer reviewed journals and the backward search revealed 88 articles in the main fields of higher education research, management and entrepreneurship. Analysis shows a rising interest in the field during the last 15 years and several new approaches who highlight the importance of alumni within a competitive environment and complex environment. Thereby the contribution of this study is a deeper understanding of alumni functions which highlights the potential of backflows from universities biggest stakeholder group to foster innovativeness and competitiveness.

Keywords: Alumni, former employees, resource, university, innovation, competition

1. State-of-the-art

Since a long time in university context Alumni are a highly discussed and especially in the United States one of the most important funding opportunities. Nevertheless this alumni system, which focusses on monetary backflows, is not conferrable to other higher education systems and scholars try to broaden this discussion. Li, Miao, and Yang (2015) highlight, that Chinese Alumni are an important resource for their Alma Mater, if they return after a stay abroad as faculty. Even if alumni do not join their Alma Mater, they can support them in a non-monetary way. Weerts et al. (2010) divided their alumni functions in the three dimension of donations, volunteering and political advocacy. Additionally Plewa, Galán-Muros, and Davey (2015) found that alumni are engaged in universities curriculum design. Thus, by bringing in their knowledge from industry into the university they support the education of employees according to market needs what makes next alumni generations more attractive for employees. However, also university spin-offs from former students or faculty can be an effective and long-lasting transfer-channel (Dahlstrand, 1997), but most universities do not care enough about them. But especially in times of rising competition between research institutions and the increased focus on the “third mission” universities need to find strategies to handle their relations to their Alumni in a beneficial way. Therefore the purpose of this study is, in which functions alumni can benefit their alma mater.

2. Research gap

The literature on university alumni concentrates on direct effects in the form of monetary flows, which do not play a big role in the influence of former employees in the literature on firms. Conversely, in the firm literature indirect effects (e. g. social capital) are highlighted, which have not been considered much in universities and/ or are not actively managed. With an increasing competition between academic institutions and the proclaimed third mission, the question, if Alumni can be a (strategic) resource and how they can enhance universities competitiveness and innovativeness gains more and more relevance. Therefore a comprised view on former organization members need to developed, since it is the basis for the development of effective strategies of alumni involvement and their handling as strategic organizational resource.

3. Theoretical arguments

The resource-based view (of the firm) locates the competitive advantage in unique resource configurations of firms and the capabilities to transform them into goods and services demanded by the market (Wernerfelt, 1984). Some of these resources may lie outside of the organization, in which case easy access becomes crucial. Research on social capital, for example, has shown that external social capital positively influences organizational performance (Leana & Pil, 2006). Taking a broad view on resources, former employees and Alumni at universities may constitute a strategic advantage if their previous relationship to the mother organization can be systematically exploited to enhance innovation performance through knowledge-flows (and other support).

4. Method

The purpose of this study is, to bring together research findings of different research stream about one phenomenon: former organization members. A first analysis of this phenomenon shows that alumni are scientifically discussed mostly in the research fields of higher education and management. To broaden the view I decided to add the research fields of human resources and transfer. Thereby the motivation to include “transfer” is that spin-offs mostly include former organization members. Therefore this research stream should be considered within a differentiated alumni discussion. Additionally “human resources” was included for taking into account an internal and complementary management view on former employees. Thus, I selected the most important 16 peer-reviewed journals within this four areas (Management: *Academy of Management*, *Journal Academy of Management Review*, *Organization Science*, *Strategic Management Journal*, *Journal of Management Studies*, *Organization Studies*; Human Resources: *Journal of Human Resources*, *Human relations*, *Human Resource Management Journal*; Transfer: *Research Policy*, *Journal of Technology Transfer*, *Journal of Business Venturing*; Higher Education: *Higher Education*, *Research in Higher Education*, *Journal of Higher Education*, *Review of Higher Education*) and conducted the search in EbscoHost in spring 2016.

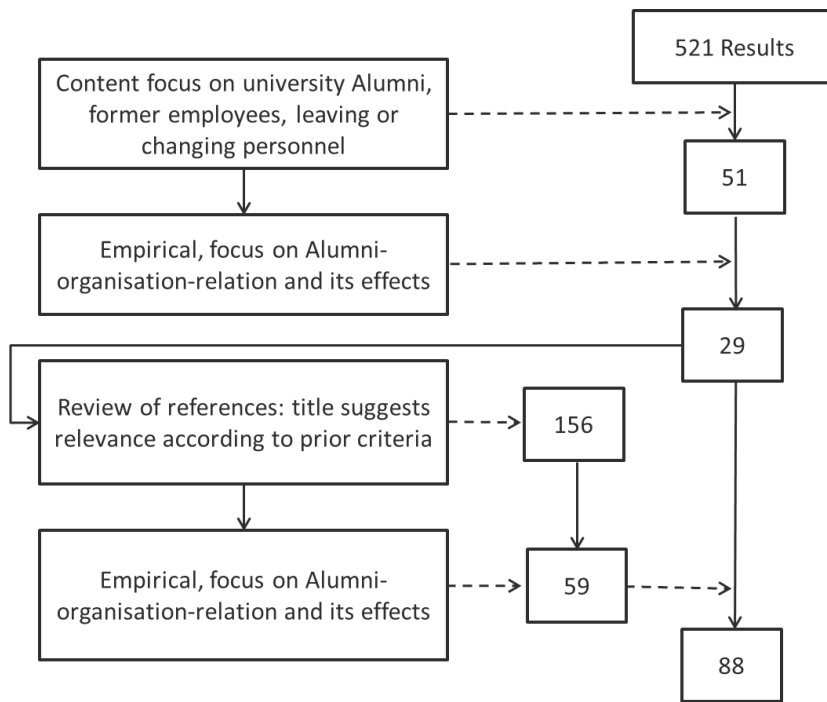


Figure 1: Review process

With the defined search strings (Annex 1) I found 521 publications between the years 1995 and 2015 (see fig. 1). Afterwards it was checked if the articles meet the criteria for consideration. This leads to 29 relevant articles. A backward search in those articles revealed another 59 relevant papers. In sum 88 publications are the basic population for this review and were analyzed with citation and content analysis.

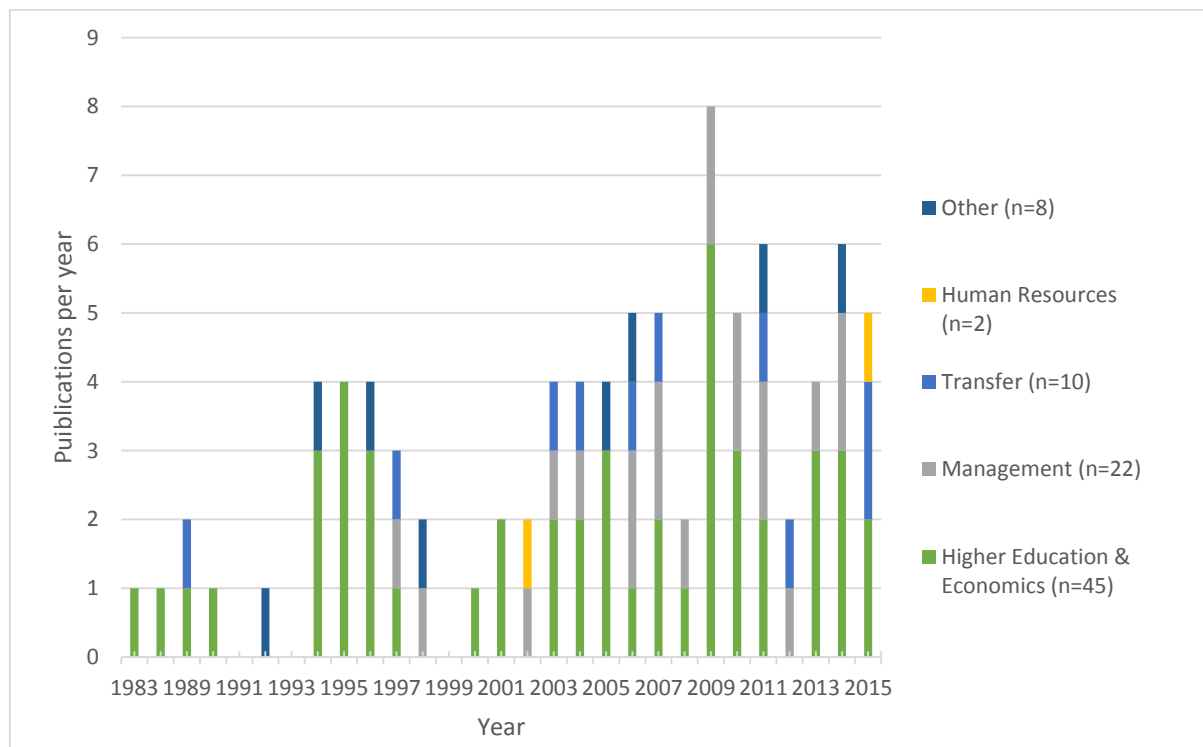


Figure 2: Included articles in the different research fields over time

More than 50 percent of the articles are from the field of Higher Education. Thereby articles from the field of Economics are included since research approaches and methods are very similar. As shown in Figure 2, most articles (72,7 %) were published during the last 15 years, in which especially the ratio of management and transfer publications rose. Surprisingly just two articles from the field of Human Resources could be identified. Throw backward search articles from the fields of marketing (2), communication (2), psychology, organizational behavior, finance and economic geography were detected and included, since they fit the including criteria and enrich the review with a complementary view on alumni and former employees.

5. Results

5.1. Research streams, approaches and “newcomer”

This review brings together research from different research fields. Therefore a citation analysis was conducted to show connections as well as separated nodes within the basic population. The analysis displays two clearly isolated citation clusters without connections (Figure 3).

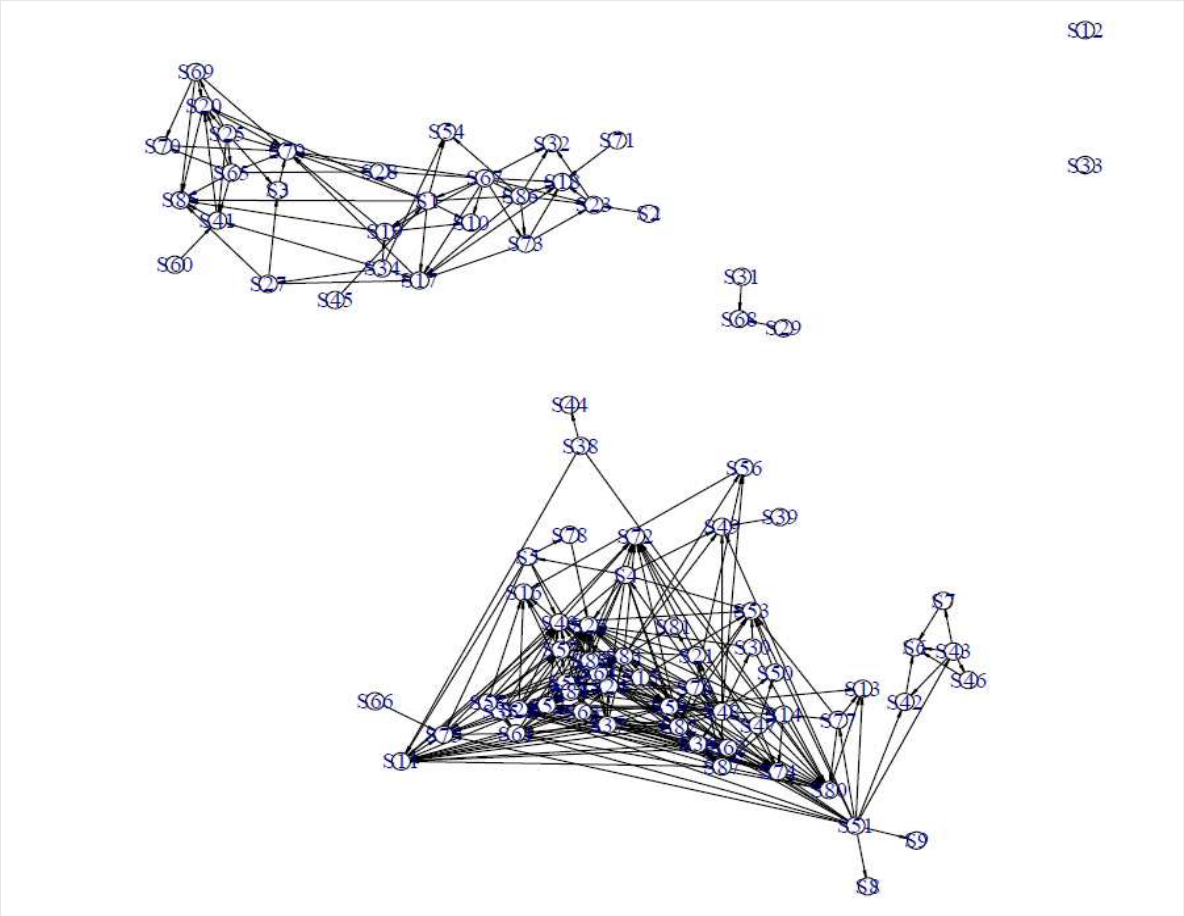


Figure 3: Citation network

The larger stream is mostly about higher education, donations and influencing factors for beneficial organizational identification. Especially life-cycles of supportive behavior (Bristol, 1990; Meer & Rosen, 2009a; Olsen, Smith, & Wunnavana, 1989), individual characteristics (e.g. Taylor & Martin Jr., 1995), sports (Baade & Sundberg, 1996; Grimes & Chressanthi, 1994; Meer & Rosen, 2009b; Tucker, 2004), organizational factors like charismatic presidents (Bastedo, Samuels, & Kleinman, 2014) and college rankings (Bastedo & Bowman, 2011) as predictors for donations are studied. One study explicitly investigates in staff and faculty as donors (Borden, Shaker, & Kienker, 2014). Longitudinal as well as cross-sectional, quantitative approaches dominate within this research stream. Within this network just few studies focus on non-monetary functions (Weerts et al., 2010; Weerts & Ronca, 2007; Weerts & Ronca, 2008). New insights into the alumni discussion brought Weerts et al. (2010) with a mixed method approach. They show that next to the alumni functions “donor” and “volunteer”, the third function of “political advocate” exists. Nevertheless 96% of all studies, who focus on supportive behavior in university context in any way, are from US. Exceptions are Belfield and Beney (2000) who study UK and Sung and Yang (2009) with their investigation in South Korea.

One of the central papers within the university alumni network is Mael and Ashforth (1992). Since this publication is the empirical validation of their organization identification model, some management scholars used this models for their research too (Iyer, 1998; Iyer, Bamber, & Barefield, 1997). Building on it, Basioudis (2007), Lennox and Park (2007) and Bardon, Josserand, and Villesèche (2015) also investigate in corporations and are part of this bigger network. All the other management and entrepreneurship articles address different research questions, what leads to the second research cluster. Nevertheless some articles from marketing perspective (Heckman & Guskey, 1998; Tom & Elmer, 1994), communication (Parsons & Wethington, 1996) and human resources (Cunningham & Cochi-Ficano, 2002) are part of this bigger network what investigates in alumni, identification and supportive behavior for the Alma Mater. A quite novel approach within this cluster is from Li et al. (2015) who investigate Chinese Alumni as scientific university resource by analyzing publication data. In conclusion the big higher education research stream is not just one sided to donations, it also ignores that the university is also an employee for whom alumni can be a multifaceted resource.

The firm Alumni and Entrepreneurship citation cluster consists of 27 publications, whereas 70% address spin-offs and their relationship to their parent firm. The other

articles are about former employees, whereby one especially focuses on employees who quit and return, so called boomerang employees (Shipp, Furst-Holloway, Harris, & Rosen, 2014). In comparison to the Higher Education cluster this network brings together research about US, North American as well as European firms and spin offs (Figure 4). Some scholars also use industry approaches (Agarwal, Echambadi, Franco, & Sarkar, 2004; Corredoira & Rosenkopf, 2010; McKendrick, Wade, & Jaffee, 2009) or investigate in a special context, like Godart, Shipilov, and Claes (2014) who study fashion houses and the impact of former employees on their organizational creativity.

In contrast to the higher education research, scholars in firm context highlight alumni as knowledge carrier (Agrawal, Cockburn, & McHale, 2006; Corredoira & Rosenkopf, 2010), where employees go to (Campbell, Ganco, Franco, & Agarwal, 2012) and competitive effects (Carnahan & Somaya, 2013; Godart et al., 2014; Wezel, Cattani, & Pennings, 2006). Thus alumni are seen as external social resource, what leads Godart et al. (2014, p. 397) to the conclusion that for the achievement of a “competitive advantage in the knowledge-based economy, companies need to think of employee departures as a distinct source of information and influence”.

Entrepreneurship research focuses especially on the inheritance from parent organization to spin-off. In this context the relationship to the mother organization is positive for spin-offs, but the balance between too less and too much involvement of the parent need to be found (Semadeni & Cannella, 2011). Similar are the results for knowledge overlap: a partial overlap is positive for growth, but if it is too high it hampers the creation of novel knowledge combinations (Sapienza, Parhankangas, & Autio, 2004). Nevertheless especially academic spin-offs are in disadvantage in comparison to corporate spin-offs since they miss market-related next to their scientific knowledge (Wennberg, Wiklund, & Wright, 2011). However, management and entrepreneurship research is sophisticated and figures out the effect of human capital and the establishment of external social capital in spin-offs or other organizations. Thus the findings are complementary to the one-sided view of higher education research.

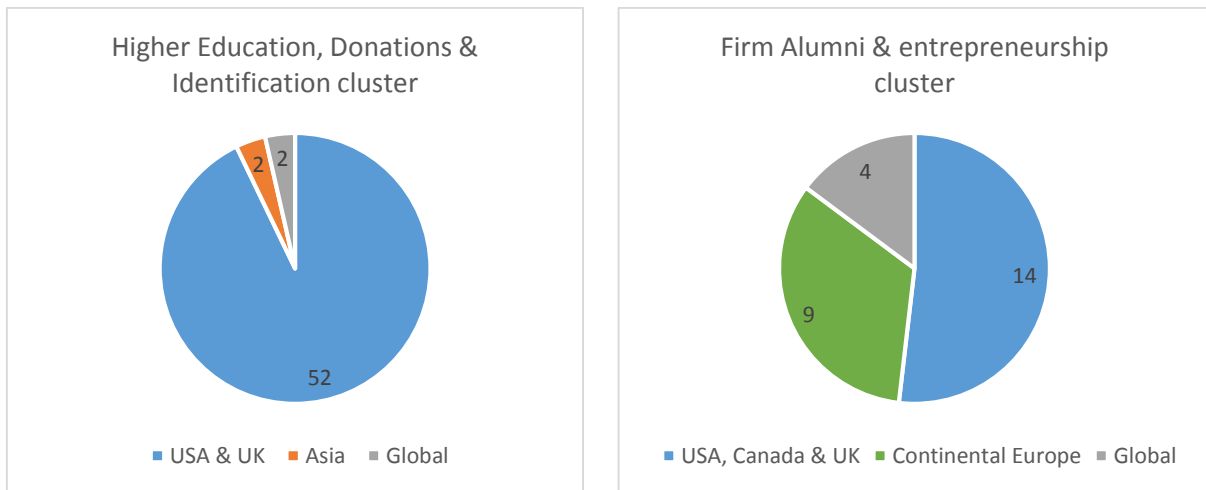


Figure 4: Studied countries within the two clusters

Table 1 displays the most cited articles within the two clusters, the citations within this network as well as the amount of publications in general according to GoogleScholar. This overview highlights the importance of Mael and Ashforth's (1992) publication as well as a difference between the two streams in general. Regardless that the literature about firm alumni and spin-offs is quite younger, the articles are much more cited. Reasons could be the higher relevance, interest in the topic within the scientific community and the limited transferability of the US-specific higher education discussion to other countries.

Citation cluster	Author (s)	Year	Cites	Cites in general	Topic
Higher Education, Donations & Identification ¹	Leslie and Ramey	1988	19	162	Alumni donations: variations over time
	Harrison, Mitchell, and Peterson	1995	15	114	Alumni donations: influence of college's development expenditures
	Mael and Ashforth	1992	15	3,465	Organizational identification (Alumni to their Alma Mater)
Firm Alumni & Spin-Offs ²	Phillips	2002	11	386	Spin-offs: organizational life chances
	Agarwal et al.	2004	8	770	Spin-offs: knowledge transfer from parent to progeny

Table 1: Central publications within the citation clusters

Five articles in this review are not part of this two big citation clusters. All of them focus on university alumni, but bring new aspects to the university alumni discussion. The

¹ Citations in general: Median: 60; Mean: 125

² Citations in general: Median: 156; Mean: 176

oldest, unconnected publication from 2006 investigates why some universities cannot translate their asset of human capital and federally funded research into regional economic activities. Within her case study Golob (2006) found that academic entrepreneurs mostly locate closely to the university. The so called founder entrepreneurs discovered the innovation as basis for the spin-off and start their own business close to the Alma Mater because of “strong and ongoing ties to the licensing institution as well as personal preferences” (Golob, 2006, p. 690).

The second unconnected publication within this review is from Berman and Pitman (2010) and focuses on finished PhD students who work afterwards as professional staff at their Alma Mater. Similar to the before stated boomerang employee approach³ (Shipp et al., 2014) and the strategy from Chinese universities to recruit their overseas Alumni (Li et al., 2015) , the authors found that universities benefit from employing their own product in interface functions. Since they can use their generic research skills and their shared understandings they “identify inefficiencies or problems and apply their critical thinking skills to produce creative solutions and greater efficiencies” (Berman & Pitman, 2010, p. 166) within academia. Thus employing boomerang alumni can be a beneficial strategy within a competitive environment.

Farrow and Yuan (2011) study Facebook as one potential instrument to strengthen the ties between alumni and their Alma Mater with the aim to increase the charitable and volunteer behavior. Within their mixed method study the authors found that participation in alumni Facebook groups can strengthen the ties to the university, since they communicate with the university and build up an emotional closeness. Both lead to actual support behavior, but according to the findings the emotional relationship is more important for charitable and volunteer behavior. Thus for activating alumni, Facebook is an effective instrument for universities, if they aim to foster alumni’s emotional closeness to their Alma Mater. Nevertheless Gallo (2013) highlight that not just the university benefits from an agile relationship. Engagement as alumni offers the opportunity to stay in contact with other alumni from the same field, to improve skills and to apply expertise. Thus the Alumni- Alma Mater relationship can be a lifelong exchange relationship. Thus,

³ The authors distinguish between Alumni and boomerang employees. In their definition Alumni quit and do not return whereas Boomerangs return afterwards. Since this study focuses on all former organization members they are all called alumni. The subgroup of persons who return (in another function) are therefore called boomerang alumni.

building on the findings of Farrow and Yuan (2011) and Gallo (2013), Plewa et al. (2015) study alumni as one knowledge resource for integrating business into universities curriculum design.

The citation analysis gives a deeper insight into the current scientific discussion about former organization members. Whereas research about alumni exists since more than 40 years, several novel approaches and insights are quite young. Higher education scholars mostly highlighted the monetary value of alumni. In contrast, firm, entrepreneurship and novel higher education approaches place the alumni-Alma Mater relationship within a complex, competitive and innovative environment. Thus a more profound understanding of alumni functions is needed.

5.2. Alumni functions

Content analysis allows me to develop a conceptual framework of alumni-functions: they can act as (direct or indirect) economic partner, transfer channel, employee/ boomerang, boundary spanner or signaling instrument (Table 2).

Value	Monetary		Non-monetary		
Function	Economic partner	Transfer channel	Employee/ Boomerang Alumni Shipp et al. (2014)	Boundary-Spanner	Reputation/ Signaling
	Business-/ Cooperation partner Basioudis (2007) Somaya, Williamson, and Lorinkova (2008) Carnahan and Somaya (2013) Bardon et al. (2015)	Technology Licensing Dahlstrand (1997) Golob (2006)	General Staff Berman and Pitman (2010)	University- Industry Plewa et al. (2015)	Successful Spin-Offs Phillips (2002) McKendrick et al. (2009)
	Donations e.g. Leslie, Drachman, Conrad, and Ramey (1983); Leslie and Ramey (1988); Olsen et al. (1989); Bristol (1990); Grimes and Chressanthis (1994); Okunade, Wunnava, & Walsh Jr.(2014); Willemain and Goyal (1994); Bruggink and Siddiqui (1995);Harrison et al. (1995); Tucker (2004); Sun, Hoffman, and Grady (2007); Meer and Rosen (2009a); Meer and Rosen (2010); Bastedo et al. (2014); Borden et al. (2014); Skari (2014); Durango-Cohen and Balasubramanian (2015);	Knowledge (explicit and implicit) Agrawal et al. (2006) Godart et al. (2014)	Faculty Li et al. (2015)	University- Politics Weerts et al. (2010)	Marketing with alumni Iyer et al. (1997) Iyer (1998) Mael and Ashforth (1992)
				„Past-to-present“ Iyer et al. (1997) Weerts and Ronca (2007) Gallo (2013) Bardon et al. (2015)	

Table 2: Alumni functions in university context

Especially the importance of alumni as donators are highly discussed, but they can also function as business-/ cooperation partner. Somaya et al. (2008) and Carnahan and Somaya (2013) underscore how business relationships evolve through the placement of alumni and the economic effects. Thus there is a negative effect if a buyer hires alumni from the competitor. Additionally Basioudis (2007) could show a price effect in audit firm prices when an alumni is involved. Thus through the placement of alumni an organization loses human capital, but builds up external social capital (Somaya et al., 2008) which can be translated in a competitive and economic advantage. In line with this Bardon et al. (2015) found that Alumni use the stratagem of reproduction within their current professional life. This means, that they try to implement management practices in the current firm, privilege other Alumni in recruiting processes and pursue “working, contracting and partnering with other alumni whenever possible” (Bardon et al., 2015, p. 601). These characteristics of Alumni can be useful also in the context of technology transfer. Agrawal et al. (2006) highlight in context of mobile inventors that personal relationships, formed through co-affiliation, are stable over time, space and organizational boundaries. The knowledge flow in form of patent citations, highlights that not only management practices are transferred through Alumni, but also innovative, technology related knowledge. Corredoira and Rosenkopf (2010) show that knowledge flows between losing and hiring firm are bidirectional. However, the results implicate differences between close and distant regions and their knowledge mechanisms too. As studied by Golob (2006), Alumni spin-offs locate mostly close to the parent organization, because of their (personal) strong ties to the institution, spin-offs can be a valuable partner for research, product-development and/or technology-licensing. Especially since scholars could show that collaboration is positive for both sides, this function should be used. Nevertheless it is to imitate that risks can evolve if the relationship is too close (Semadeni & Cannella, 2011) or long-lasting liabilities against the parent-organization exist (Phillips, 2002). But in sum spin-offs have the potential to function as transfer partner or at least as market related knowledge resource.

In non-monetary way alumni can support their Alma Mater, if they return as employees (boomerang employees), if they function as boundary spanner or signaling/ reputation instrument. In comparison to the other functions, boomerang alumni are an active part within the organization after some time outside. Beneficial for the return are social relationships from the time before (Li et al., 2015) as well as shared understandings,

language and trust (Berman & Pitman, 2010). Li et al. (2015) focus on alumni faculty who return after some time abroad. They show that their intra-organizational networks are stronger than those from non-alumni. These ties are stable over time and influence the tendency towards high impact research. A limitation within this study is the Chinese cultural context. However, Berman and Pitman (2010) investigate in finished PhD students who work afterwards as professional staff at the Alma Mater. They find that the university benefits from PhDs who change their role within the university since they can use their knowledge and skills. Not discussed is, if these persons worked outside university between they started working as professional staff. It can be expected that PhDs with industry experience are especially beneficial as transfer professionals, like project scouts or innovation managers, since they combine scientific and market knowledge with trust and shared understandings.

In higher education research volunteering is discussed as one alumni function and is summarized within this framework as boundary spanning activity. Most of the volunteering activities focus on social events to foster relationships between former students as well as former and current students (e.g. Gallo, 2013; Weerts & Ronca, 2007). All this activities are subsumed under Boundary Spanning “past-to-present”. As highlighted from Gallo (2013) there are various activities Alumni are engaged in: mentoring for students and recent alumni, organizing social events or engaging in university governance. Additionally Plewa et al. (2015) could show that Alumni networks positively influence universities curriculum design with the aim to meet the needs of the surrounding businesses. Thus Alumni have the opportunity to function as Boundary Spanner between university and industry. Another opportunity is to function as Boundary Spanner between university and politics. Weerts et al. (2010) found that some Alumni are political advocates for their Alma Mater. Thus they contact e.g. legislators or the governor’s office in behalf of the university. The authors state that the observed individuals behave as political advocate especially in their time as member of the Alma Maters political action network, but they also highlight that there are more individuals engaged in an informal political behavior than alumni associations expect. In conclusion, it seems that alumni function in different ways as Boundary Spanners, but research did not focus explicitly their activities until now.

The last non-monetary role of alumni is the reputation function. Especially if prestige alumni are used for marketing this can be beneficial to attract new students and partners.

Nevertheless prestigious parent organizations affect the short-term success of spin-offs (Phillips, 2002) and that the effect of having a spin-off for the parent-firm is positive since it signals to the “broader labor market about the parent organization’s reputation as an incubator of entrepreneurs and a desirable place to work“ (Phillips, 2002, p. 979).

In conclusion, the analysis shows that alumni functions can be much more sophisticated than scholars highlighted before. Alumni have the opportunity to engage in universities development from extern or intern. The results implicate that Alumni especially can foster organizational competitiveness and innovativeness, if they benefit their Alma Mater through knowledge flows and the establishment of (business and research) cooperation’s. Nevertheless, further research need to study these functions into detail and if all university Alumni have the same importance for these functions. Building on Berman and Pitman (2010) and the findings from corporation context (e.g. Agrawal et al., 2006; Corredoira & Rosenkopf, 2010), it can be hypothesized that former PhD students and persons within a former employment relationship (faculty, engineering staff/ inventors) are more important for the evolution of business-/cooperation-partnerships and as technology transfer channel than the typical university graduate.

6. Conclusion and Implications

Caused by the rising competition between academic institutions and the increasing relevance of universities third mission, strategies need to be discussed. Therefore this systematic literature review investigates in alumni as universities biggest and constant stakeholder group (Gallo, 2013). Since in the past most scholars studied the monetary backflows from alumni to their Alma Mater at US higher education institutions, the results are one-sided and limited transferable to other countries.

Citation analysis shows two big research streams as well as some new isolated approaches within higher education discussion. While the university alumni research is clearly dominated by studies about donative behavior at US higher education institutions, research about former firm employees and spin-offs is much more sophisticated and dynamic. The complementary views and the empirical findings within this research streams leads to an expanded understanding of alumni functions. Especially in a competitive environment alumni can lead to an organizational advantage if they forward information from extern or if they advance the organization with their inside and/or outside acquired knowledge and skills. In conclusion it can be hypothesized that

knowledge flows through alumni can foster organizational competitiveness and innovativeness, but need to be studied into detail in the future.

Further research should also study if and how organizations can systematically activate Alumni as strategic resource. At the moment universities focus on the activation of alumni as donor and boundary spanners between alumni generations. Nevertheless other functions are neglected, like Dahlstrand (1997) highlighted in the case of spin-off parents who are too little interested in a continued relation. In contrast, in firm context scholars highlight the importance of Alumni, but just few firms have approaches for staying in contact (Godart et al., 2014) and therefore to use them as strategic resource. One approach which can be easily used in different setting is the establishment of Facebook as instrument to strengthen relationships (Farrow & Yuan, 2011). Nevertheless some findings highlight the importance of geographical proximity for supportive behavior. Thus purposeful strategies are needed, since university entrepreneurs could also benefit from a knowledge flow from past founders to overcome their experience related disadvantage in comparison to corporate entrepreneurs. Thus by implementing Alumni strategies, universities could strengthen their regional economic activities (Golob, 2006), too.

Since the analysis shows that former university employees are neglected in the Alumni discussion, further research should study their importance for universities into detail. According to former findings, for example length of organizational tenure (Mael & Ashforth, 1992), the existence of a mentor (Iyer et al., 1997; Mael & Ashforth, 1992), like a PhD-supervisor, and social relationships who evolve during co-location (Agrawal et al., 2006) are valuable for support behavior and knowledge flows. Thus it can be hypothesized that former employees (incl. PhD students) are a more valuable resource for universities than the typical graduate students.

In sum the contribution of this study is a novel approach within university alumni research and by this an expanded understanding of Alumni and former employee functions. Independently from the type of organization, the review shows that beneficial approaches for alumni handling and activation are missing. This is crucial especially for universities, since they have former students and employees who could support the Alma Mater within a competitive and innovative environment.

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Appendix 1

Search strings:

- 1) "alumn*/former employe*" and "resource*"
- 2) "alumn*/former employe*" and "resource*" and "organization*"
- 3) "alumn*/former employe*" and "human resource*"
- 4) "alumn*/former employe*" and "relation*" and "organization*"
- 5) "alumn*/former employe*" and "Knowledge*/Technology*/*Transfer"