

Examining the Transfer of Academic Knowledge to Business Practitioners: Doctoral Program Graduates as Intermediaries

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ABSTRACT

This study explores whether practitioners who hold a Ph.D. in business act as intermediaries in the transfer of academic knowledge from academia to practice. Twenty Ph.D. graduates were interviewed, and the data were subjected to deductive content analysis. It was concluded that the previous claims that academic research does not influence decision-making of industry practitioners are not fully warranted. Graduates of doctoral business programs act as knowledge-transfer intermediaries that aggregate, summarize, communicate, and implement findings reported in academic publications. Academic journals have the potential to disseminate scholarly knowledge beyond the academic world. Demand for evidence-based knowledge in the practitioner's environment determines his or her probability of applying academic knowledge. Not all academic knowledge is perceived as useful by practitioners, and limited access to academic literature is a major impediment to the application of scholarly findings in practice. The practitioners' connection with academia after graduation is also linked to their probability of using academic literature.

Keywords: Academic Output, Knowledge Transfer, Knowledge Worker, Research Impact, Research Relevance

INTRODUCTION

The debate about the perceived irrelevance of academic business research dates back to the 1980s when scholars, practitioners, and public officials started criticizing scholars for placing

priority on scientific rigor over relevance to industry (Bennis & O'Toole, 2005; Knights, 2008; Van de Ven & Johnson, 2006). The disconnect between academics and practitioners has been deemed "the Great Divide" because the theoretical contributions of researchers are rarely

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implemented in practice (Rynes, Bartunek, & Daft, 2001). The very value and relevance of academic research has been called into question as a result of the perceived lack of applicability and generalizability of academic knowledge (Benjamin & O'Reilly, 2011). For example, the utilization of academic research on a regular basis by human resource managers is below one percent (Rynes et al., 2001), and information systems professionals are generally unaware of academic research in their field (Pearson, Pearson, & Shim, 2005). As a result, a flurry of papers has been published which reflects on this divide between academia and practice (Jennex, 2001; Rottman, 2008; Simmons et al., 2001; Starkey & Madan, 2001).

There are several factors that justify the importance of the transfer of academic knowledge to practice. First, in the current knowledge-based economy, organizations must utilize recent and relevant knowledge in their decision-making to remain competitive (Parent, Roy, & St-Jaques, 2007). Second, the volume of scientific research of a nation is positively correlated with its overall wealth (King, 2004; Rousseau & Rousseau, 1998). This correlation, however, becomes even stronger when a larger proportion of scientific discoveries reach practitioners. Third, the application of academic research has been shown to increase an organization's sales and productivity (Fontana, Geuna, & Matt, 2006). Fourth, empirical evidence suggests a positive relationship between the commercialization of academic findings and organizational performance levels (Susanty et al., 2011). In order to ensure the success of an academic discipline, it must have an impact on the state of both theory and practice (Jennex & Olfman, 2005, 2006). Therefore, calls have been made for studies that examine possible transfer methods of evidence-based knowledge to practitioners (Rousseau & McCarthy, 2007).

Knowledge refers to people's ability to act based on the information they possess (Berger & Luckmann, 1966). Knowledge provides a justification and motivation to alter decisions (Hannabuss, 2001). Accordingly, industry practitioners require knowledge to develop and

implement action strategies. Therefore, academic knowledge is only relevant to industry if it motivates practitioners to take action inspired by its content. However, prior investigations have identified a glaring gap between the knowledge presented in scholarly publications and the use of this knowledge. Booker, Bontis, and Serenko (2008) studied how knowledge management professionals access and utilize academic research in their daily work. They found that, while practitioners value academic research, it is the accessibility of this research that produces the detachment. This accessibility refers to the receiver's (i.e., the practitioner's) ability to effectively consume knowledge. Simmons et al. (2001) also established that the process of knowledge transfer mostly fails on the side of the receiver. Serenko, Bontis, and Hull (2011) argued that future research examining the transfer of academic knowledge to practice should focus on knowledge transfer mechanisms, specifically indirect knowledge transfer channels. Direct channels of knowledge transfer work when an individual accesses, understands, and executes the knowledge directly from the source (i.e., from an academic publication) (Almond, 2001). Unfortunately, direct knowledge dissemination channels are underutilized by practitioners. In contrast, knowledge is transferred through indirect channels when the knowledge is modified and/or distributed to the end user by an intermediary that converts this knowledge into a format that may be easily comprehended by busy practitioners (Nohria & Eccles, 1998).

Direct knowledge dissemination channels are ineffective because academic works are usually targeted at other academics, reviewers, and editors. They are written in complicated language, contain jargon, present advanced statistical techniques, have abstract ideas and theories, and assume the reader's familiarity with previous literature and academic research in general. Thus, the accessibility of academic publications is a major barrier for the transfer of academic research to practice because practitioners often lack the academic training which is required to read and understand academic works. At the same time, graduates of

doctoral business programs who are employed in the non-academic sector (e.g., managers who hold a Ph.D. in business) are fully qualified to read academic publications and use academic findings in their decision making. This study attempts to contribute to the knowledge base by exploring whether doctoral business program graduates who work in industry are knowledge ambassadors acting as an indirect channel of knowledge transfer between academics and practitioners. Particularly, the purpose of this study is to explore whether doctoral business program graduates who enter the non-academic workforce acquire, utilize, and disseminate academic knowledge in their daily decision making.

THEORETICAL BACKGROUND

The Rigor-Relevance Debate in the Management Discipline

Throughout the history of science, creating, communicating, and utilizing authenticated knowledge have been recurrent purposes of academic institutions (McLuhan, 1962; Roberts & Skeat, 1983; Saenger, 1975). Presently, the creation and dissemination of scholarly knowledge is a common component of mission statements for universities, and research is considered one of the most important activities of faculty members (Jagodinski, 2008; Serenko, Bontis, & Moshonsky, 2012). However, there is debate about whether the academic institution is fulfilling its self-expressed mission. Khurana (2007) empirically studied business schools and concluded that the top U.S. schools have lost focus on the mission of the legitimization of management and are motivated by self-interest instead of knowledge creation. Pfeffer and Fong (2002) support this critique of business schools and state that the applicability of both education and research has fallen.

The role of the university often changes depending on the stakeholder consulted. The academic researcher has been viewed as the primary stakeholder for academic output. Spender (2005) argues that management research has been driven by “a search for legitimacy, owner-

ship and the control of management knowledge” (p. 1283) by these academic researchers. Policy makers’ aspiration for universities is to enhance the quality of education and supply of useful knowledge for society as a whole in response to the rising demand for knowledge-intensive products and solutions (Yusuf, 2008). Policy makers also have the added pressure of addressing the demands of funding agencies to ensure continued funding. In many practitioners’ view, the purpose of the university is to be a generator of knowledge for the development of industry (Feldman, 1994). Where the commercialization of knowledge has become a focus for some institutions, collaboration with practice has become routine (Hitt, 1998; Van Aken, 2005).

Another threat to the reputation of management scholars as knowledge producers comes from business consultants, who became popular in the 1980s. Consultants often act as independent advisors to various organizations and deliver new knowledge to legitimize their profession (Alvarez, 1998; Scarbrough, 2002; Suddaby & Greenwood, 2001). From the perspective of their customers, consultants infuse new ideas, offer solutions, implement technologies, and assist in decision-making processes. In this, their actions resemble those that are supposed to be done by academics, who – instead of consultants – should be considered the creators and disseminators of knowledge.

This topic raises the question: what type of knowledge should academics pursue – fashionable or fundamental (Abrahamson, 1991; Weick, 2001)? Scarbrough (2002) defined fashionable knowledge as “knowledge that has been diffused, but which has not been institutionalized” (p. 89). There is an argument on both sides of the debate as to what type of knowledge should be created by academics. On the one hand, there are views that academics should be encouraged to tailor management research to the practitioner audience, which reverses the proper relationship between academia and industry (Knights, 2008). On the other hand, there are arguments that researchers should focus on fundamental issues that constructively criticize industry practices and do what is best for the development of

science in general (Starkey & Madan, 2001). The problem, however, is that to the practical world, management research is viewed as not generalizable and as lacking the potential for practical implementation (Jacob, 2001). According to Rynes et al. (2001), organizations tend to ignore numerous research findings, solutions, and strategies provided by academia.

The management discipline has two goals to balance – scholarly rigour and social usefulness (Benbasat & Zmud, 1999; Hodgkinson & Starkey, 2011). Consequently, it is important to understand the mechanisms that contribute to the widening of the Great Divide in order to sustain advancement in the management discipline. If the gap between the stakeholders continues to exist, it may impact the justification of the role of the academic researcher and even the sustainability of academia (Starkey & Madan, 2001). Business schools must become more responsive in addressing practical considerations; otherwise, practitioners will access substitute suppliers of knowledge.

In summary, policy makers are searching for methods of knowledge transfer from academia to practice in order to address the increasing need for relevant knowledge, to promote innovation, and to encourage competitiveness (Hanberger & Schild, 2004). This process begins with the mobility of university-educated students who develop an association with academia and later enter the labour force (Fleming & Frenken, 2007), often as business consultants. According to Bramwell and Wolfe (2008), former students act as intermediaries between industry and academia to transfer academic research to practitioners, establish future research directions, and improve curricula. However, the extent and manner in which these graduates transfer academic knowledge to practice requires further study. In line with this school of thought, this study will strive to gain an understanding of the possible function of Ph.D. graduates as an intermediary between academia and practice. The purpose is to understand what hinders the transfer of academic knowledge to practice and whether

doctoral business program graduates who are employed in private and public non-academic organizations may bridge this gap.

Knowledge Transfer

Knowledge transfer has become one of the most important strategic organizational tools (Christensen, 2003). It is the key concept that all successful managers are aware of and apply in their daily work (Cavusgil, Calantone, & Zhao, 2003). When knowledge is allowed to flow within an organization, it enables organizational learning (Lahti & Beyerlein, 2000). When people face an opportunity or a problem, they require accessible knowledge to make the required modifications to their behavior (Liyanage et al., 2009). The value of knowledge lies in its ability to help managers undertake better actions and improve their decision making (Davenport & Prusak, 1998).

There are various theories explaining knowledge transfer and how knowledge is communicated from one individual to another. In the past, knowledge was considered an object which could simply be passed from one person to another without regard for the surrounding context (Parent et al., 2007). It was also assumed that knowledge transfer was a hierarchical, top to bottom interaction where the receiver of the knowledge was a passive actor (Roling, 1992). However, this traditional model has been criticized for its linear perspective which ignores context and exchanges between the two participants. Instead, the knowledge transfer process is bi-directional, and it mostly fails on the receiver's side (Simmons et al., 2001; Szulanski, 1996). Therefore, the receivers cannot be passive entities that are bestowed with knowledge from a source. Instead, they must be active problem-solvers who generate their own knowledge base (Hutchison & Huberman, 1994). Knowledge transfer is a result of the interaction within a dyadic relationship (Knights & Scarbrough, 2010). The newer, process-based, knowledge transfer models are of the social constructivist perspective, which assumes that

knowledge has an individual meaning to different people based on their experiences (Parent et al., 2007). Process-based models take into account the environment in which the knowledge is transferred and applied. In an organizational context, the legitimacy of new knowledge is validated against the organization's culture (Roling, 1992), and received knowledge is adapted to fit the receiver's individual situation (Foss & Pedersen, 2002).

Knowledge transfer processes may also be understood from the perspective of the theory of communication, which focuses on the behaviors exhibited during interaction between the source and receiver (Baxter & Braithwaite, 2008; Dillard, 1990; Giles, 2008; Hewes & Planalp, 1987; Wilson, 1997). The Goals-Plans-Action Theory illustrates that the source can influence the receiver based on his or her behavior during the transfer process (Dillard, 2008). The Uncertainty Reduction Theory states that the primary goal of an individual's communication is to decrease uncertainty (Bylund, Peterson, & Cameron, 2012). This allows one to better predict the actions of others and the outcomes of different situations. The Communication Accommodation Theory posits that individuals accommodate their communication approaches based on their desire to either converge and match, or diverge and differentiate, from the other person's style (Bylund et al., 2012). Usually, the individual who is perceived as possessing the least power in the relationship will do the accommodating (Giles, 2008).

With respect to the transfer of academic knowledge to practice, the aforementioned theories underline the importance of understanding the relationship between the participants and the environment in which the exchange takes place. In terms of this study, it means paying attention to the practitioners' previous and current relationships with the academic sector, the communication channels through which they access academic literature, the cultures of their organizations, and their communication styles.

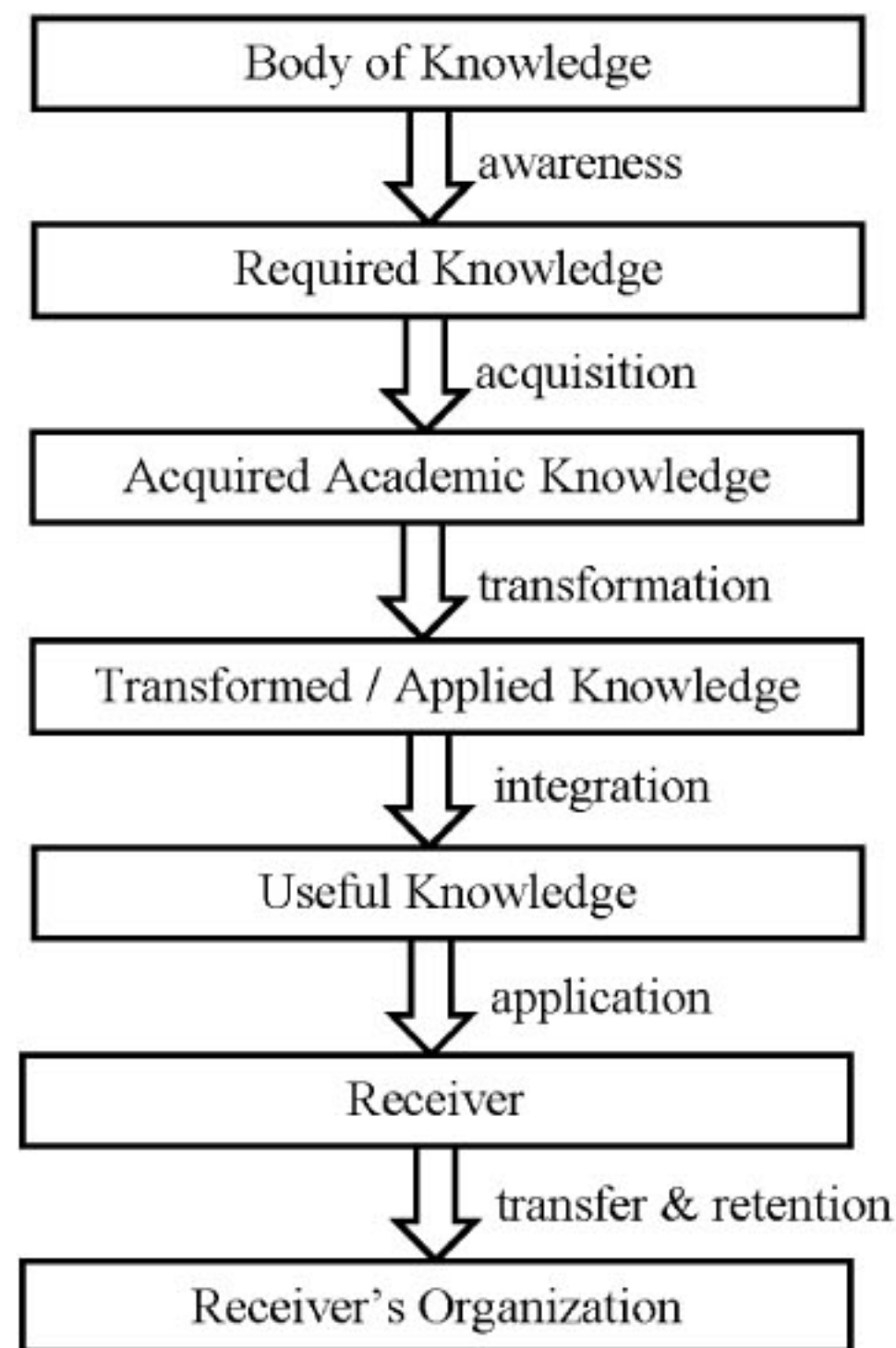
The Knowledge Transfer Model

Knowledge transfer occurs over a variety of mediums through direct or indirect methods. A direct channel means that the receiver accesses the material written by the creators of the academic knowledge through mediums including journals, books, and conference proceedings. However, practitioners are rarely directly exposed to or utilize current academic material (Pearson et al., 2005). Rather, these practitioners access knowledge through indirect channels where the knowledge is transformed by an intermediary into an accessible format that is applicable to the receiver's environment (Nohria & Eccles, 1998). Understanding and identifying effective indirect channels, therefore, is key to conveying academic research to practitioners (Booker, Bontis, & Serenko, 2012).

For example, medical patients avoid information they believe themselves to be unqualified to consume and, instead, defer to the information provided by their healthcare providers as authorities (Baxter & Braithwaite, 2008). Similarly, a practitioner who does not possess a Ph.D. can indirectly access academic material by communicating with practitioners holding Ph. Ds, thus using them as channels for knowledge transfer. This indirect channel occurs when non-Ph.D.-holding individuals are exposed to academic theory through the Ph.D. graduates who have the ability to synthesize and communicate the initially inaccessible knowledge. Accordingly, Zolnik (2010) demonstrates that post-doctoral fellows play a vital role in technology transfer and the dissemination of scholarly knowledge beyond the boundaries of academia.

In order to explore the dissemination of knowledge, the present study adapted the process-based model of knowledge transfer proposed by Liyanage et al. (2009) (see Figure 1). This model conforms to the notion that knowledge is not an object which can be passed in static form from one person to another

Figure 1. The process-based model of knowledge transfer (adapted from Liyanage et al., 2009)



because it is through the process of interaction that an individual attaches new meaning to the knowledge environment (Parent et al., 2007). This model depicts a process which occurs on different levels of the organization. Both the source and the receiver of the knowledge have to actively engage in the knowledge transfer process and possess the necessary capabilities for the receiver to be able to effectively gain new knowledge and be able to act upon it. Each step in the knowledge transfer process must be completed before proceeding onto the next one. If all of these steps are not completed, then the process of knowledge transfer cannot occur, and the recipient's behavior will not be impacted by the knowledge. As expressed by Knights and Scarbrough (2010), the need for such a model is emphasized by the constant debate in this field.

The model assumes that there exists a body of scholarly knowledge which the recipient needs to be aware of in order to consume

it. The process of knowledge transfer begins with the recipient identifying what kind of knowledge is required to solve a particular problem. Therefore, the receiver must be able to correctly assess the situation and the surrounding environment. The receiver must next acquire the necessary academic knowledge – knowledge that is unprocessed and may not be applied immediately or as is. After this, scholarly knowledge is transformed into new, applied knowledge that builds on the recipient's existing knowledge, skills, or capabilities. The integration of this knowledge involves adapting the knowledge to the situation and environment at hand and making it useful in a given context. In the next stage, this knowledge is applied to the current problem in an actionable strategy. Last, this knowledge should be transferred from the receiver to other organizational members and retained by not only the receiver but also his or her organization because newly acquired

knowledge should have a lasting impact on as many stakeholders as possible.

This process-based model of knowledge transfer is applied in the present study to explore whether doctoral business program graduates who are employed in the non-academic workforce acquire, utilize, and disseminate academic knowledge in their daily decision making.

METHODOLOGY

Twenty semi-structured phone and Skype interviews with practitioners who possess a Ph.D. were conducted during 2012-2013. These practitioners obtained their doctorates in Canada in business, management, or a management-related discipline. The rationale for using doctoral degree holders relates to the previously identified problem of the accessibility of academic research. Past studies revealed that academic papers are inaccessible to most practitioners due to jargon, length, writing style, and complicated statistics. Scholarly papers also mostly contain theoretical recommendations that need to be converted to practical application (Booker et al., 2008; Serenko, et al., 2012). Additionally, most business practitioners are unaware of the existence of scholarly publications. By studying individuals who are equipped with the necessary skills and experience to utilize academic material, this study acts to negate the inaccessibility issue. Therefore, this study focuses on alternative explanations for the gap in the transfer of academic knowledge to practice.

The interview questions were designed to follow the process of knowledge transfer and explore how the participants progressed through the various stages of the proposed model as described in Figure 1. The interview protocol was subjected to face validity assessment by consulting a group of business faculty members to address concerns of ambiguity and social desirability, and various adjustments to the questions were made. When respondents did not offer comprehensive answers, several probing follow-ups were used.

Participants were recruited in two ways: Internet searches and referrals (i.e., snowballing). The first method was initially used to identify individuals through a Google search of each person listed on a Canadian university's published graduate list from an applicable Ph.D. program. Graduates who worked in industry were identified through this process. If the individual's contact information was not available online, his or her dissertation supervisor was contacted to assist in reaching the graduate. The second method refers to approaching the individuals who were mentioned by the previous interviewees. Overall, the participants included ten consultants, six government employees, three investment managers, and one employee of a private company (20 in total). The participants were initially told that the study was focusing on their use of various sources of knowledge, not specifically on their use of academic research. This misdirection was important in order to eliminate social desirability bias (Crowne & Marlowe, 1960; Fisher, 1993).

The interviews were analyzed using content analysis, which is a systematic process of analyzing written, verbal, or visual content (Cole, 1988). Content analysis is the most appropriate method for analyzing the data from interviews because of the allowed flexibility in the research design (Harwood & Garry, 2003). This technique allows for a continual re-evaluation of categories established from existing theoretical models. Additionally, since content analysis provides a formalized analysis procedure, it facilitates the comparison of the different subjective viewpoints (Flick, 2002). More specifically, deductive content analysis was used to test previous knowledge established in the knowledge transfer field. Deductive content analysis structures the analysis around an earlier theory and moves from the general to the specific (Burns & Grove, 2005; Elo & Kyngas, 2008).

The data was analyzed to determine the underlying relationships among an individual's characteristics, values, experiences, and envi-

ronment with his or her demand, valuation, and use of knowledge. The raw data from the interviews was transformed into manageable content categories based on systematic coding (Weber, 1990). The codes used to analyze the data for this study were developed based on the process-based model of knowledge transfer (Figure 1), aspects of holistic knowledge transfer, and known antecedents for and barriers to knowledge transfer (Dey, 1993). While traveling the dynamic path of deductive content analysis, the codes were continually re-evaluated and transformed as the analysis progressed. The researchers then returned to existing theory which might explain observed phenomena and further direct the analysis. This check of reliability also involved an additional review of the data to ensure the material was analyzed properly.

Theory triangulation was achieved by incorporating multiple theories to strengthen the credibility of the findings (Erlandson et al., 1993). The differing perspectives of each participant in the study also contributed to data triangulation. The data analysis process was facilitated through the use of a qualitative data analysis program NVivo. Nvivo was used

to organize and analyze the content from the interviews through queries, visualization, and report generation.

FINDINGS

Eleven participants were female and nine were male. The participants graduated with their respective Ph.D. degrees between 1991 and 2010 with the average year being 2005 (i.e., seven years before the interview date). Figure 2 shows that the participants possessed a wide range of degrees.

Knowledge Awareness

Knowledge awareness was focused on the knowledge that the practitioners believed they required to perform their job. Additionally, the study explored whether these practitioners perceived academic knowledge to be a necessary source. Participants described (a) what they believed was the necessary knowledge to search for in order to perform their job-related duties and (b) how they accessed it. Four categories of necessary knowledge emerged (Figure 3).

Figure 2. Ph.D. degrees of participants

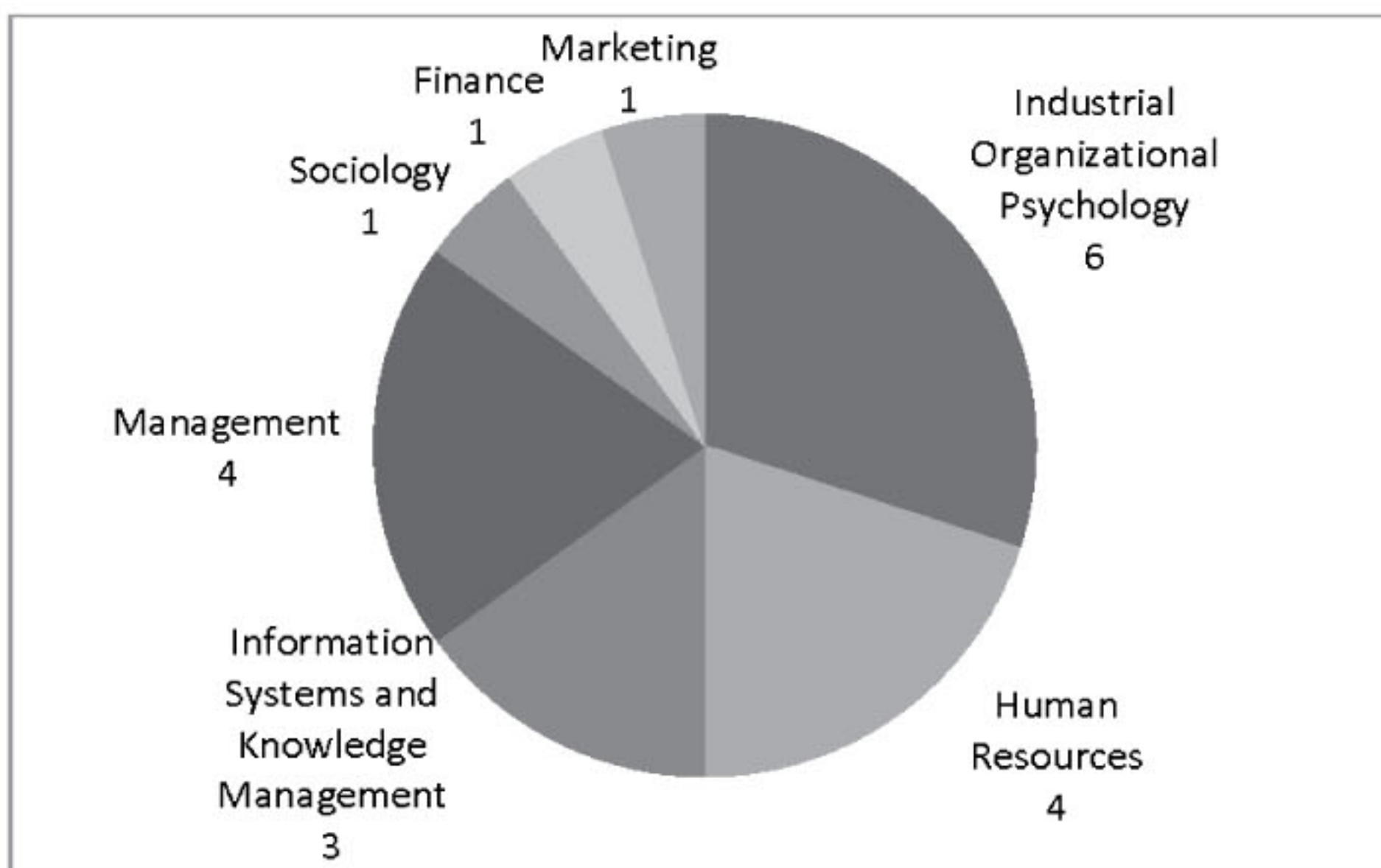
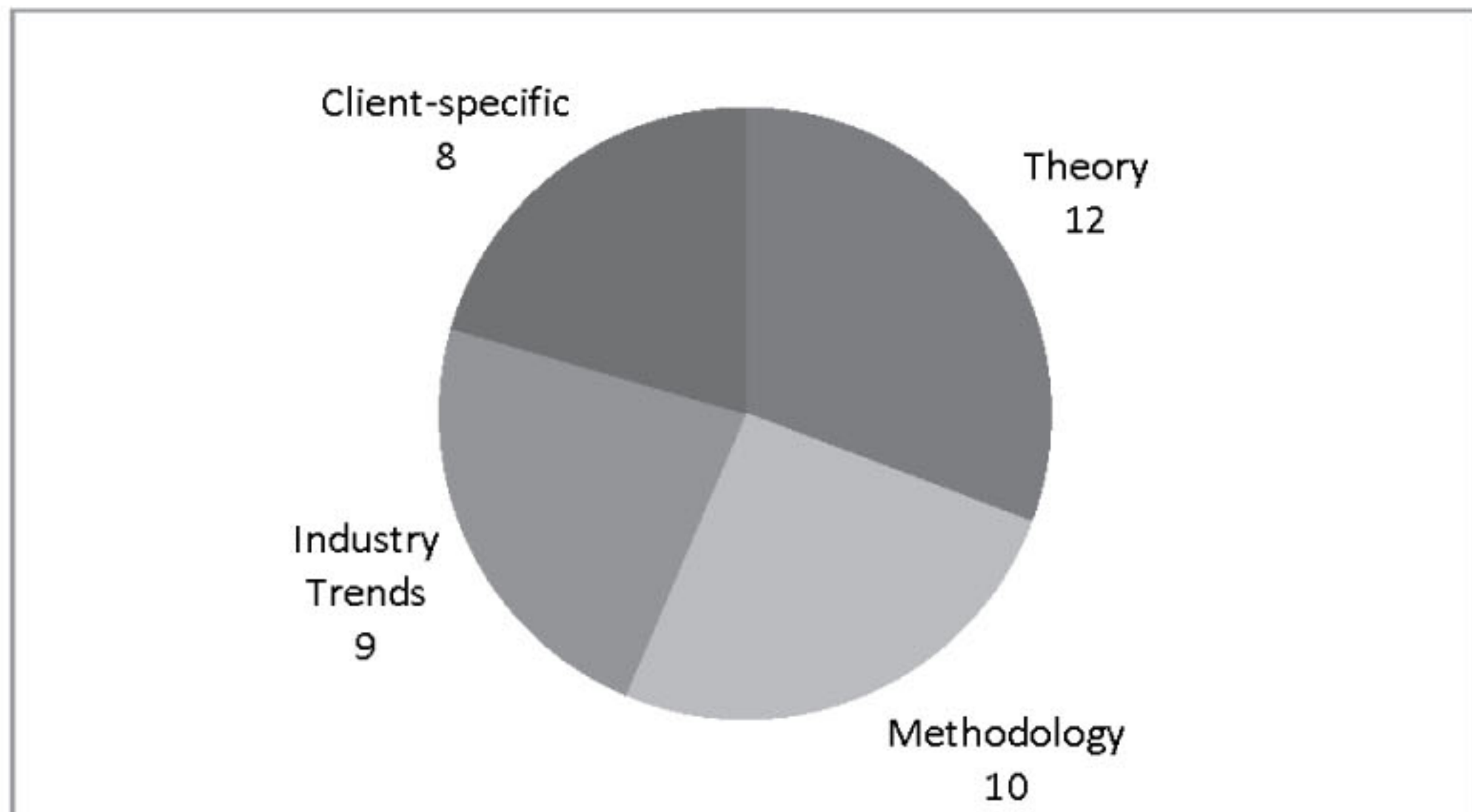


Figure 3. Perceived knowledge requirement



Often, participants stated they require a variety of knowledge:

I tend to think of it as I need a background in industrial organizational psychology, background in clinical accounting psychology, so literature you can think of it as... background in the business literature and also really understanding the actual clients that I'm working with.

Out of the twenty participants, nine subscribed to an alert system which notified them of new knowledge from a source (Figure 4). Interestingly, when asked, several respondents who did not receive alerts said they had not thought of that but would use such notifications in the future. The following excerpt provides an example of a participant's use of alert tools:

So there [are] four journals that they, that the Academy, produces, and every month I get an email that tells me the titles of all of the articles in each of the journals. So you can very quickly scan, the, basically the index of that month's publication and see if there is something that is of particular interest to your area.

Additionally, the participants described how they decided which source was required (Figure 5). The responses were coded in the following manner: 1) situational (i.e., the participant decides which source to access based on the nature of the problem he or she was encountering), 2) timely (i.e., the source which provides the quickest answer), 3) internal experience (i.e., the past experience of the individuals themselves and of their colleagues), 4) audience (i.e., the group that the practitioner will present the new knowledge to), and 5) reliability (i.e., how consistent the source is with providing accurate, proven information).

In terms of discrepancies between consultants and government employees, government employees were slightly more likely to mention theory and methodology as required knowledge. While several consultants decided which source is required based on their audience, none of the government participants did.

Knowledge Acquisition

Figure 6 presents knowledge sources that practitioners access on a regular basis. Academic journals were mentioned most frequently, with

Figure 4. Use of alert tools

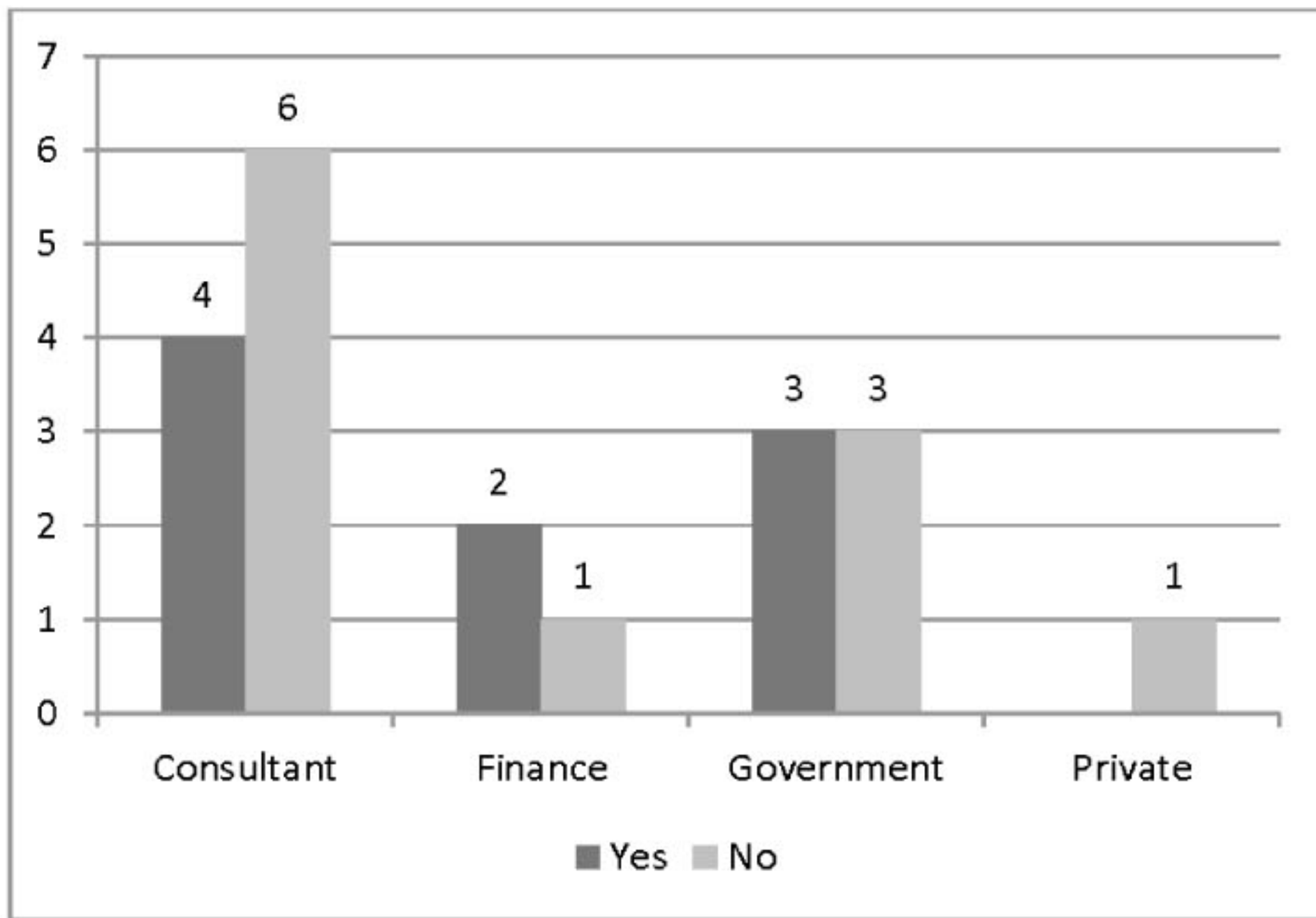


Figure 5. Decision criteria

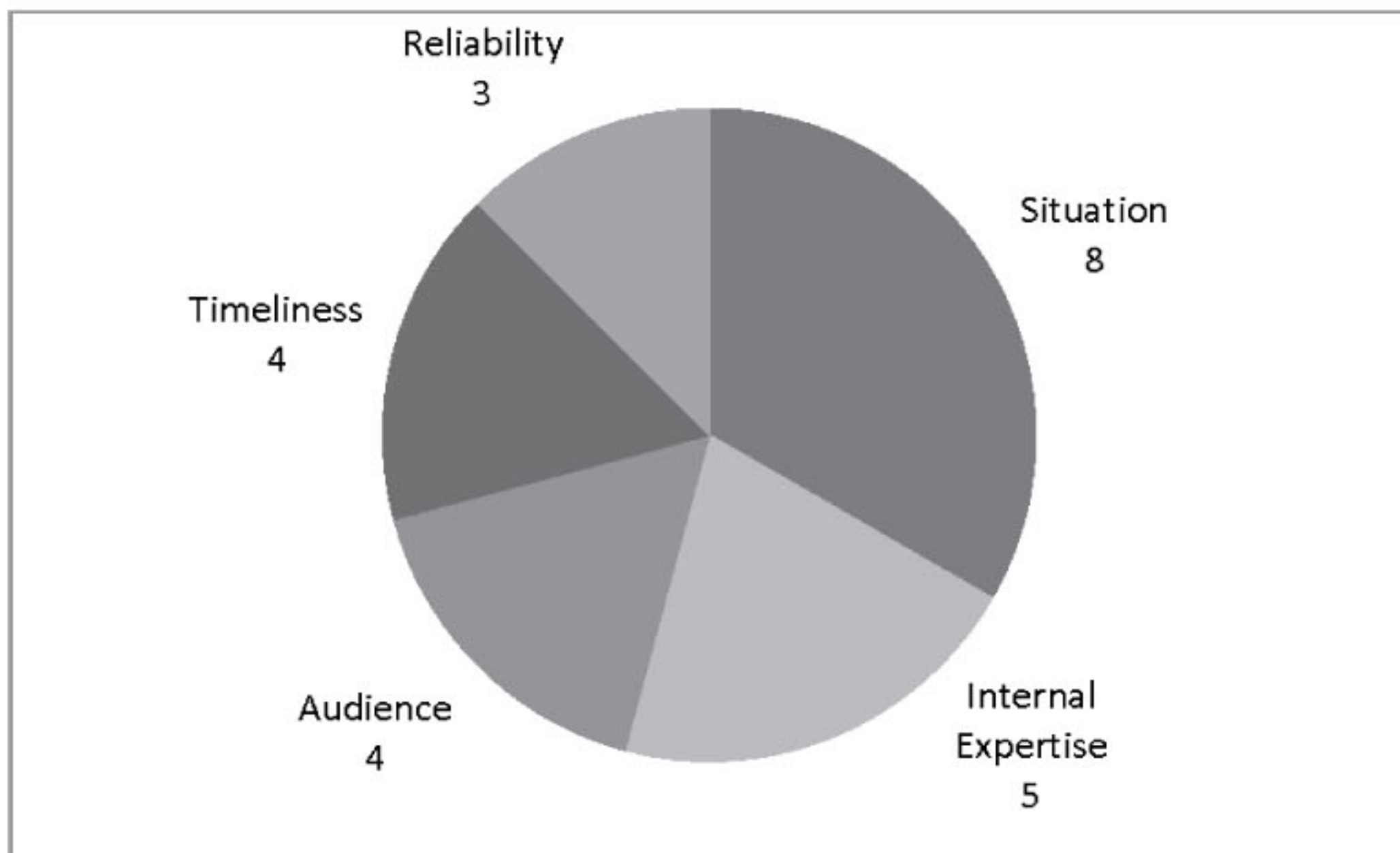
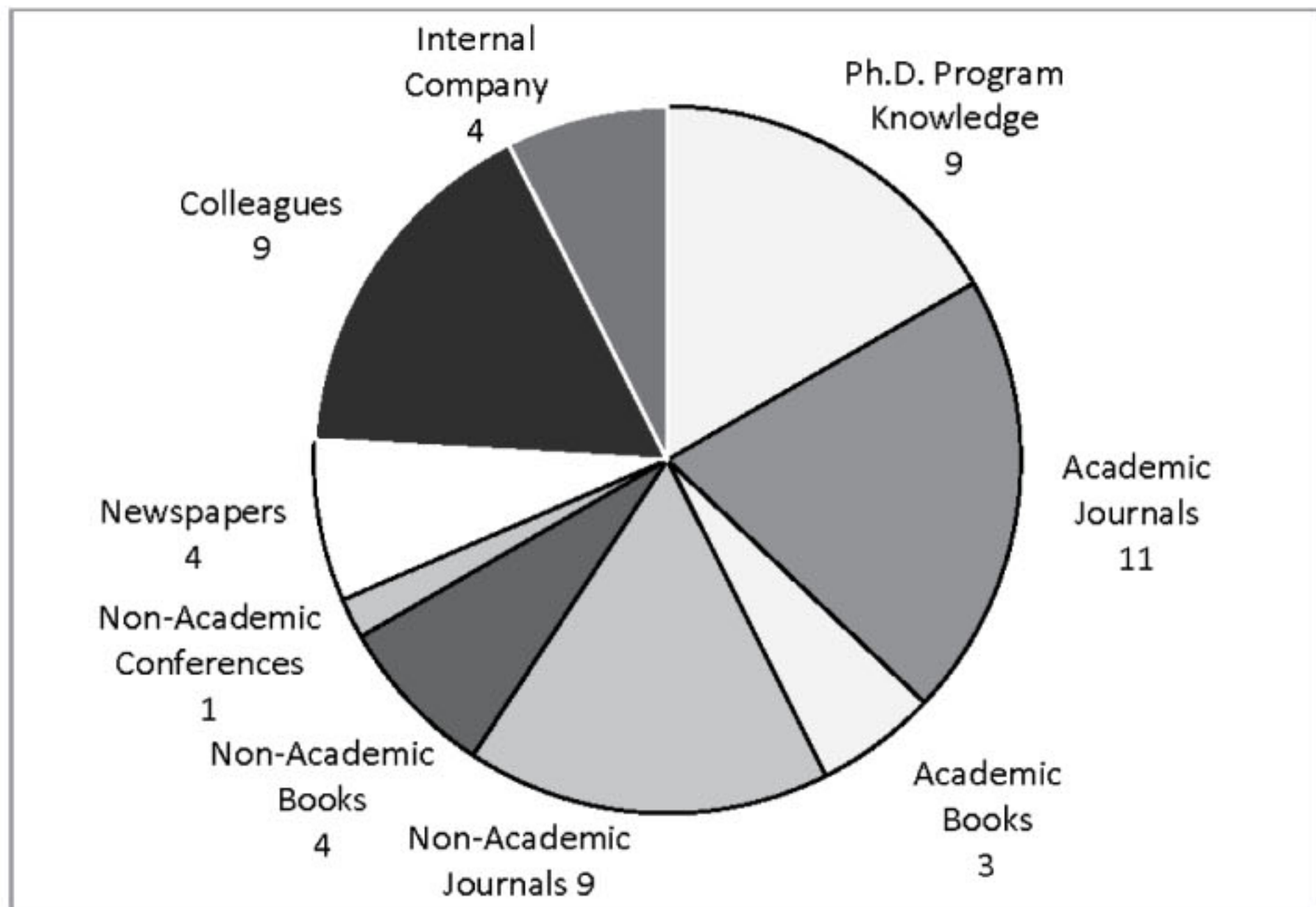


Figure 6. Knowledge sources accessed



eleven practitioners stating they access this source. Non-academic journals and knowledge obtained during their Ph.D. programs were the next highest accessed sources with nine instances each. On average, the practitioners would consult with three different sources.

In focusing on academic research, the participants were asked how they access academic findings. Nine participants had access to academic literature at work, four through their Ph.D.-granting institution, and two obtained a login and password from their colleagues or current students (legally or not). Regrettably, four individuals said they didn't have access to academic literature, and, if they wanted to, they would have to pay for it personally:

Well, it's not easily available, like Harvard Business Review would be a good source and I'll read it from time to time. It's expensive, and I'm at the early stages of my business, and being able to buy academic, peer-reviewed journal articles is not something that I can afford. But, if it was free, I would certainly look at it.

Nine practitioners said they only accessed academic literature when they encountered a problem that required academic knowledge. Five responded that they accessed academic literature on a regular basis. Because two participants never accessed academic literature, they were excluded from this question. Additionally, responses were not obtained for four participants. While many practitioners expressed their desire to access academic literature, most could not do so due to budgetary or time constraints. Nevertheless, most respondents did access academic literature either regularly or intermittently. While government employees all had access to academic literature at work, the only consultant with access to academic literature at work owned his or her own practice. Consultants had the largest barrier to accessing academic literature because they had to rely on their colleagues who had access or they had to pay for it personally.

Knowledge Transformation

The knowledge transformation stage in the knowledge transfer process involves converting the newly accessed academic knowledge into a useable form for its intended consumers. The participants were asked if, when they accessed academic literature, it contributed to the development of their knowledge base. It was assumed that, if the participants were able to transform and adapt the new knowledge, they improved their ability to make better managerial decisions. If the newly acquired knowledge was obsolete or irrelevant, no transformation processes would take place.

Eleven participants stated that they gained new knowledge when they accessed academic literature. Four said that sometimes it was new and sometimes it was not. Three respondents mentioned that academic literature did not contribute to their knowledge base. Two respondents did not comment. Overall, a majority commented that academic knowledge was valuable and worth adapting.

Those who did not find academic knowledge worth transforming commented on the obsolescence of and lack of novelty in academic findings:

Academic publications, unless they are still working papers, they are a bit dated because it takes a while until they get published. So it's not really new information.

My bias is that 90% percent of academic literature out there is rehashing and not contributing anything new to the field. And so I try to keep up with it, but I'd say only 10% of it is providing me with new knowledge.

Additionally, the practitioners were asked if accessing academic literature had improved their skills or capabilities. Ten responded affirmatively. Three said that this occurred sometimes, and five said that it did not. One participant said that he or she gained new knowledge from academic literature but that it did not enhance his or her capabilities. At the

same time, it may potentially improve his or her understanding of the situation, underlying factors, and related concepts that may be applied in the future or in different contexts:

I guess my abilities are not influenced by academic research; my understanding of a particular area is what's improved with the academic research. So it doesn't necessarily change how I do things; it might change how I understand something.

There are, again, a few differences between the responses from consultants and government employees. Five of the six government employees answered that new knowledge is gained by accessing academic literature, and one said that this occurs "sometimes." In comparison with the government employees' responses, of the nine consulting responses, four said yes, three said sometimes, and two said no.

Knowledge Integration

The knowledge integration portion of the interview studied how the practitioners found academic research fit into their work environment by addressing organizational needs. The participants were asked to describe the general usefulness, applicability, and relevance of academic research in performing job-related duties. Five participants stated that academic literature is unconditionally relevant and applicable to their work responsibilities. For example, one person commented on how important academic literature is to his or her responsibilities:

Totally relevant and necessary, I could not do my job without academic sources.

Six replied that academic literature is relevant in creating the foundation for their knowledge but not for implementable recommendations. Three did find relevance and usefulness in academic knowledge but noticed that it requires extensive transformation in order to be applied. Six participants replied that it was rare that they were able to apply academic

knowledge because of its lack of relevance or usefulness. Many answered that the applicability and relevance of academic research is based on certain conditions, which included language, sample type, scope, and intended audience. For example, one participant expressed how academic research required conversion:

It's applicable, but I would have to take the time to convert it into something...so it's applicable at a conceptual level, less at a pragmatic level. If I just want to analyze the why and the how, from an analytical perspective, it's very helpful, but less so if I need something that I can use right away.

In a comparison between the ten consultant participants with the six government participants, only one consultant said that academic knowledge is relevant and applicable to his or her working environment, whereas three government employees said yes.

Knowledge Application

Knowledge application occurs when the useful knowledge is utilized to address the current

problem the practitioner has encountered. In this stage in the knowledge transfer process, the practitioners acted upon the new knowledge they obtained. The participants were asked how frequently they applied in practice their findings from academic literature, and the responses were categorized as: 1) regularly, 2) sometimes, 3) rarely, and 4) never (Figure 7). Overall, a majority applied the body of academic knowledge in practical settings. For example, a practitioner expressed his or her enthusiasm as follows:

I am the type of person who, if somebody gives me something that I find interesting ... I will spend the next three weeks telling everybody about it and trying to apply it all over the place, which I'm kind of known for.

The participants were also asked if their company or clients recognized the value in applying academic research to solve managerial problems. The responses were less optimistic (Figure 8).

It was observed that an employee's organization or clients dramatically influenced the probability of applying scientific findings for

Figure 7. Practical application of academic knowledge

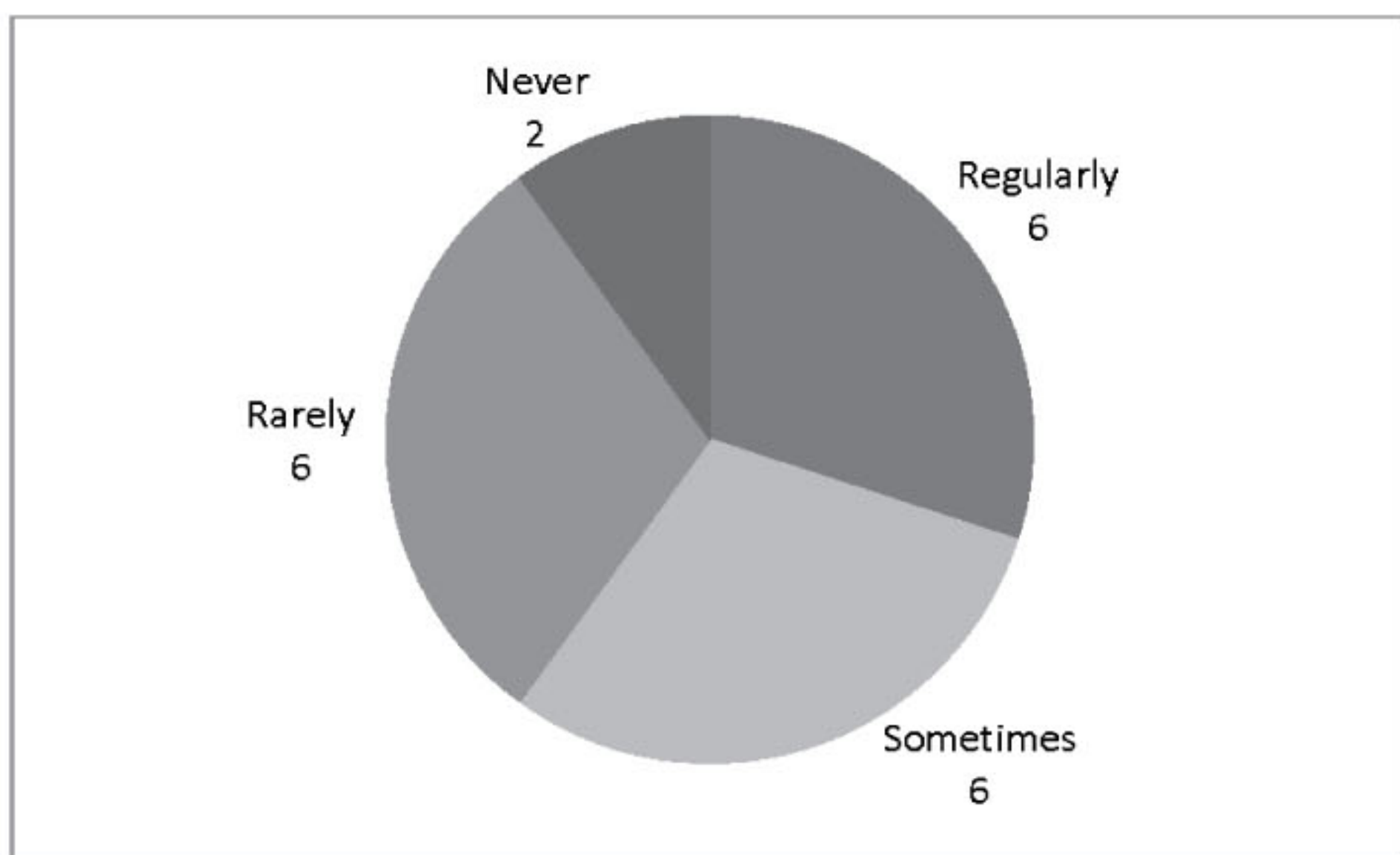
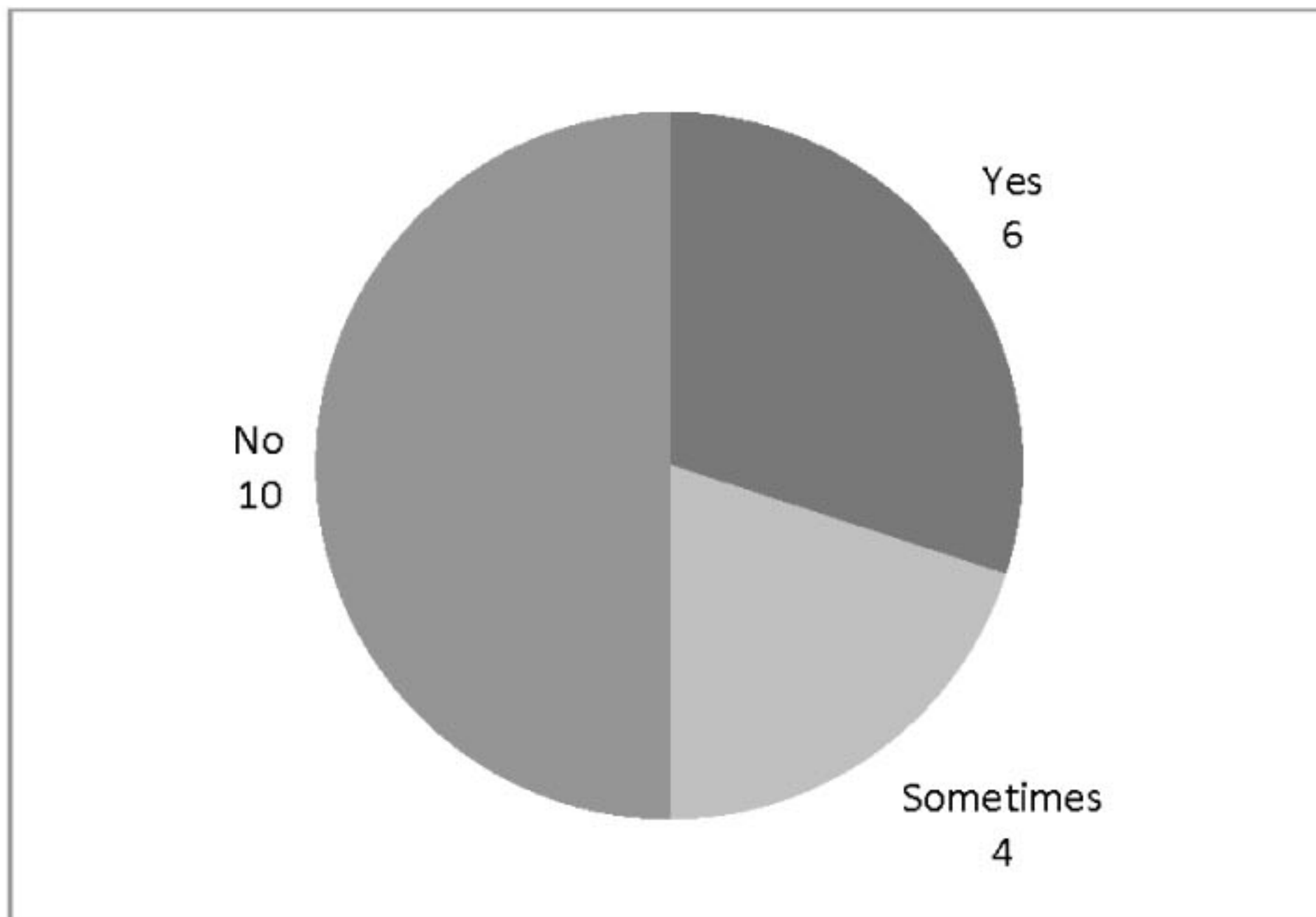


Figure 8. Client or company values applied academic knowledge



decision making. If the organizational culture, job settings, fellow colleagues, and policies valued academic knowledge and encouraged its application for decision making, practitioners were more likely to use it. For example, one participant explained how his or her clients would appreciate the application of academic knowledge because it increases the validity of the recommendations made:

I think there is an appreciation of the face validity that that would bring to the advice that you provide. In terms of that information is valid and we can believe that that is true.

However, an opposite effect was also observed. For instance, an interviewee who never used academic literature described the deterrents he or she faced:

A couple of things, number one the demands of the job in the private sector: it's about productivity; you're not measured by how many articles you are going to read... you are measured by

how many hours can you... have you been on a client. So based on how you are measured, your behavior changes and so, if the culture of the firm doesn't support you to read all of the academic articles to see what ideas and what is the latest thinking... there's not many firms that pay you to do that. So by default then you don't do it.

Another consultant stated that his or her use of academic knowledge could have an opposite effect in his or her organization:

Nobody would ever [care about the inclusion of academic knowledge]; in fact, you could reduce your credibility if you heavily reference your findings.

Yet again, there is a stark contrast between the answers provided by the consultant and government participants. Only two consultants (out of ten) versus three government employees (out of six) affirmed that they apply academic knowledge on a regular basis. The majority of

consultants revealed that they rarely applied academic knowledge. Additionally, there was a difference in whether or not the participants believed that their company or clients value the application of academic knowledge because most consultants stated that it was not valued.

Knowledge Transfer and Retention

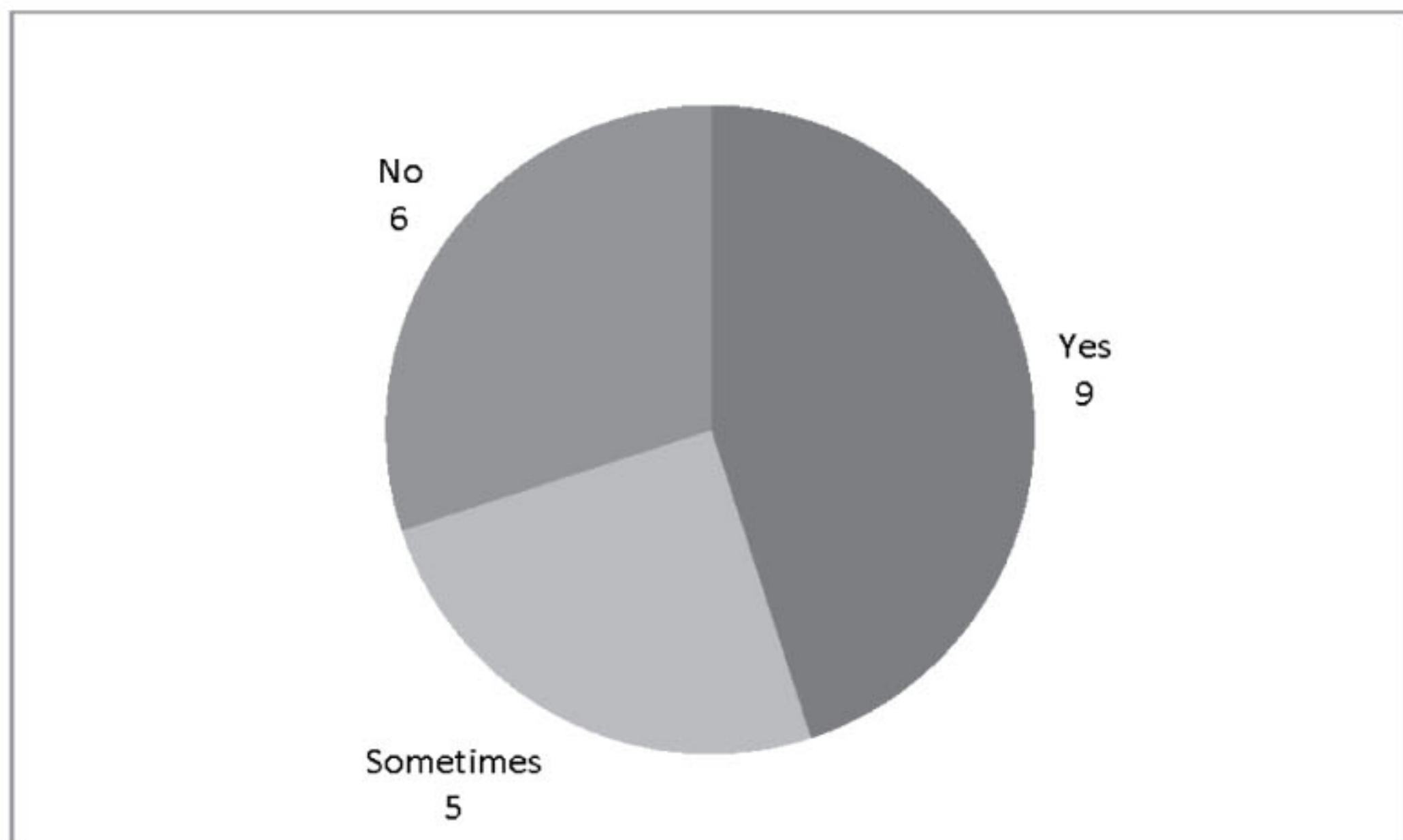
Knowledge transfer and retention ensures that the academic knowledge acquired and utilized by practitioners is embedded in the organization for future consultation and action. For knowledge to be retained, it must have a lasting impact on the individual's or company's behavior. The participants were asked if they see themselves as translators of academic research by making academic knowledge usable for those who would not be able to access it themselves. Most responded affirmatively (Figure 9). For instance, one participant discussed how he or she transfers academic knowledge and the challenges that must be overcome in this effort:

I'm using it, and people know it, but I will translate. I would use it by translating it, and

I would definitely not hesitate to use what I have learned here as long as I can make it understandable and useful for my colleagues. I will give you an example: in the academic environment in literature, we're talking about commitment and then we're talking about this topic [that] has been highly researched. And it gets to very more detailed terminology like employee commitment, supervisor commitment... I don't see myself talking about these definitions here, because people won't follow me. So I need to stay broad, talking about commitment, but not going with all the refinements that we can have in the literature. This is where I will lose them. I need to use this knowledge but not go as deeply as academic knowledge will do.

Most participants viewed themselves as translators of academic knowledge to those who were not able to consume it by means of the direct knowledge dissemination channels. By providing a higher level of abstraction, they believed that educational differences did not create an unbridgeable gap:

Figure 9. Transfer of academic knowledge



It's not that they weren't intelligent; they were just maybe a different level.

The majority of government employees replied that they transfer academic knowledge to their colleagues who lack the necessary education. In contrast, few consultants believed they successfully perform this function.

Other Factors

During data analysis, two factors were discovered that affected the probability of practitioners using academic research. The first one pertains to the practitioners' connection with academia. Only seven of the twenty practitioners replied that they had been published in peer-reviewed journals and conference proceedings after obtaining their Ph.D. Almost all of those who published also reported that they regularly use academic knowledge. Nine participants had also taught at a college or university since graduation, and they were more likely to use academic research than those who had not taught. Thus, a connection with academia, which may be continued through publishing in peer-reviewed outlets and teaching, increases the likelihood of an individual using academic literature.

The second factor relates to the degree to which academic knowledge is valued in the practitioner's environment. It was observed that the audience to which the practitioner presented his or her recommendations greatly impacted the sources the practitioner employed. If the audience requires evidence-based knowledge, then academic research is more likely to be used. One of the strongest indicators of the probability of an individual accessing and applying academic literature is whether or not his or her clients or company values academic knowledge. If the client or company does not value academic research, the likelihood of the practitioner referencing the material declines. One reason why this relationship could exist is that, if the participant's employer does not value academic content, then it will not pay for the practitioner to have access to this material.

Implications

The overall purpose of this study was to investigate the transfer of academic knowledge to practice. Particularly, it explored whether doctoral business program graduates who are employed in the non-academic sector act as an indirect knowledge dissemination channel by acquiring, utilizing, and disseminating the academic body of knowledge in their daily practice. Based on the findings, several implications are offered.

Implication 1: The previous claims that academic research does not influence decision making of industry practitioners are not fully warranted.

Previously, a number of scholars, practitioners, and policy makers expressed their concern that academic research in the business discipline does not reach industry professionals, remains unimplemented in practical settings, and has no impact on the state of practice (Bennis & O'Toole, 2005). In other words, they stated that the transfer of academic knowledge to practice does not occur. The present study offers empirical evidence that refutes this claim. It was found that the academic body of knowledge does have an impact on the behavior, operations, and decisions of practitioners when it is delivered through appropriate channels.

Implication 2: Graduates of doctoral business programs act as knowledge transfer intermediaries that aggregate, summarize, communicate, and implement findings reported in academic publications.

According to the direct knowledge transfer channel, practitioners are supposed to access, read, and use the body of knowledge existing in peer-reviewed publications. This channel, however, is rarely utilized because practitioners generally lack the necessary training required to consume academic knowledge directly from

its source. In contrast, academic knowledge may be successfully transferred to practice by means of indirect dissemination channels which aggregate, summarize, communicate, and convert academic knowledge into a format that may be easily comprehended by busy practitioners. This study demonstrated that doctoral business program graduates fulfill this role relatively successfully. Many of them not only use academic knowledge in practice but also deliver it to other members of their organization and clients who, in turn, will retain it and use in the future.

Implication 3: Academic journals have a potential to disseminate scholarly knowledge beyond the academic world.

Peer-reviewed journals have served as a primary tool for the promotion and development of science for centuries (de Vaujany, Walsh, & Mitev, 2011; Greco et al., 2006; Merton & Sztopka, 1996). They help scholars communicate their discoveries to a wider audience, retain copyright over their intellectual contributions, ensure the quality of publications by means of peer-reviewed processes, establish the direction of scientific progress, and preserve knowledge for future generations. This also applies to all types of business disciplines, including knowledge management (Serenko, 2013; Serenko & Dumay, 2015). This study demonstrates that, in addition to the critical mission above, academic journals play an important role in disseminating and preserving scholarly knowledge not only in the academic environment but also in practical settings. In this study, it was observed that many doctoral-degree-holding practitioners still access academic journals to acquire new knowledge. Thus, scholarly outlets may potentially promote academic knowledge far beyond the boundaries of scholarly institutions. For this, appropriate knowledge dissemination mechanisms should be further established.

Implication 4: The principles of the dissemination of academic knowledge in the

practitioner-oriented environment should become a component of student training in doctoral business programs.

Doctoral business program graduates can act as valuable knowledge distribution channels that can enhance the effectiveness and efficiency of an organization. During their doctoral degree training, they should be prepared with the skills and experience necessary to act as intermediaries that promote the benefits of academic literature in the practitioner-oriented environment. Because the knowledge that practitioners receive during their Ph.D. training is applied outside of academia, all doctoral students should be taught the principles of scholarly knowledge dissemination. In a similar vein, De Meyer (2013) argues that doctoral education in business should include more interdisciplinary work and be targeted at a wider selection of career paths.

The ability of Ph.D. program graduates to translate and promote the latest scientific discoveries beyond the academic world has been already well-recognized in the field of medicine. For example, several Ph.D. programs in science have already introduced specialized curricula for this purpose (Smith, Jarrett, & Bierer, 2013). Many leading healthcare organizations institutionalized the position of knowledge broker whose primary goal is to bridge the gap between research and practice (Meyer, 2010; Ward, House, & Hamer, 2009). Thus, there are exemplars that the developers of doctoral business program curricula may follow.

Implication 5: Demand for evidence-based knowledge in the practitioner's environment determines his or her probability of applying academic knowledge.

One of the strongest indicators of the probability of an individual accessing and applying academic literature is whether or not his or her employer or client values academic knowledge. If the company or client does not value academic research, the likelihood of the practitioner referencing the academic material

declines. One reason why this relationship exists is that, if the participant's employer does not value academic content, then it will not pay for the practitioner to have access to this material. This implication is somewhat similar to the findings of Siegel, Waldman, and Atwater (2004) who argue that cultural misunderstandings inhibited agreement between academics and practitioners. Some reasons why academic content is not seen as valuable included a lack of relevance, the scope of the research, and the complex language used. Additionally, as stated by many of the participants, it took considerable time and effort to convert academic knowledge into a form that is consumable by other users. This is partially attributed to the absorptive capacity and the responsive capacity of the organization as identified in the capacity-based model of knowledge transfer (Cohen & Levinthal, 1990; Parent et al., 2007). The absence of these capacities inhibits knowledge transfer within an organization. There is no motivation for these practitioners to undertake this effort if it is not appreciated or recognized as valuable. Therefore, managers should change their attitude towards the use of credible scientific evidence in order to promote the transfer of academic knowledge to industry.

Implication 6: Not all academic knowledge is perceived as useful by practitioners.

On the one hand, many practitioners found academic knowledge applicable to their business practice. On the other hand, the usefulness of academic knowledge is sometimes limited. For example, academic theories, principles, and recommendations are often very abstract. Practitioners, however, need to put the abstract ideas expressed in academic sources into the context relevant to their organization and current situation. Another issue is the timeliness of academic findings. It takes years from the beginning of a scholarly investigation until it appears in print and reaches its target audience. As a result, practitioners frequently perceive academic findings as somewhat obsolete. The same finding was also reported in previous em-

pirical investigations of the practical relevance of academic business research (Thomas & Tymon, 1982; Varadarajan, 2003). Nevertheless, many practitioners are still able to benefit from academic discoveries reported in peer-reviewed sources, but too often the search process for applicable knowledge becomes time consuming, which in turn negatively affects the perception of usefulness of academic output.

Implication 7: Limited access to academic literature is a major impediment to the application of scholarly findings in practice.

In this study, a major difference between consultants and government employees was observed: the latter acquired, transformed, integrated, applied, and transferred academic knowledge to a greater extent. The issue, however, was not in the differences in the sectors (private vs. public), job titles, or tasks performed by both groups of practitioners. The problem lay in the accessibility of academic literature—very few consultants had access to subscription-based academic publications whereas most government employees did. Thus, access plays a key role in the distribution of scholarly knowledge beyond the academic world.

Implication 8: The practitioners' connection with academia upon graduation is linked to their probability of using academic literature.

Those practitioners who kept in touch with the academic environment through publications or engaging in university or college teaching also maintained their academic connection by accessing and employing academic knowledge in workplace. This finding may be explained from the perspective of the social identity theory (Tajfel & Turner, 1979), which explains how an individual's self-concept can predict behavior. In-group preference appears where individuals favour the group they identify with, such as the academic community (Sachdev & Bourhis, 1987). This in-group preference for academic

community formed continued appreciation for scientific knowledge. As a result, practitioners who continued publishing scholarly works after graduation or taught at an academic institution were far more likely to use academic research than those who did not publish or teach courses. Therefore, they were more likely to self-identify as a member of the academic society while practitioners who did not have this connection might have seen academics as an out-group. Future research should further explore the role of academic ties of university graduates with the academic environment and their use of scholarly research in workplace.

Implication 9: Alert tools are an important mechanism helping practitioners stay abreast of relevant academic knowledge.

Time pressure is one of the most important components of the contemporary workplace environment. Unlike full-time academics, practitioners are not paid for continually digesting and staying up-to-date with the latest scientific discoveries. They cannot dedicate time to continually browsing new issues of peer-reviewed outlets and accumulating new knowledge in case they may need it in the future. Alert tools, which inform the subscriber about new publications that match specific criteria, were employed by almost half of the interviewed practitioners. Interestingly, many had not heard about the advantage of alert tools before and indicated they would use them in the future. Therefore, electronic alert tools may serve as an important mechanism to help busy practitioners keep track of the relevant knowledge in their respective areas.

CONCLUSION

The results of this study support and further develop current literature in the realm of knowledge transfer. The adapted and extended process-based model of knowledge transfer incorporates relevant theory regarding knowledge and how it should impact the behavior of the

receiver. Additionally, the findings of this study contribute to understanding indirect knowledge dissemination channels and how intermediaries process knowledge for the consumption by others. Particularly, this study empirically demonstrates that doctoral program graduates who join the non-academic sector after graduation promote the dissemination of academic knowledge.

The results suggest that there must be a greater demand and appreciation for evidence-based knowledge. Current organizational cultures outside the public sector are not conducive to a practitioner accessing and applying academic literature. The findings presented in this study enhance our understanding of the factors that affect a doctoral business program graduate's likelihood of acquiring, utilizing, and disseminating academic knowledge. Organizations employing doctoral degree holders should consider providing them with access to academic literature, which may improve their decision-making. Most importantly, these individuals may act as knowledge ambassadors to deliver academic knowledge to their colleagues and present it in an appropriate format. This, in turn, may improve overall organizational performance. Particularly, this is an important issue for consulting companies, which, in contrast to public organizations, rarely provide their employees with access to academic material.

Recently, the role of the academic institution and its responsibility for the accessibility and distribution of academic research was questioned. One important finding from this study is that the characteristics of academic publications created a barrier for many practitioners. These limiting features include the narrow scope, limited generalizability, complex language, and the sample population used in such publications. Yet, if academics were to present their research to accommodate practitioners, they would never be published in academic journals. Because journal publications are a significant aspect of academics' performance evaluation, it doesn't make sense for them to do this. Therefore, the required form and preferred function of academic articles are apparently not

well aligned between the stakeholders. While some participants believed these institutions should be changing to address what industry values, others argued this is not so and that such accommodation should not be the function of universities. This echoes the debate in academic circles. However, it is unclear if an academic institution or academic journal can be sustainable if it does not fill industry's need for knowledge: can there be a self-sufficient industry with academics publishing solely for themselves? With consultants increasingly being viewed as a viable alternative for academic knowledge dissemination, this is becoming an urgent matter for policy makers.

Considering the increasing competitiveness of the academic job market around the world, more doctoral business program graduates will join the non-academic sector in the future. Therefore, they need to receive not only theoretical but also applied knowledge during their training. Particularly, an ability to convert academic findings to actionable items should be strongly emphasized. For this, changes to the academic curricula are required at both institutional and national levels.

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APPENDIX: INTERVIEW QUESTIONS

Demographic Question Set 1

- What is your current job title and responsibilities? In what industry?
- If you were to describe the type of knowledge do you create on an average day, how would you do it?

Knowledge Awareness

Question 1: What sort of knowledge do you seek on an average day?

Question 2: How do you decide what source of knowledge to choose to solve each managerial problem? In other words, does your selection of knowledge sources depend on the nature of the problem?

Probe 1: What way of gaining new knowledge have you found most beneficial?

Question 3: Do you use specific tools to make you aware of new knowledge that is available to be consumed?

Knowledge Acquisition

Question 1: In your daily work you probably come across situations when you need credible sources of knowledge. Please, list in order of importance, sources of knowledge you use in your daily work.

Probe 1: Do you use knowledge that you learned in your PhD program? Your MBA/Management program?

Probe 2: Do you use academic journals, practitioner journals, books, or the Internet?

- Which journal titles do you use most frequently?
- Do you have access to academic research? How do you access it?
- Do you read academic literature regularly or do you search for a particular topic only when you need it?
- If you don't use academic publications, why not?
- Do you attend academic/practitioner conferences? If yes, which ones? If not, why not?

Probe 3: Do you frequently use knowledge from your colleagues?

Knowledge Transformation

Question 1: With respect to your job, do you gain new knowledge by accessing academic literature? Does this new knowledge improve any of your existing skills or capabilities?

Knowledge Integration

Question 1: Can you comment on the general usefulness, applicability, and relevance of academic knowledge in aiding you in your daily work?

Knowledge Application

Question 1: How frequently do you utilize academic knowledge to benefit you and your organization?

Question 2: Can you give me a few examples when you applied academic knowledge in your daily work? What were the outcomes and benefits for you and the company?

Question 3: Have your company or clients ever recognized the value of applying knowledge from academic publications? If yes, can you offer an example of this?

Knowledge Transfer and Retention

Question 1: In your work, do you communicate or transfer your academic knowledge to your colleagues who don't have a PhD degree? Can you see yourself as a translator of academic knowledge?

Demographic Question Set 2

- When did you graduate from your PhD program?
- After getting your PhD, have you taught part-time or full-time at a college or university?
- What area was your PhD in?
- Have you published any works after obtaining your PhD?

Note: The list above represents a starting point to solicit the necessary answers. Additional questions and probes were used when needed to ensure that each point was adequately covered.