SIGNALING THEORY: PAST, PRESENT, AND FUTURE

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ABSTRACT

Signaling is all around us in our everyday lives. People signal by the way they carry themselves, speak, and interact. Organizations signal as well in their advertisements, recruiting, and annual reports, just to name a few. In this article we consider the influence of Spence’s (1973) seminal article on signaling theory. We trace signaling theory’s impact on management, psychology, and anthropology. We propose a model of the relationship among information, signaling, and perceptions. Finally, we suggest areas of further research in signaling theory based on where it has been, where it is today, and our proposed model.

INTRODUCTION

Signaling is all around us in our everyday lives. People signal by the way they carry themselves, speak, and interact. Organizations signal as well in their advertisements, recruiting, and annual reports, just to name a few. In this article we consider the influence of Spence’s (1973) seminal article on signaling theory. We trace signaling theory’s impact on management, psychology, and anthropology. We propose a model of the relationship among information, signaling, and perceptions. Finally, we suggest areas of further research in signaling theory based on where it has been, where it is today, and our proposed model.

SIGNALING THEORY: PAST

Spence (1973) provides a hypothetical example of how signaling affects job choice in the market. He starts with an introduction that ironically signals to the reader a level of uncertainty about Spence’s own abilities. His abilities, however, are shortly proven and the investment in the article quickly shows purpose.

Spence (1973) describes the hiring process as an investment and likens it to playing the Lottery. He goes on to say that the wage is the marginal contribution that an employer will pay for representation in this Lottery. But just as the final number is picked in a Lottery you do not know until that happens if you made the correct investment or not. These unknowns are better explained by observable personal attributes described as Signals. But as Spence (1973) states not all attributes are fixed (Indices), some are alterable (Signals). Indices are defined as unalterable pieces of data that include sex, gender, race, and other unalterable attributes. Signals
and indices are regarded as parameters in shifting conditional probability distributions that define an employer’s beliefs (Spence, 1973).

In this lottery of hiring the employer’s risk is neutral, and each of the signals/indices are neutral as described by Spence in the article. However, these signals to the individuals are manipulatable but costly. Spence (1973) says that a signal can not distinguish one applicant from another unless the costs of signaling are correlate negatively with productive ability. For example a college degree is becoming a non-distinguishable signal in which everyone is investing which ironically, in effect, makes it indistinguishable amongst job candidates.

However, equilibrium is reached when the signals portrayed by an applicant are received by an employer. An equilibrium can be thought of as a set of employer beliefs that generate offered wage schedules, applicant signaling decisions, hiring, and ultimately new market data over time that are consistent with the initial beliefs (Spence, 1973). This may not happen for many hiring and interviewing rounds, but could be likened to the hiring of junior accountants every spring from college, with special attention paid to their education. Each year, hiring through interviewing takes place, and equilibrium begins to crystallize based upon this year’s new hires versus last year’s results. These signals need to be negatively correlated but, as Spence stated, effective signaling depends not only upon the negative correlation of costs and productivities, but also upon there being a “sufficient” number of signals within the appropriate cost range (Spence, 1973). But, as mentioned before regarding the cost of college, if the “Signal” is too productive relative to the costs, everyone will invest heavily in the signal, and it may cease to have a signaling function (Spence, 1973). Signals, though, are not the only indicator; there are also Indices referred to previously.

Indices are unalterable pieces of data that include sex, gender, race, and other unalterable signals. Spence (1973) uses the index of sex to indicate any of these indices. He goes on to explain that as another signal is entered into the mix other than a standalone signal the equilibrium measure is now duplicated. For example, instead of having education as one signal among a like group, you now have education bifurcating to a male and female, a two-tailed group. This will, over time, cause a ranking to take place that could be seen as unfair and prejudiced to that singled out or signaled group. Spence (1973 indicated that the mechanism that generates the equilibrium is a like feedback loop. Spence refers to the situation of the disadvantaged group as a lower level equilibrium trap, which conveys the notion of a situation that persists for reasons inherent to the model. The multiple equilibria of the education model translate into arbitrary differences in the equilibrium configuration and status of two groups, as defined as observable, unalterable characteristics.

Spence (1973) makes some exciting points regarding signals and their relation to wages from an employer. The fact that Spence refers to the disadvantaged group as endogenous to the model is troubling in today’s society. Future research could focus on the feedback loop and its effect on governmental programs such as intercity education programs to help free misfortunate people from their feedback loop. In the remainder of this article, we will explain the importance
of this negatively correlated relationship between the cost and productivity of signals as they relate to the management, I/O psych, and non-business literature over the last 30 years.

**SIGNALING THEORY: PRESENT**

Signaling theory has been the basis of many hypotheses, models, theories, and ideas since Spence (1973). We will discuss three of these areas of study. They are management, I/O psychology, and science. We have reviewed the top journals in these areas to trace signaling theory and its impact for the last 30 years and give the reader a glimpse at where it has been and where it is headed. Table 1 identifies and describes the several seminal theories within the fore mentioned fields that trace their roots to signaling theory.

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The area of management takes the signaling ideas and grows them into many broader areas of research. Rosenbaum (1979) took the signaling theory as an explanation of the tournament pattern of mobility. He described the importance of his work this way: to describe the patterns of moves of an employee cohort, by testing particular relationships suggested by the tournament model. The aim is descriptive analysis, not causal inference. These analyses do not seek to assert that early career paths cause later career mobility. Rather, they seek to ascertain whether early career paths are related to later career mobility (Rosenbaum, 1979). He goes on to say that if such a relationship were discovered it would identify highly visible social signaling as Spence (1974) speaks about it in his publication seminal work.
Forbes (1987) takes this a step further and lists three cues that stem from signaling theory when making decisions regarding promotions in the tournament of mobility. They are: (1) prior history of promotions, (2) functional area background, and (3) number of different jobs held. Forbes however finds that mobility within an organization does not follow a strict tournament pattern of moves by employees. Employees who had been passed over still can rise to the top of the organization and sometimes quicker than those who won early on.

Signaling theory has become important in the recruiting literature. As Spence (1973) mentioned, a signal is only as good as it enables signalers to set themselves apart from the rest. The Chapman, et. al (2005) article covers outcomes, predictors and moderators. The moderators are synonymous with what Spence referred to as indices and the predictors correspond with the true signals to the recruits. As indices are unalterable it is important to concentrate on the predictors examined by Chapman, et al. These predictors or signals to the recruit are: job and organizational characteristics, recruiter characteristics, perceptions of the recruitment process, perceived fit, perceived alternatives, and hiring expectancies.

Job and organizational characteristics can be many. Job characteristics described in Morris and Venkatesh (2010) are skill variety, task identity, and autonomy. Organizational characteristics described in Turban and Keon (1993) are reward structure, centralization, size, and geographical dispersion. These characteristics can signal to a recruit much information about the company. Skill variety may tell a recruit that this job will offer a wide range of knowledge and, coupled with autonomy, may signal that the recruit is free and able to learn as much as possible in the position. With the organizational characteristics of a strong reward structure and large size, this may signal that there is room for movement and rewards for a job well done.

Recruiter characteristics can be perceptual or behavioral in nature, though behaviors have not been explicitly linked to actual job choice decisions (Rynes, 1989). What signals, then, might draw recruits to a particular organization or job choice? A signal in this case could be the demographics, personality, or even appearance of the recruiter. However, Rynes et al (1991) found that the most predominant signaling characteristics were not physical but how the recruiter represented the company from an employee standpoint. For example, if the recruiter seemed inefficient then the organization would be seen as inefficient as well. Along with recruiter characteristics there are the recruitment processes and the perceived “fit”. To understand these signals we must look to the elaboration likelihood model. This model helps explain that recruits process information in a “core” rather than “peripheral” fashion (Harris, 1989; Powell, 1991). When this happens the signals that they have processed set in when the organization least desires it (Ryens et al, 1990).

The final signals that will be discussed are the perceived alternatives and hiring expectancies. These might be, for example, alternatives as other jobs within the organization or the expectancies of freedom believed available as a member of the organization.
Ehrhart and Ziegert (2005) also use signaling theory in describing recruitment processes. They discuss a variety of theories that are conceptually linked to attraction, with an emphasis on the more widely cited and supported theories. These theories are then broken down into three categories of meta-theories. These three categories are environment processing (individual), interactionist processing (fit), and self-processing meta-theories (personal characteristics). Of importance here is the final metatheory of self-processing. This is because it draws on social psychology and involves attitudes and views related to a person’s characteristics, which is relevant in explaining the relationship between subjective fit and attraction of the signal. The theories that compose this group are social learning theory, consistency theory, and social identity theory.

Social learning theory suggests that vicarious learning influences behavior through its influence on the observer's outcome expectancies (Bandura, 1986; Manz & Sims, 1981; Trevino & Youngblood 1990). In the definition provided, the vicarious learning could be unethical recruitment practices, implying that these are learned through the company.

The second theory is consistency theory. This theory states that self-esteem is an important variable in vocational choice (Korman 1976; Saks & Ashford 1997). Saks & Ashford (1997) tie this theory to self esteem and state that those with high levels of self-esteem think of themselves as “need-satisfying” individuals, and those low in self-esteem think of themselves as “norm-satisfying” individuals. This would imply that signals given by recruiters are more noticed by high self-esteem individuals. This would allow the signal to have the negative relationship needed to have the most effect in the recruiting arena.

The final recruiting theory with its roots in signaling theory is social identity theory. This theory states that when an organization is viewed in a positive light, this reflects favorably on the individuals within it, who receive positive outcomes such as approval from others (Barber, 1998; Ehrhart & Ziegert, 2005). Turban and Greening (1997) demonstrated this when they hypothesized that firms engaging in socially responsible actions have positive reputations and are perceived as attractive employers by job applicants, thus giving these employers a competitive advantage. This was supported by their study and demonstrates the need for good signals at a time when corporate success is tied to a high quality work force.

Marcus and Goodman (1991) used signaling theory to describe two types of signals in a crisis type situation within a publicly held company. These crisis situations were accidents, scandals and product safety. The two signals that ameliorated these crises were accommodative and defensive. Accommodative signals can serve shareholders’ interests after scandals, but defensive signals can serve interests such as these following accidents (Marcus & Goldman, 1991).

Dealing with a crisis and employment mobility are not the only directions in which signaling theory has expanded in the business management realm. Certo (2003) speaks of the financial implications of signaling theory on an IPO. Ross (1977) has contended that firms retain debt in an effort to signal quality and Bhattacharrya (1979) has argued that firms attempt to
signal quality by issuing dividends. IPOs managers send signals to investors to indicate firm quality and understand that a Low-quality firm attempting to imitate a signal will ultimately suffer bankruptcy (Certo2003).

The discipline of psychology has many models but, as William Bolding (1993) illustrated in his article regarding consumer behavior, signaling theory provides great enhancement when used with a psychological model. Bolding illustrated that offering a warranty is a way to signal to the customer that your product is superior when asymmetric information is present and again separates the stronger company from the weak company that is unable to model the stronger company.

In addition to signaling to consumers on warranties, firms can signal on advertising (Kirmani, 1990) and retailer choice (Davism, 1991) through quality signals like brand names. Using these as signals for a product’s position can increase perceived quality, and decrease information cost and the risks perceived by consumers (Erdim et al, 1998).

Signaling theory is not just for the consumer from the industrial / organizational psychology view. Firms may also signal to current and future employees. McNall (2010) suggests, observable personnel actions by the organization (e.g., having flexible, family-friendly policies) may be interpreted as a signal of more unobservable characteristics such as care and concern for employees on behalf of the organization. This is another example of asymmetric information and negatively related variables that are signaled to the future employee.

When Spence (1973) wrote his article on job signaling he probably did not foresee the effects it would have on other types of study other than psychology and business. But, we would be remiss not to point out the other research stemming from signaling theory. Anthropology for example is another area that is beginning to study signaling theory’s effects. Bird and Smith (2005) examined the potential explanatory value of signaling theory for a variety of anthropological topics, focusing on three social arenas in which signaling might plausibly be important: unconditional generosity, “wasteful” subsistence behavior, and artistic or craft traditions. As they point out signaling, though a powerful construct, requires further examination and must be studied further in the anthropological realm. Another author that focused signaling theory is Richard Sois (2003). He looked at signaling theory in the context of religion and social behaviors. He explains how signaling theory acts as a lens through which we can discern the selective pressures that have favored religious practices in the human lineage. Other articles like this contend that signaling theory should be used with other proposals to trace the evolution of religion (Sois & Bressler, 2003).

**SIGNALING THEORY: FUTURE**

What is the future of signaling theory in the fields of management, psychology, and anthropology? We offer figure 1 as a proposed model of the relationships among information,
signaling and perceptions as a framework within which to build a case for areas of future research in signaling theory.

Figure 1: Information, Signaling, and Perceptions

CONCLUSION

In conclusion, we will now point out strengths and weaknesses that we have observed while reviewing the research. Then we will show some missing links in the signaling research. Throughout these points, future research ideas will be mentioned.

Strengths and weaknesses of signaling theory and where it stands today were shown throughout our research. The main strength is signaling theory’s role as the genesis of other theories not only in the business realm, but in psychology and anthropology as well. Strength between signaling theory and recruitment is reflected in the study of “fit” and how P-O (Person-
Org) and P-J (Person-Job) can be signaled from a company’s point of view and at a relatively low cost vis-à-vis practices like corporate social performance. Weaknesses in the theory as it stands, include the lack of some information on how perceived alternative signals and hiring expectancies might be signaled during the recruiting process, and the lack of a multi dimensional scale needed to be able to measure many signals at a given time.

A large missing link observed would be the financial backing of what a signal costs. As researchers of many other Human Resource constructs have attempted to identify financial costs and benefits, so should researchers in signaling theory. Another missing link that might benefit from future research is between the distal and proximal events related to signaling and perceptions.

REFERENCES


