

Improving relationship performance on e-platforms: Role of technology usage in promoting justice

*Qian YANG (qianyang@nwpu.edu.cn)
School of Management
Northwestern Polytechnical University
West Youyi Road, Xi'an,
710072, China*

*Xiande ZHAO
China-Europe International Business School (CEIBS)
Hongfeng Road, Pudong, Shanghai,
201206, China*

Abstract

In the new e-platform business model, technology usage seems to work as a governance mechanism to regulate operations and manage interorganizational relationships. To respond, this study examines how technology usage in e-platform operations influenced the relationship quality between the platform builder and platform participants by promoting perceptions of three types of justice. The results from a survey of 394 platform participants in China reveal that technology usage leads to better relationship performance through enhanced perceptions of procedural, distributive, and informational justice. The positive impacts of procedural justice and distributive justice on relationship performance are greater than that of informational justice.

Keywords: e-platform; technology usage; justice

Instruction

In recent years, the increasing prominence of the Internet, the mobile Internet, big data, and digital tools has brought great challenges and enormous development opportunities for firms. In the face of these trends, the ways inter-firm exchanges are coordinated, controlled and managed have changed dramatically. Together with the developments in these areas, a new business model for an e-platform has emerged and become relevant due to the widespread use of information technology, which makes exchanges more efficient, flexible, and intelligent.

The main income of 60% of the world’s largest firms, including world-famous enterprises like Apple, CISCO, Microsoft, Google, Citigroup, UPS, Taobao, Baidu, and Tencent, comes from the e-platform model (Chen and Xu, 2013). During the 2017 double-eleven Shopping Festival in China, the sales volume from the platform T-mall (Taobao) accounted for 168 billion RMB (approximately 24.5 billion USD). This new business model not only propels exchange volume, but also changes the way collaborative parties manage their relationships. An in-depth interview with the operations manager of Tencent’s open platform (the largest online games and utility tools development platform in China) revealed that thanks to a strong execution ability in the supervision and control of technology, the platform’s contracts with participants have become highly simplified, generalized, and homogeneous. It seems that technology usage is playing the role of a control mechanism in the e-platform context.

Technology-based logic suggests that technology enables firms to interact effectively and efficiently with partners without extensive human involvement (Trainor et al., 2014). This provides participants with greater access and autonomy to use various resources and capabilities on the platform to accomplish their tasks, enhancing their operation efficiency and performance (Tiwana, 2008). Moreover, in technology-dominant transactions, cooperation procedures and interfaces are clearly defined by technology specifications. The need for continual overt supervision and the threat of opportunism is thus reduced (Hoetker et al., 2007). In this way, technology usage strengthens firms’ confidence and commitment by guaranteeing firms with consistent transaction procedures, proportional benefits, and necessary information. Therefore, technology usage provides important insights into the governance of e-platform relationships between the platform builder and platform participants, especially the contents suppliers, beyond formal control mechanisms. However, the role of technology usage as a control mechanism in e-platforms has not been adequately addressed in the literature.

To fill this gap, we offer an integrated model in which technology usage acts as a control mechanism to improve relationship performance (see Fig. 1). In this model, we propose that it is through the perception of three types of justice (procedural, distributive, and interactional) that technology usage exerts its governance effect on the e-platform relationship. In summary, this study seeks to answer two related research questions in the e-platform setting: (1) How does technology usage drive relationship performance via different types of justice perceptions? (2) Which type of justice affects relationship performance most effectively?

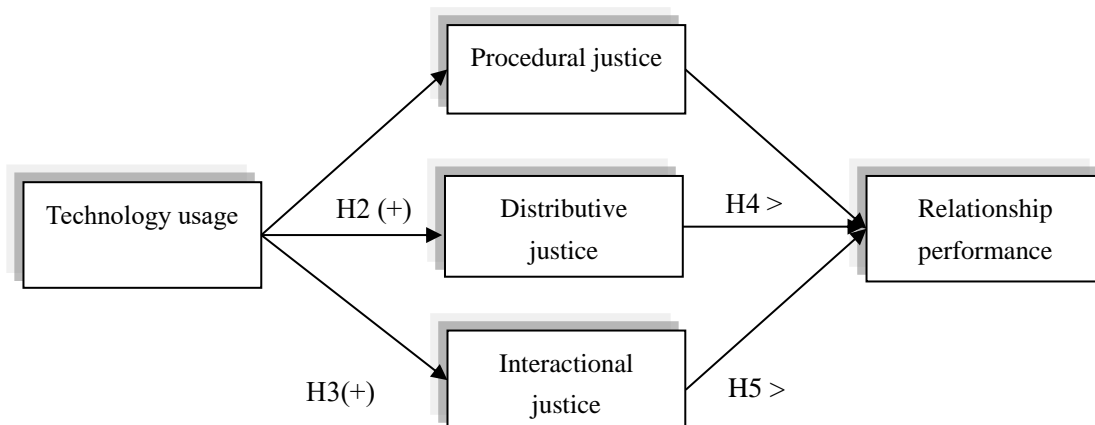


Figure 1. Conceptual model

Theoretical development and hypotheses

Technology usage

The use of technology to eliminate the need for human resources to perform routine activities and link functions or systems both within and between organizations may be the most sweeping change in today's inter-firm exchanges (Carr and Smeltzer, 2002). In the e-platform model, technology is used nearly in every aspect of the transactions, such as partner selection, daily communication, inter-firm cooperation, contracting, process monitoring, online promotion, and profit distribution. We therefore define technology usage as the use of automated systems, inter-function links, inter-firm interfaces, information systems, transaction monitoring, and computer-to-computer links between firms. To date, technology usage has mainly been addressed in the information systems (IS) literature. From the perspective of task-technology-fit (TTF) theory, numerous IS models have investigated the influence of technology usage on performance at both the individual and organizational levels (e.g., Ahearne et al., 2008; Devaraj and Kohli, 2003). The results have suggested that technology usage affects performance and that performance is better if the technology fits the task (Goodhue and Thompson, 1995). In these studies, technology usage has typically served as an information processing tool. Moreover, most of the technology-to-performance chain research in the IS literature has been conducted solely from the technology user's perspective (Ahearne et al., 2008). In the e-platform setting, it is difficult to define technology users because every party in an e-platform transaction uses technology to some extent. Thus, the results regarding technology usage from the IS literature are not applicable to our study. We extend the understanding of technology usage by explaining how it affects relationship performance via specific mechanisms; that is, we explain perceptions of different kinds of justice from the relationship management perspective.

Justice and its dimensions

In addition to transactional forces that discipline exchanges via economic incentives and sanctions, interorganizational relationship management entails many social orderings, especially in long-term economic exchanges (Luo et al., 2015). Justice, the perception of equity in an ongoing exchange, has long been studied in organizational research (Greenberg, 1993; Liu et al., 2012). After decades of development, the concept is understood to have multiple dimensions. Specifically, procedural justice reflects the degree of fairness in the procedures used to determine how actors are treated and how benefits are assigned (Greenberg, 1993). It emphasizes the structural and instrumental side of justice (Luo et al., 2015). In addition to procedures, firms care about whether the distribution of benefits in an exchange is fair in view of each party's contribution, commitment, and assumption of responsibility. This dimension is called distributive justice (Luo, 2007). Distributive justice captures the economic aspect of a cooperative business relationship. The last dimension included in this study is informational justice, which concerns the fairness of the open communication of information. It focuses on thorough, reasonable, and timely communication concerning procedures, transaction details, and outcome distribution between partners (Bies and Moag, 1986).

Hypotheses

In e-platform transactions, technology codifies and constrains those procedures through clear technical standards and interfaces. No action can be carried out without meeting the prescribed requirements and obtaining technical authorization. Transaction details become transparent to each side, and partners know exactly how inter-firm interactions, decision making, and conflict resolution will be executed. This guarantees the predictability of the cooperation procedures and outcomes (Liu *et al.*, 2012).

Moreover, in the e-platform model, one platform builder cooperates with multiple participants simultaneously. To reach economies of scale and improve the efficiency of cooperation, the platform builder applies the same technical infrastructure and systems procedures to all participants. In other words, the procedures the platform uses to cooperate with all its participant firms are highly consistent and homogeneous. Here, we predict:

H1: Technology usage improves the participant firms' perception of procedural justice in the platform.

Moreover, although technology usage cannot directly change the way profits are distributed in platform transactions, it can improve participant firms' perception of distributive justice in the platform. In an e-platform, selling behaviors, sales volume, profits, and customer evaluations are monitored and recorded via information systems. Once the profit distribution ratio between the platform and a certain participant is determined, the relevant systems automatically calculate the profits the participant deserves according to agreed-upon rules.

In addition, technology usage facilitates the leverage and learning of capabilities on the part of the platform and other participants, helping firms make quicker innovations and perform flexibly to better serve customers (Evangelista and Sweeney, 2006). Similarly, due to technology, customer feedback can be easily transmitted to firms. With this firsthand information, firms can upgrade their products, make service recoveries, and maintain good customer relationships (Trainor *et al.*, 2014). All of these actions increase the sales volume and ultimately the profits of platform participants. Participants are likely to think they are making more money because of the platform, leading to a higher satisfaction with the benefits distributed by the platform. Based on all this, we posit:

H2: Technology usage improves the participant firms' perception of distributive justice on the platform.

Further, technology usage enhances the participant firms' perception of informational justice in the platform. First, by replacing interpersonal communication, negotiation, and supervision with technical systems, e-platforms have improved the efficiency of inter-firm communication. Second, due to the use of technology, information and knowledge are classified and stored in electronic files and information systems. Compared with physical storage, e-platforms significantly improve the richness of information, effectively eliminate information overlap, and greatly simplify the retrieval of information (Carr and Smeltzer, 2002). Lastly, because technology makes it much easier to establish communication between firms, it can link various stakeholders to the platform, which is difficult to achieve in traditional settings. Because participant firms' communication becomes more effective, timely, thorough, and open, their perception of informational justice in the platform is enhanced. As a result, we postulate:

H3: Technology usage improves the participant firms' perception of informational justice on the platform.

The relative effectiveness of three types of justice

Although all positive, the relative impacts of different dimensions of justice on relationship performance in the e-platform setting are likely to be diversified. We suggest that procedural justice promotes relationship performance more strongly than distributive justice. In the e-platform model, the platform builder is usually the leading firm or even the monopoly firm in the industry. Such firms have a strong market reputation, excellent brand value, and a huge number of customers (e.g., Apple, Microsoft, Google, Taobao, Tencent, etc.). Compared with those large enterprises, participant firms are typically small and medium-sized firms. They depend on platforms for end customers, distribution channels, learning opportunities, and technical support. Thus, they emphasize the wellbeing of the cooperation relationship with the platform more than the potential profits. As indicated by Lind and Tyler (1988), fair procedures, rather than payoffs, determine a firm's behavior and commitment. Procedural justice gives participant firms confidence in the sincerity of the platform and the long-term development of their cooperative relationships. In addition, procedural justice is vital to open and thorough communication between partners. With fair procedures, open communication channels are built and authorized when needed. All parties have fair opportunities to express their perspectives or concerns (Luo *et al.*, 2015). Conflicts and dysfunctions are solved with unbiased procedures, and each party's concerns can be fully considered (Brockner, 2002). This guarantees the consistency of the exchange process and safeguards the interests of participants (Liu *et al.*, 2012). Thus, we suggest:

H4a: Procedural justice has a greater promoting effect on relationship performance than does distributive justice in the context of e-platform transactions.

H4b: Procedural justice has a greater promoting effect on relationship performance than does informational justice in the context of e-platform transactions.

Furthermore, we posit that the promoting effect of distributive justice on relationship performance is stronger than the effect of informational justice. Distributive justice gives firms the confidence that if they commit to the relationship, make investments, and fulfill their duties, reasonable benefits can be guaranteed. In contrast, by providing exchange parties with open and thorough information sharing, information justice effectively delivers important market information and reduces information asymmetry between exchange parties. In this way, informational justice reduces inter-firm conflicts and perceived uncertainty (Jap, 1999) and enhances operational efficiency and customer responsiveness (Paulraj *et al.*, 2008). It is through improving the overall efficiency of transactions that informational justice exerts its influence on relationship performance. In the e-platform model, the transaction convenience brought by technology reduces the threshold of market access. Many homogeneous participant firms have recently entered the market. Market competition is fiercer, and the lifespans of firms are shorter than those of firms in traditional settings. A statistical analysis of the Tencent Open Platform shows that the average lifespan of its content providers (platform participants) is 2 to 3 years, and the average lifespan of a particular game or application is just 6 to 12 months. Thus, compared with overall transaction efficiency, ensuring economic gains to survive and support follow-up development and innovation is more critical for participant firms. Here, we propose:

H5: Distributive justice has a greater promoting effect on relationship performance than does informational justice in the context of e-platform transactions.

Method

We collected data from participants on two of the largest e-platforms for mobile/PC applications in China. We developed questionnaires for the participant firms of these two platforms. The English version was developed first, then translated into Chinese, and then back-translated into English. To make the questionnaire items fit the e-platform context, we conducted field interviews with eight managers. For content validity, we conducted five in-depth discussions with two professional scholars and three industry operations managers. Afterwards, a pilot study was conducted with 17 volunteers.

The formal data collection process was conducted in late 2014 with the support of Tencent and China Mobile. A sample of 200 developers for each firm was randomly selected from three tiers of participants (regular, semi-close, and close, classified based on their value contribution to the platform) of both platforms, with a total sample of 1200. After three weeks, after eliminating surveys with missing data, we obtained 394 complete responses, with an effective response rate of 32.8%. Table 1 presents the measurements, reliability, and validity of all constructs and control variables in this study.

We used the SEM method to test the overall model and relevant hypotheses. First, the overall model showed a good model fit ($\chi^2 = 661.72$, $df = 365$, $CFI = 0.974$, $GFI = 0.903$, $NFI = 0.943$, and $RMSEA = 0.046$). Technology usage exerted a significant positive effect on procedural justice ($\beta = 0.734$, $p < 0.001$). Thus, H1 was supported. The positive coefficient between technology usage and distributive justice was significant ($\beta = 0.735$, $p < 0.001$), which lends support to H2. Lastly, another significant positive relationship between technology usage and informational justice ($\beta = 0.669$, $p < 0.001$) provides full support for H3.

The results show that the procedural justice and distributive justice had greater impacts on relationship performance than did informational justice ($p < 0.05$), while the impacts of procedural justice and distributive justice on relationship performance had no significant difference ($p > 0.1$). Therefore, H4 is partially supported, while H5 is supported.

Table 1 Construct Reliability and Validity

Construct	Cronbach α	Factor Loading	CR	AVE
Technology usage	0.947		0.893	0.583
TU1: The platform evaluates our application and qualification through the information technology system.		0.767		
TU2: Our contract with the platform is signed by the information technology system.		0.696		
TU3: The platform's testing of our products is accomplished by information technology.		0.772		
TU4: The on-line process of our products onto this platform is accomplished by information technology.		0.774		
TU5: Our daily communication with the platform is accomplished by information technology.		0.791		
TU6: Support and services from the platform are		0.780		

Table 1 (continued) Construct Reliability and Validity

provided through information technology channels. Procedural justice	0.938	0.775	0.849	0.530
PJ1: The platform has clear regulations concerning its cooperation policies with developers.		0.697		
PJ2: The platform's cooperation policies with different developers are consistent and transparent.		0.769		
PJ3: The platform's cooperation policies with different developers are implemented in a consistent manner.		0.675		
PJ4: Compared with other platforms' cooperation policies, this platform's cooperation policies seem reasonable to us.		0.719		
PJ5: Compared with other platforms' supervision and management policies, this platform's supervision and management policies seem reasonable to us.				
Distributive justice:	0.946		0.864	0.560
DJ1: The profit distribution is fair compared with the market positions of both sides.		0.743		
DJ2: Our gain from this partnership is about the same as that of other firms in similar business relationships.		0.779		
DJ3: Our gain from this partnership is consistent with the amount of investment we have put into it.		0.772		
DJ4: Our gain from this partnership is commensurate with the responsibilities we have taken in it.		0.734		
DJ5: The profit distribution manner reflects the effort that each side has put into the establishment and maintenance process of the partnership.		0.712		
Interactional justice	0.939		0.904	0.654
IJ1: We routinely exchange information with the platform.		0.812		
IJ2: We have information-sharing channels with various parties in the platform.		0.813		
IJ3: Both sides think maintaining transparent communication is important to the relationship.		0.852		
IJ4: The platform always makes us aware of important issues.		0.774		
IJ5: The platform often explains the reasons behind relevant policies if needed.		0.791		
Relationship performance	0.947		0.910	0.671
RP1: The platform is a sincere business partner.		0.783		
RP2: We believe that the platform will treat us fairly.		0.833		
RP3: Our cooperation relationship with the platform has met our expectations.		0.786		
RP4: We have a high degree of loyalty to the platform, so we will continue to work with it.		0.837		
RP5: Even if other platforms provide better trading conditions, we do not want to terminate the relationship with this platform		0.856		

Table 1 (continued) Construct Reliability and Validity

Control variables:
Relationship duration: We have maintained _____ years of cooperation with the platform.
Firm size: 1) less than 10; 2) 11–20; 3) 21–50; 4) 51–100; 5) more than 100
Sales volume: 1) less than 1 million; 2) 1–5 million; 3) 5–20 million; 4) 20–50 million; 5) more than 50 million
Percentage of sales volume from the platform: 1) less than 10%; 2) 10%~30%; 3) 31%~50%; 4) 51%~70%; 5) 71%~90%; 6) more than 90%

Conclusion and Discussion

Research on inter-firm relationship management has attracted considerable attention from scholars. Studies have shown the importance of both transactional and relational mechanisms in driving superior performance and reducing opportunism. Our study advances the literature by examining this issue in the new e-platform setting, analyzing the role of technology usage to the relationship performance of platform builder-platform participant relationships. In addition, our study reveals the paths through which technology usage is related to favorable relationships. Using data collected from 394 participants in two of the largest platforms for mobile/PC applications in China, our empirical analysis confirms the positive links between technology usage and superior relationship performance via the perceptions of three kinds of justice. By providing a technical-mechanism lens on inter-firm relationship management, and by adding the paths of justice perceptions, this study offers new insights into the value of technology usage in interorganizational relationship management in the context of e-platform transactions.

Theoretical implications

First, this study contributes to e-platform relationship management literature by bringing in technology usage as a platform context-related control mechanism. This finding extends other research that has shown that in addition to be an information processing tool, technology usage can also serve as an indispensable strategic control mechanism from the perspective of relationship management in the e-platform context.

More important, however, are our findings on the influencing paths in the technology usage-relationship performance link. The paths are essential to the understanding of the technology and performance dynamics in e-platform relationships, because the paths help uncover the underlying mechanisms through which technology usage can be used to manage relationships at the interorganizational level.

Another interesting finding from this study is that although all three types of justice drive relationship performance, their effects are distinct. This not only confirms the central role of justice perceptions in the development of interorganizational relationships, but also extends our understanding of the differential effectiveness of different justice perceptions in the new e-platform setting.

Managerial implications

The results of this study provide several fruitful managerial implications for organizations in the e-platform setting. First, using data collected from platform participant firms in China,

this study confirms the importance of technology usage in e-platform relationships, and further suggests that technology usage works as an effective technical governance tool for managing interorganizational relationships in the e-platform context.

Further, this study confirms that the positive influence of technology usage on relationship performance works through perceptions of justice in e-platform relationships. This indirect link suggests that, to achieve favorable relationship performance, firms may choose either to use more technology or to promote the perception of justice, or both.

Third, this study implies that when conditions permit, firms should design fair transaction procedures, make rational profit distributions, and build smooth communication channels to foster the perception of all three types of justice in the focal relationship. The formation of such perceptions will improve the relationship performance of the focal relationship to the maximum degree. When under constraints (e.g., limited resources, unbalanced development, poor infrastructure), however, firms should emphasize the cultivation of procedural justice or distributive justice, because these two are more effective methods for achieving the desired relationship performance with exchange partners in the e-platform setting.

Limitations and Future Research

Our results must be interpreted in light of the limitations of this study. First, we used only data from two platforms (one type) to test the conceptual model and hypotheses, which may limit the generalization of the findings to other types of platforms. Our conclusions are drawn from platforms that provide digital games and social applications for mobile phone and PC users. The question of whether the findings hold for other platforms (physical products platforms, service platforms, B2B platforms, etc.) needs further examination.

Second, this study focuses on the role of technology usage as an interorganizational relationship management tool that nurtures justice perceptions but does not analyze the determinants of technology usage. With the view that technology usage is accompanied with certain drawbacks, expanded future studies could investigate the conditions and implementation steps of technology usage in transactions and interorganizational relationship management.

Third, although we include three types of justice and examine the relative effectiveness of each, the dynamics among these three types of justice remain unknown. It would be useful to consider whether different types of justice affect each other and whether their relative importance varies over the lifecycle of interorganizational relationships.

Acknowledgement

The authors gratefully acknowledge the financial support by the National Natural Science Foundation grants (71502066; 71420107024; 71520107001) of P.R. China, and the Fundamental Research Funds for the Central Universities (3102017OQD036) of P.R. China.

References

- Ahearne, M., Jones, E., Rapp, A., and Mathieu, J. (2008), "High touch through high tech: The impact of salesperson technology usage on sales performance via mediating mechanisms", *Management Science*, Vol. 54 No. 4, pp. 671-685.
- Bies, R.J., and Moag, J.S. (1986), "Interactional justice: Communication criteria of fairness", In: Lewicki, R.J.,

- Sheppard, B.H., Bazerman, M.H. (Eds.), *Research on Negotiation in Organizations*, vol. 1. JAI Press, Greenwich, CT, pp. 43–55.
- Brockner, J. (2002), “Making sense of procedural fairness: How high procedural fairness can reduce or heighten the influence of outcome favorability”, *Academy of Management Review*, Vol. 27 No.1, pp. 58-76.
- Car, A.S., and Smeltzer, L.R. (2002), “The relationship between information technology use and buyer-supplier relationships: An exploratory analysis of the buying firm’s perspective”, *IEEE Transactions on Engineering Management*, Vol. 49 No. 3, pp. 293-304.
- Chen, W.R., and Yu, Z.X. (2013), *Platform strategy: A revolution on business model throughout the world*, Beijing Zhongxin Press.
- Devaraj, S. and Kohli, R. (2003), “Performance impacts of information technology: Is actual usage the missing link?” *Management Science*, Vol. 49 No. 3, pp. 273–289.
- Evangelista, P. and Sweeney, E. (2006), “Technology usage in the supply chain: The case of small 3PLs”, *International Journal of Logistics Management*, Vol. 17 No. 1, pp. 55-74.
- Goodhue, D.L. and Thompson, R.L. (1995), “Task-technology fit and individual performance”, *MIS Quarterly*, Vol. 19 No. 2, pp. 213–228.
- Greenberg, J. (1993), “The social side of fairness: Interpersonal and informational classes of organizational justice”, In: Cropanzano, R. (Ed.), *Justice in the Workplace: Approaching Fairness in Human Resource Management*. Erlbaum, Hillsdale, NJ, pp. 79–103.
- Hoetker, G., Swaminathan, A., and Mitchell, W. (2007), “Modularity and the impact of buyer-supplier relationships on the survival of suppliers”, *Management Science*, Vol. 53 No. 2, pp. 171-191.
- Lind, E.A., and Tyler T.R. (1988), *The social psychology of procedural justice*, Plenum Press, New York, NY.
- Liu, Y., Huang, Y., Luo, Y.D., and Zhao, Y. (2012), “How does justice matter in achieving buyer–supplier relationship performance?” *Journal of Operations Management*, Vol. 30 No. 5, pp. 355-367.
- Luo, Y.D. (2007), “The independent and interactive role of procedural, distributive, and interactional justice in strategic alliances”, *Academy of Management Journal*, Vol. 50 No. 3, pp. 644-664.
- Luo, Y.D., Liu, Y., Yang, Q., Maksimov, V., and Hou, J.G. (2015), “Improving performance and reducing cost in buyer–supplier relationships: The role of justice in curtailing opportunism”, *Journal of Business Research*, Vol. 68 No. 3, pp. 607-615.
- Paulraj, A., Lado, A.A., and Chen, I.J. (2008), “Inter-organizational communication as a relational competency: Antecedents and performance outcomes in collaborative buyer–supplier relationships”, *Journal of Operations Management*, Vol. 26 No.1, pp. 45–64.
- Jap, S.D. (1999), “Pie-expansion efforts: Collaboration processes in buyer–seller relationships”, *Journal of Marketing Research*, Vol. 36 No. 4, pp. 461–475.
- Tiwana, A. (2008), “Does technological modularity substitute for formal control? A study of alliance performance in software outsourcing”, *Strategic Management Journal*, Vol. 29 No. 7, pp. 769-780.
- Trainor, K.J., Andzulis, J., Rapp, A., and Agnihotri, R. (2014), “Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM”, *Journal of Business Research*, Vol. 67 No. 6, pp.1201-1208.