Intangible Resource Flow as an Antecedent of New Product Development Success in Buyer-Seller Relationships

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Abstract

There is currently considerable interest in the co-creation of value by sellers and buyers. It is often noted in the literature that much, if not most, of the innovation in product development derives from the buyer rather than the seller. Sellers therefore need a means of judging which of the relationships that they have with buyers has the greatest potential for value creation through new product innovation. Because the flow of intangible resources through buyer-seller relationships is an important contributor to new product development, this paper investigates the literature on relationship marketing, new product development, innovation and intellectual capital, and proposes a conceptual model of the potential for intangible resource flow from buyer to seller and its relationship to the success of new product development. The potential for the intangible resource flow is conceptualized in terms of the availability of intangible resources in the buyer and the attributes of the buyer's boundary personnel.

Introduction

In a competitive world economy, it is essential to bring to market new products that are successful in terms of a broad set of criteria, such as effectively matching buyers' needs and sensitivities and being economically viable. This requires a sound knowledge of the processes by which new product development (NPD) takes place. This paper therefore conceptualizes a model, shown in Fig. 1 below, which is designed to help elucidate the NPD process in the context of buyer-seller relationships. It identifies a set of conditions, based on the work of Baxter and Matear [5], that promote good flow of relevant intangible resources through a buyer-seller relationship. It proposes these conditions as antecedents to development of new products that are successful in terms of a broad set of criteria, such those noted above.

There is considerable interest currently in the literature concerning the co-creation of value by sellers and buyers [41, 43] and much of the value that results from NPD innovation derives from the buyer rather than from the seller [19]. Thus, if a seller is to effectively manage its portfolio of products, it needs, among other tools, a means of judging which of its relationships with its buyers provide the greatest potential for value creation through innovation of appropriate new products. Hence, the proposed model views the NPD process from the perspective of a seller, for whom a buyer with high potential for joint innovation must possess sound information, skill and capabilities; in addition the buyer's personnel who work with the seller must be capable of effectively facilitating the flow of those resources to the seller. The model therefore utilises, as antecedents, a set of dimensions that reflect the buyer's characteristics in terms of both (i) its internal resources and (ii) the capability of its people to facilitate the flow of these resources to the seller. The model uses success of product development as the dependent variable, with a set of desired outcomes as its dimensions. The next sections of the paper review the literature that provides the grounding for the model in Fig. 1.

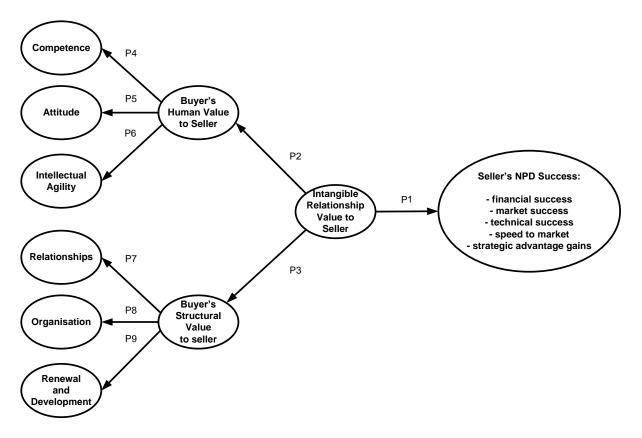


Fig. 1. Conceptual model of seller's NPD success outcomes and buyer's attributes as antecedents

Intangible resource flow as an antecedent of NPD success

The resource based view of the firm sees the development of a firm's resources as a critical function in gaining competitive advantage [4]. Some of this development will be achieved internally, but much of it will require the utilization of external resources for combination with existing internal resources. Competence theory notes that many of the external resources utilized by a firm will not be owned by the firm: many "addressable" resources may in fact be owned by another firm but accessible through a relationship with that firm [38]. As noted above, many of the relationships that provide these addressable resources will be with the firm's customers [19], so the need to include customers in NPD is widely discussed and researched [e.g. 15, 25, 27].

It is further seen in the literature that in order to effectively develop new products across a buyer-seller relationship and thus to quickly and accurately meet the constantly changing needs of its customers, there must be the potential for resources, especially intangible resources in the form of information, to flow across the relationship [24]. It is the intangible resources that flow through a relationship that are of particular interest to the Fig. 1 model, firstly because it is the intangible ones that tend to provide long-term competitive advantage because of their relative inimitability [4, 30], and secondly because they are less well researched.

In order to promote the flow of intangible resources between buyer and seller for successful development of new or improved product or service offerings, it is necessary to develop close relationships and networks in such a way as to optimise the availability of the resources [14,

36, 45]. Two conditions must be met for this flow of intangible resources to occur across a relationship. The first condition is that there must actually be suitable resources in one relationship partner that can be accessed by the other. The second is that there must also be effective integration of organisations to promote the flow of intangible resources and the development of new ideas [7, 33, 35]. This means that boundary personnel with suitable attributes are required.

The potential for intangible resource flow across a relationship as the antecedent in this model is therefore conceptualised using the model of intangible relationship value validated by Baxter and Matear[5], Baxter and Zhang [6], and Yang [46], because it assesses the two conditions noted above. It utilises a novel framework of intangible resources, synthesised into relationship marketing theory from the resource-based view of the firm [4, 30] and the intellectual capital literature [37]. The framework includes (i) the internal resources of the buying company, stated in terms of its network of relationships, its organisational characteristics and its development skills, and (ii) the competence, attitude and intellectual agility of the buyer's personnel, as dimensions of relationship value to the seller. The framework is seen on the left hand side of Fig. 1 above and will later be described in more detail.

The Baxter and Matear [5] paper provides a broadly grounded and theoretically sound starting point for the antecedents to be used in this model. It derives conceptually from the work of Morgan and Hunt [30], who provide a set of categories of resources that are available to a firm from its partner through a buyer-seller relationship. These categories are based on Morgan and Hunt's resource-advantage theory, which is in turn founded on the resource based view of the firm. They include the intangible resources that are relevant to the conceptualisation of this model, as is discussed in more detail below.

As a starting point for the outcome proposed for the model, the existing literature provides the basis for a set of dimensions of NPD success, such as financial success, effectively matching buyers' needs and speed to market, as the outcome variable [e.g. 1, 22, 28, 35, 39, 44], and provides validated measures for some of these dimensions, though not for others. The following sections further describe the theoretical grounding for both the antecedents and the outcomes proposed.

Availability of resources for NPD

As noted above, for a buyer to be a useful partner for a seller in the NPD process, it must possess suitable intangible resources. Based on the intangible resource categories of Morgan and Hunt [30], the Baxter and Matear [5] model noted above assesses the value of a buyer to a seller, named by them the "structural intangible value", in terms of such resources. This paper's model is focussed on intangible resources, as was the Baxter and Matear model, so these "structural" intangible relationship resources are in fact a representation of the relevant intellectual capital in the buyer made available through the relationship. Baxter and Matear operationalized the Morgan and Hunt categories using measures synthesised from the intellectual capital literature, which has a closely related set of intangible resource categories. Both the intellectual capital literature and the resource based view of the firm have their origins in the economics of Penrose [34]. Some details of the domains of Baxter and Matear's three structural intangible value dimensions are provided in the following paragraphs. Much of this conceptualisation, and that of the dimensions of "buyer's human value to seller" as described in the next section, comes out of the work of Hamel and Prahalad [18] and of Nonaka [32].

The lower three first-order dimensions included in the model in Fig. 1, which reflect the second-order dimension named structural intangible relationship value to seller, might be described as the "harder" aspects of the usefulness of the relationship in providing intangible resources to the seller. They represent, as in the Baxter and Matear [5] model, those of the buyer's resources which will be of use to the seller if they can flow through the relationship. Of these, the first-order dimension named relationships refers to those relationships of the buyer to which the seller gains useful access by way of its relationship with the buyer. They might include such relationships as those the buyer has with its other suppliers, its consultants, or with its own customers. These relationships of the buyer can provide access to further information and other resources such as downstream market information, further distribution channels, or technical information, which can be provided to the seller through the relationship.

The domain of the first order dimension named organization includes the buyer's existing information or intellectual attributes that can bring benefit to the seller by way of access to these resources through the relationship. Examples are databases, process manuals, culture and management styles, internal networks, and also intellectual property such as patents, trademarks, brands and processes that have legal protection.

Renewal and development, on the other hand, refers to those resources in the buyer that are in process and will have a positive effect on future value, but whose impact is not yet manifested in the buyer's organisation. Plant, machines, and training courses that are in planning but not yet installed are examples of the buyer's resources that may provide benefit to the seller.

Facilitation of the flow of resources

The upper three dimensions on the left of Fig. 1, namely competence, attitude and intellectual agility, are conceptualised as reflections of a second-order construct named buyer's human value to seller. They appear, in the work of Baxter and Matear [5], to be distinct from the lower three shown on the left of Fig. 1, named relationships, organisation, and renewal and development, and therefore are conceptualised as reflections of a distinct second-order dimension, human intangible value of the relationship. They describe the people who work with the seller in the relationship and might be seen as the facilitation component of the resource flow through the relationship. Their inclusion is important to fully describe the function of the relationship as a value provider. As noted by Varey [42], the human component of relationships is a critical, and until recently, somewhat neglected, aspect in the relationship literature. In the technology management literature, the human component of relationships is now seen as important to the success or failure of technologically innovative projects, for example in the operation of networks [40].

Roos, Roos, Dragonetti and Edvinsson [37] describe competence of the personnel in a firm as that attribute which develops the firm's intellectual capital "through knowledge, skills, talents and know-how of employees." In this paper's model, as in the Baxter and Matear [5] model, competence is used as a dimension of the intangible relationship value to the seller that describes, in the perception of the seller, the buyer's personnel who work in the relationship. If people working for the buyer have higher levels of competence, they will be able to better

serve the relationship with the seller by aiding the information flows that are so essential to the management of technology across the buyer-seller relationship interface. In other words, the provision of value in terms of information flow will be better.

The attitude dimension is seen as covering "the value generated by the behavior of the employees on the workplace" and refers in this research to the personality traits of the buyer's personnel who work in the relationship. Motivation, behavior and conduct are included in the domain of attitude. The ability to apply competences by way of innovation, imitation and adaptation and to increase them through learning is seen as the third first order dimension, intellectual agility [37]. These capabilities will, in the relationship context, again aid the work done jointly in the relationship by the partners and hence aid the flow of resources effectively.

NPD success as outcome

In order to propose success as an outcome in the conceptual model presented in Fig. 1, it is necessary to define the domain of the success variable. There is now a well-established, though apparently still early-stage, literature on the success of new product innovation as an outcome, which investigates its dimensions. A set of these dimensions is included under the outcome variable, "Seller's NPD Success". The basis for including these will now be discussed.

Some of the research in the innovation/NPD success literature has used single dimensions or even single measures of success. For example, Yap and Souder [47] used a 5-point scale with the response categories ranging from "far below our expectations" to "far above our expectations" for the product performance on "commercial project outcomes". Calantone, Chan and Cui [8] used a single measure of success, new product profitability, as their outcome variable on an 11-point scale. Kandemir, Calantone and Garcia [22] used a dichotomous variable (success versus failure in profitability terms) and Narver, Slater and MacLachlan [31] used a 6-point scale response to the statement "New-product success compared to our major competitor is good". But, given that there is good evidence of the multi-dimensionality of the success construct, the model in Fig. 1 incorporates multiple dimensions.

An argument can be made that, in the long term, it is financial outcomes that really matter in judging success of NPD. This is true, but the problem with this argument is that the financial indicators that can be used are, in general, short-term indicators of past performance, and that indicators of less tangible value in activities such as NPD are needed to assess long-term financial value that will only be realised in the future. The need to capture future financial benefits in terms of intangible value indicators is the basis for the balanced scorecard [23] approach to assessing firm value. The proposed model in Fig. 1 therefore includes both financial success and the less tangible long-term providers of financial benefits in the proposed success dimensions.

The success dimensions identified in the literature, other than financial, cover a broad range of facets of success. In 1997 papers, Cooper and Kleinschmidt [11, 12] identified three key dimensions of success outcomes that cover a broad base: financial performance; opportunity window; and market impact. They then identified a set of important measures of these dimensions. In a study of European companies published in 1995, they identified two dimensions, "impact" and "profitability", based on measures of sales and financial outcomes

[9]. These dimensions and their measures seem narrower in scope and less market-oriented than in their 1987 papers, but overall, their work, together with, for example, that of Griffin and Page [16] makes it clear that success is a multidimensional construct. The three Griffin and Page dimensions were: customer-based success; financial success; and technical performance success (which included speed to market). The studies noted in this paragraph lead to the "financial success", "market success" and "technical success" dimensions in Fig. 1.

The speed of development of new products has been researched extensively, as an important issue in assessing success. However, there is some uncertainty in the literature as to where it fits in this assessment. Griffin and Page [16], found that speed was not a particularly strong indicator of success, when included as one of the indicators of technical performance success. Cooper and Kleinschmidt [10] found, in their factor analysis, that "Timeliness emerges as an independent or stand-alone performance dimension." Allocca and Kessler [1] used speed as a quite separate construct which they used as both a dependent and an independent variable in regressions with other innovation antecedents and outcomes. Lynn, Skov and Abel [26] found support for their model that includes speed to market as a separate variable, but with paths from other antecedents through it to new product success. The relationship between speed and performance/success is therefore unclear and needs further investigation. A separate speed dimension is thus included in the proposed model.

Some studies have used dimensions or measures of success that can be seen as a provision of strategic advantages by a product launch. For example, Millson and Wilemon [28] used the following measures of new product success: "This product allowed us to offer a new line of products to existing markets" and "this product opened up a market(s) new to our firm". Montoya-Weiss and Calantone [29] identified strategic dimensions such as "marketing synergy" in a meta-analysis of the new product performance literature. In a conceptual model of performance measurement in new product innovation, based on balanced scorecard principles [23], Jimenez-Zarco, Martinez-Ruiz and Gonzalez-Benito [21] note such factors as competitors and learning and growth. Although they are discussing determinants rather than outcomes of success, some of the points they raise are relevant to assessing outcomes also. For example, the learning that is achieved in developing a new product will be useful for future product development. It therefore seems necessary to include a "strategic advantage" dimension of the success outcome in the proposed model.

Conceptual model

The literature review above provides the theoretical basis for the conceptual model proposed as in Fig. 1 above. The main proposition, labelled P1 in Fig. 1, is that the value of the relationship in terms of its ability to provide intangible resources, named in Fig. 1 as "intangible relationship value to seller" is an antecedent of success in new product development. The argument for this proposition is provided in the section of the literature review titled "Intangible resource flow as an antecedent of NPD success" above. As noted in that section, relationships of sellers with their buyers are important conduits for innovation. The NPD success construct at the head of the arrow labelled P1 is conceptualised as multidimensional, as noted in the section above titled "NPD success as outcome". The details of its dimensionality require further investigation, and there may be other dimensions that need inclusion for more complete and up-to-date assessment of success: this will require exploratory research. But its domain is clear in principle. The other two key propositions in Fig. 1 are labelled P2 and P3. The two second order dimensions in the model, "buyer's human value to seller" and "buyer's structural value to seller", are conceptualised as reflections of a "total intangible relationship value to seller" construct. The reflective nature of the model, with arrows from intangible relationship value to seller through the second order dimensions to the first order dimensions, and in turn to the indicators of the first order dimension, which are not shown in Fig. 1, is the result of the conceptualisation of resource flow and the resulting competitive advantage as the outcome of the processes that take place in the relationship [13]. It views the relationship as a conduit [2, 3] for access to the resources of other firms [17] and views the relationship as the unit of analysis. The perspective is therefore that of the value provision through the relationship to the seller.

P2 proposes that the value of a buyer-seller relationship is reflected in the attributes of its boundary personnel, conceptualised as their possession of sound capabilities and skills that will facilitate the flow of intangible resources through the relationship to the seller and included in Fig. 1 as a construct named "buyer's human value to seller". The section above titled "Facilitation of the flow of resources" provides the argument for this proposition and gives brief domain descriptions of the three first-order dimensions of competence, attitude, and intellectual agility which are linked to "buyer's human value to seller" by reflective paths proposed as P4 to P6. Similarly, the section above "Availability of resources for NPD" provides the argument for proposition P3, which is that the value of a buyer-seller relationship to a seller as a partner in innovation is also reflected in the possession by the buyer of structural organisational attributes that will be of value to the seller. The remaining propositions, P7 to P9, express the further reflection of the second-order dimension "buyer's structural value to seller" in a set of three first-order dimensions, which are named as relationships, organisation and renewal and development, and whose brief domain descriptions are also given under "Availability of resources for NPD". All these antecedent constructs in Fig. 1 and their indicators have been validated in several studies, so they should not require much modification for this study other than some contextualisation.

There are some control variables that need to be considered in further discussion of the relationships in Fig. 1. For example, firm size and strategy type may have an effect, as found in the work of Allocca and Kessler [1] and Griffin and Page [16] respectively. Market factors such as turbulence may have an effect [24, 31]. Measures of success may be different in the short term from what they are in the long term [20]. These variables can be tested as the model is tested.

Conclusion

The model presented in Fig. 1 contributes fresh insight into the processes of NPD, specific to the transfer of knowledge through the buyer-seller relationship, and specific to the relationship as the unit of analysis. This is an advance on previous work that has investigated the effectiveness of the NPD process. The model also provides a broad dimensional analysis of NPD success outcomes.

By providing a new view of success antecedents and outcomes, it acts as a basis for further empirical study of resource flow across relationships and contributes toward the building of the theory of NPD processes. This knowledge of processes can be further developed so that it is specific to contexts such as services and manufacturing.

In the longer term, the knowledge of the antecedents of NPD success, of which this model will provide a part, will be useful in the development of tools for managers. Tools can be developed both to understand the drivers of NPD success and also to assess specific relationships in a firm's portfolio of relationships in terms of their potential for viable product development.

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