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# The impact of marketing capability, operations capability and diversification strategy on performance: A resource-based view

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ABSTRACT

Using resource-based view (RBV) of the firm as a theoretical backdrop; we aim to find out the relative impact of a firm's functional capabilities (namely, marketing and operations) and diversification strategies (product/service and international diversification) on financial performance. We hypothesize that this linkage depends on the firm's relative efficiency to integrate its resource–capabilities–performance triad. Using archival data of 102 UK based logistics companies, we find marketing capability is the key determinant for superior financial performance. This study highlights that a market-driven firm is likely to have better business performance than a firm focusing solely on operational capabilities. Also, firms are better off when they focus on a narrow portfolio of products/services for the clients and concentrate on a diverse geographical market. Our findings provide a new perspective to model a firm's functional capabilities and diversification strategy on its financial performance and offer a benchmarking tool to improve resource allocation decisions.


## 1. Introduction

Traditionally, marketing and operations functions have been studied separately in management literature (Karmakar, 1996). Marketing focused on creation of customer demand and how to offer customers a unique value proposition. On the other hand, operations focused on management of supply to fulfill customer demand. Porter (1985) argued that all functional areas of business contribute towards delivery of goods and services but marketing and operations are the two key functional areas that add and create value to customers. There is a growing body of management science literature which stresses the integration of marketing and operations functions as key to organizational performance (Balasubramanian & Bhardwaj, 2004; Ho & Zheng, 2004; Malhotra & Sharma, 2002; Sawhney & Piper, 2002). Mismatch between these two functions lead to production inefficiency and customer dissatisfaction, whereas a proper fit lead to superior competitive advantage and sustainable profits (Ho & Tang, 2004). It is widely accepted even among business leaders that ability to integrate such cross-functional expertise is essential for continued growth and profitability (Wind, 2005).

Diversification strategy, in terms of entering into a related or unrelated business and/or entering into a new geographic market is considered to be of crucial importance to an organization's long term leadership position in its own industry (Hoopes, 1999; Goerzen & Beamish, 2003; Nachum, 2004; Narasimhan & Kim, 2002). Strategic management literature has studied extensively the costs and the benefits of diversification strategy and its effect on competitive advantage for an organization (Chakrabarti, Singh, & Mahmood, 2007; Palich, Cradinal, & Miller, 2000; Ramanujam & Varadarajan, 1989). Researchers have particularly focused on the effect of product/service diversification which is defined as the synergy in different lines of business (Berger & Ofek, 1995; Bettis & Mahajan, 1985) and, international diversification or geographical diversification in a different market (Fang, Wade, Delios, & Beamish, 2007; Ghoshal, 1987; Kim, Hwang, & Burgers, 1993) on firm performance. Hitt, Hoskisson, and Kim (1997) argued that the ability of an organization to manage such diversification depends on their cross-functional capabilities and coordination activities. It is widely accepted that efficient linkage of various internal functions within an organization and interactions among them is crucial to manage the 'curvilinear effects' of diversification on performance (Narasimhan & Kim, 2002; Palich et al., 2000).

From the above discussions, it is clear that functional capabilities (marketing and operations) and diversification strategies (product/service and international diversification) have significant impact on a firm's financial performance. But to our knowledge, there has been no research to integrate all these constructs and find out the relative impact of each of them on firm performance. Thus, our first research objective is to understand the nature of relationship between marketing capability, operations capability, and diversification strategy (product/service and international) on organization's financial

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performance. Capabilities are broadly defined as "complex bundle of skills and accumulated knowledge that enable firms (or strategic business units — SBU) to coordinate activities and make use of their assets" (Day, 1990, p. 38). As a theoretical background of our study, we use the resource-based view (RBV) framework to assess how individual organization's resources and capabilities affect its financial performance (Wernerfelt, 1984). RBV theory suggests that each organization has a distinctive set of resources and capabilities, and some capabilities will have superior impact on financial performance than the others (Song, Benedetto, & Nason, 2007). Such difference in impact is attributed to the efficiency with which a firm is able to convert its resources into "valuable" "difficult to imitate" capabilities and into financial performance (Liebermann & Dhawan, 2005). Efficiency is defined as the ratio of a firm's output to that of its input and is measured in terms of the maximum feasible output which can be obtained with a given set of inputs (Liebermann & Dhawan, 2005). In this study, we specifically study the relationship in two contexts: high vs. low efficient firms in making this transformation. Thus, our second research objective is to understand how efficiency of a firm to convert its resources into financial outputs moderates the relationship between the functional capabilities and diversification strategy on overall business performance.

We accomplish our research objectives in three stages. First, following RBV rationale, we model the functional capabilities (marketing and operations) of a firm in the form of input–output transformation. This enables us to understand how a firm is able to optimally use its function specific resources to achieve function specific objectives. Such identification of sub-optimal resource usage provides insights to better resource allocation decisions. We use similar approach to classify firms into high and low efficient groups as per their overall business performance. Second, we propose and empirically test how diversification strategy affects firm performance. Third, we examine how business performance measured using multi-factor construct in stage 1 affects the relationship between functional capabilities and diversification strategy on firm's financial profitability.

We test our conceptual framework using archival financial data for UK road based logistics service providers. A logistics firm, operating in business to business context, has to excel in both operations capabilities through superior process knowledge and marketing capability through continuous creation of customer value. Firms in logistics industry are extremely dependent on the overall economic growth of the country; and the performance of freight intensive industries such as manufacturing, agriculture, and retail. However, with increase in focus on services dominant industries, stagnant economic growth, increase in fuel cost, and congestion on the roads, the logistics industry in UK is experiencing stagnation. The growth in freight transport in UK has been less than the GDP growth of the country (Office of National Statistics, 2006). In UK, the numbers of road freight operators have steadily fallen by 15% in the last decade. Rail and water based transport has steadily replaced road transport. The cost of moving freight by rail and sea has decreased over the years whereas, the cost of road transport has increased by a third during the last decade making it more challenging for the road transport operators to compete and sustain (Department of Transport, 2004). Thus, recession in economy, spiraling cost of operation, and tighter profit margin has made it imperative for the logistics companies to re-think about their value propositions to their customers, diversify through expansion of services offered and geographical coverage. Many logistics companies are thus going towards consolidation of their business portfolio to achieve greater efficiency. Despite the gloomy industry forecasts, there is a significant variation in performance of the logistics firms. The small and medium logistics firms experience a negative growth in business and very large firms have significantly higher profit than the firms in the other end of the spectrum (Office of National Statistics, 2006). Thus, it becomes critical to understand how functional capabilities and long term diversification strategies of logistics firms affect their business profitability and how efficiency of firms moderates this inter-relationship.

The rest of the paper is structured as follows. The next section discusses our theoretical underpinning of using RBV framework and the conceptualization of functional capabilities and diversification for logistics firms. Section 3 discusses the data and the methodology for measuring resources, capabilities and efficiency. Section 4 presents the empirical findings and Section 5 highlights the implications of our result, limitations of our study and provides direction for future research.

## 2. Conceptual framework

This section narrates our conceptual framework developed on the basis of resource-based view (RBV) theory. It is organized as follows. In subsection 2.1, we give a synopsis of RBV theory explaining the key concepts of resources, capabilities and their linkage to firm performance. In subsection 2.2, we describe the principal functional capabilities namely marketing and operations. We also explain the role of diversification and its impact on long term competitive advantage along with the arguments for hypotheses formulation. We hypothesize that such relationships between capabilities, diversification and performance is moderated by a firm's efficiency in transforming its financial resources into profitability outputs.

### *2.1. Resource-based view (RBV) — a synopsis*

RBV views a firm as a bundle of resources and capabilities (Wernerfelt, 1984). Amit and Schoemaker (1993) define resource as "stocks of available factors that are owned or controlled by the firm". Resource consist of tangible components like financial and physical assets like property, plant and equipment, and intangible components like human capital, patent, technology knowhow (Grant, 1991; Amit & Schoemaker, 1993). Capability is defined as the ability of the firm to use its resource "to effect a desired end" (Amit & Schoemaker, 1993). It is like "intermediate goods" generated by the firm using organizational processes to provide "enhanced productivity to its resources" (Amit & Schoemaker, 1993). Capabilities are "invisible assets", tangible or intangible organizational processes developed by a firm over a period of time that "cannot be easily bought; they must be built" (Teece, Pisano, & Shuen, 1997). RBV argues that firms will have different nature of resources and varying levels of capabilities. Firms' survival depends on its ability to create new resources, build on its capabilities platform, and make the capabilities more inimitable to achieve competitive advantage (Day & Wensley, 1988; Peteraf, 1993; Prahalad & Hamel, 1990). Thus, mere possession of superior resources cannot achieve competitive advantage for the firm, but how a firm deploys its scarce resources, put its capabilities to best use, invest and complement its existing capabilities infrastructure can bring "immobility and inimitability" to its resource-capability framework (Peteraf, 1993; Song et al., 2007). In marketing literature, there has been extensive use of RBV framework to analyze firm performance (Dutta, Narasimhan, & Surendra, 1999; Liebermann & Dhawan, 2005), to understand the interaction between marketing and other functional capabilities and their effect on performance (Song et al., 2007; Song, Droge, Hanvanich, & Calantone, 2005; Song, Nason, & Benedetto, 2008), and particularly to understand inter-organizational relationship performance (Palmatier, Dant, & Grewal, 2007). The results suggest that there is a significant relationship between capabilities and performance. Strategic management researchers have used RBV to understand the inter-firm difference in performance (Barney, 1986; Peteraf, 1993; Makadok, 2001). In addition, RBV theory suggests that heterogeneity in firm performance is due to ownership of resources that have differential productivity (Makadok, 2001). Since, a firm's capability is defined "as its ability to deploy resources (inputs)

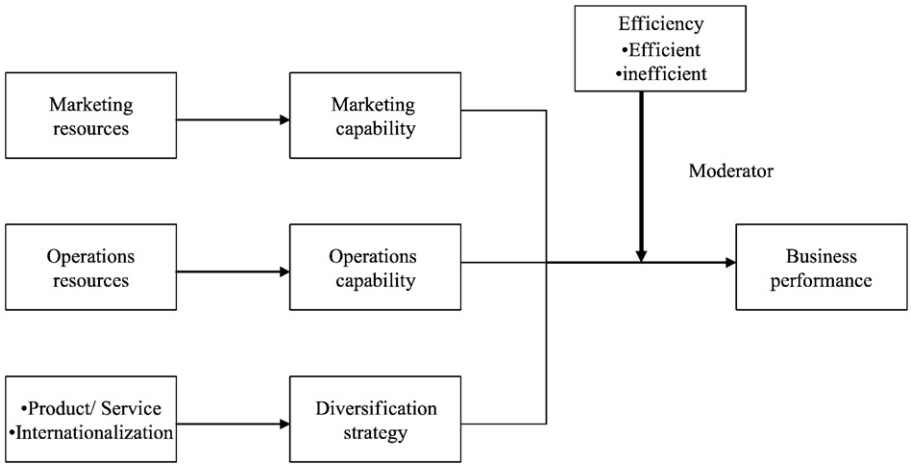


**Fig. 1.** Framework to measure resources–capabilities–performances transformation.

available to it to achieve the desired objectives (outputs)" (Dutta et al., 1999), so in this study, we use an input–output framework in the form of efficiency frontier function to understand the optimal conversion of a firm's resources to its objectives.

### 2.2. Resources, capabilities, diversification and performance

In our conceptual framework, we consider how a firm exploits its critical capabilities in marketing and operations; and pursue a diversification strategy to achieve competitive advantage. According to RBV, a firm diversifies to extend its resources into new markets and businesses. Resources and capabilities such as business knowledge, technological expertise, and international diversification experience are transferred between the parent company and its business subsidiaries (Fang et al., 2007; Lu & Beamish, 2001). RBV posits that as firms diversify within the scope of their resources and capabilities, they obtain economies of scale through lower operational costs and leverage superior business efficiency through shared fixed assets like common production facilities, distribution channels, or even brand names (Hitt et al., 1997). Marketing capability involves integration of all marketing related activities of a firm using superior market knowledge from customers and competitions. Operations capability is the process, technology, reliability and quality of the overall operations of the firm. According to RBV, a coordinated effort by the firm to make these two capabilities as "immovable and inimitable" can bring the competitive edge (Dutta et al., 1999; Liebermann & Dhawan, 2005; Narsimhan, Rajiv, & Dutta, 2006). Day (1994) suggests that "every business develops its own configuration of capabilities" according to the environment, and "it is not possible to enumerate all possible capabilities". So, in this study, we focus on the principal functions of a logistics firm (namely marketing and operations) and study how their functional capabilities along with diversification strategies affect their business performance. Fig. 1 represents the conceptual framework for our study.

#### 2.2.1. Marketing capability

Marketing capability is defined as the integrative process, in which a firm uses its tangible and intangible resources to understand complex consumer specific needs, achieve product differentiation relative to competition, and achieve superior brand equity (Day, 1994; Dutta et al., 1999; Song, Benedetto et al., 2007; Song, Droge et al., 2005). A firm develops its marketing capabilities when it can combine individual skills and knowledge of its employees along with the available resources (Vorhies & Morgan, 2005). A firm that spends more resources to interact with customers can enhance their "market sensing" abilities (Narsimhan et al., 2006). Such capabilities, once built are very difficult to imitate for competing firms (Day, 1994). Thus, marketing capability is considered to be an important source to enhance competitive advantage of firms.

The role of being "market-driven" and its impact on firm performance has been an active area of research in marketing discipline (Song et al., 2008). Song et al. (2007) suggest marketing capability helps a firm to create and retain strong bond with customers and channel members. Marketing capability create a strong brand image that allows firms to produce superior performance (Ortega & Villaverde, 2008). Marketing literature suggests that firms use capabilities to transform resources into outputs based on their marketing mix strategies and such marketing capabilities is linked to their business performance (Vorhies & Morgan, 2003, 2005). Based on the above arguments, we hypothesize:

**Hypothesis 1a.** The greater is the marketing capability of a firm; the better is its business performance

#### 2.2.2. Moderating effect of firm efficiency on marketing capability-business performance linkage

Extant literature suggests that the impact of marketing capability on a firm's business performance varies according to a firm's own characteristics (Ortega & Villaverde, 2008; Song, Benedetto et al., 2007; Song, Droge et al., 2005; Song, Nason et al., 2008). Song et al. (2007) studied the moderating role of a firm's strategy based on Miles and Snow framework and found a positive impact of marketing capability on financial performance for firms which can sustain customer loyalty through their unique marketing communication. Ortega and Villaverde (2008) propose marketing capability has more impact on financial performance for firms which invest on better assets to innovate in a dynamic business environment. Strategic management literature suggests that marketing capability has varied impact on performance depending on they way in which a firm can align itself with its business environment (Conant, Mokwa, & Varadarajan, 1990; Desarbo, Benedetto, Song, & Sinha, et al., 2005; Song et al., 2007). Firms with proactive market orientation have distinct competencies in market planning, marketing resource allocation and overall control than firms who prefer to wait and watch. Thus, innovative firms devote significant resource on its marketing activities whereas, defender firms focus more on cost reduction rather than develop their critical innovative abilities. Market orientation literature suggests that firms with superior market orientation frequently outperform their less market oriented rivals in delivering better customer value (Jaworski & Kohli, 1993; Kumar, Ganesh, & Echambadi, 1998; Narver & Slater, 1990). Vorhies and Morgan (2005) emphasize that marketing capability is firm specific and unique to it. Such customer value-adding capabilities are not imitable, replaceable, or transferable, and thus provide basis for

competitive advantage. Competing firms targeting similar market evolve comparable marketing capability but not identical ones. Firms are classified as more efficient if they have a superior resource–capability–performance transformation ability and less efficient otherwise. Following the RBV rationale, we posit that marketing capabilities of firms differ and unique firm characteristics like efficiency influence performance. Thus, we investigate the following:

**Hypothesis 1b.** Marketing capability has a stronger impact on business performance for efficient firms rather than the inefficient ones.

*2.2.3. Operations capability*

Operations capability is defined as the integration of a complex set of tasks performed by a firm to enhance its output through the most efficient use of its production capabilities, technology, and flow of materials (Dutta et al., 1999; Hayes, Wheelwright, & Clark, 1988). Manufacturing strategy literature highlights the role of operations capability on firm performance (Gonzalez-Benito & Gonzalez-Benito, 2005; Hayes & Pisano, 1996; Roth & Miller, 1990). It argues that a firm can achieve competitive advantage by handling an efficient material flow process, careful utilization of assets; and acquisition and dissemination of superior process knowledge (Tan, Kannan, & Narasimhan, 2007). Superior operations capability increase efficiency in the delivery process, reduce cost of operations and achieve competitive advantage (Day, 1994). Extant literature emphasizes the role of an integrative approach in combining marketing and operations capability; and suggest operations success is a pre-condition to marketing success (Hausmana, Montgomery, & Roth, 2002; Tatikonda & Montoya-Weiss, 2001). Thus, we hypothesize

**Hypothesis 2a.** The greater is the operations capability of a firm; the better is its business performance

*2.2.4. Moderating effect of firm efficiency on operations capability–business performance linkage*

Extant literature suggests that the impact of operations capability on a firm's business performance varies according to a firm's own characteristics (Ortega & Villaverde, 2008; Song, Benedetto et al., 2007; Song, Droge et al., 2005). Operations capability is likely to be more important for firms which are not cost effective at this moment and want to reduce their cost of operations, develop their production facilities, improve their value proposition to their customers, and thus increase their efficiency in running their business (Song et al., 2008). Operations capability improves performance of firms which competes with superior competitors from a relatively disadvantaged position in terms of product and process development, cost of operations, and innovative characteristics (Ortega & Villaverde, 2008). Strategic management literature suggests that operations capability has varied impact on performance depending on they way in which firms align themselves with their business environment (McDaniel & Kolari, 1987; Song et al., 2005; Wu, Yeniyurt, Kim, & Cavusgil, 2006). Innovators have superior product engineering technology, high R&D budgets, and prioritize technology as a source of competitive advantage. Followers are more interested to maintain status-quo, rely less on new product/service development, do not invest resources to understand and forecast technological changes. This follows the RBV rationale as operations capability is inimitable, immobile and classified as a source of competitive advantage. Cool and Schendel (1988) demonstrates that firms in the same market segment having similar operations capability differ in terms of their financial performance. Using the above arguments, we posit firms which are less efficient in resource–capability–performance transformation need superior operations capabilities, and such capabilities have cumulative effect on their business performance. Thus, we suggest the following:

**Hypothesis 2b.** Operations capability has a stronger impact on business performance for inefficient firms rather than the efficient ones.

*2.2.5. Diversification strategies and performance*

Ramanujam and Varadarajan (1989) define diversification as the entry of a firm into new lines of business activity through internal business development or acquisition. Strategic management literature has delved extensively on why a firm diversifies, cost of diversification, when diversification can improve firm performance and when it is detrimental to it (Chakrabarti et al., 2007; Montgomery, 1994; Ramanujam & Varadarajan, 1989). The principal reasons for diversification are perceived benefits associated with greater target market, utilization of unused productive capacity, risk reduction in terms of diverse portfolio of business, and capability build-up. Conceptually, diversification should have a positive influence on firm performance as it helps the firms to achieve economies of scale, greater reach, and leverage its experience in other markets (Rumelt, 1974). However, empirical studies on the role of diversification on firm performance give a different result. Montgomery and Wernerfelt (1988) suggest that diversification has negative impact on performance. Diversification often increase the cost of operation, causes conflict in terms of greater managerial and organizational complexities; and inhibits firms from responding to major external changes (Chakrabarti et al., 2007; Grant, Jammine, & Thomas, 1988). Researchers have studied the effect of product/service diversification (Berger & Ofek, 1995; Bettis & Mahajan, 1985), and international diversification (Ghoshal, 1987; Kim et al., 1993) on firm performance. In this study, we focus on the service diversification aspect as the context we have chosen is the service sector. Service diversification can either be in related or unrelated category. For example, logistics firms offer a complete supply chain management solutions coordinating the flow of information and goods between suppliers, manufacturers, retailers and customers is said to pursue a related service diversification strategy. They offer warehousing, distribution, and inventory management solution to the entire supply chain and act as an integrated partner to the client organizations. On the other hand, logistics firms transporting consumer goods like food, clothing diversify into offering specialized insurance services, export, import and customs clearance services is said to pursue an unrelated service diversification strategy as offering such diversified services require different skill sets. Similarly, international diversification can be in related or unrelated geographical markets depending on the synergy between the principal and the new markets entered by the logistics firms. RBV theory explains diversification improves performance if the resources like market knowledge transferred between partners are rare, valuable and inimitable (Prahalad & Hamel, 1990). Thus related diversification improves firm performance through better use of resources and capabilities, whereas unrelated diversification exceeds the range of resource utilization, surpasses management capabilities and proves to be detrimental to firm performance (Tallman & Li, 1996). Extant literature suggests that there exist a mixed relation between diversification and firm performance (both positive and negative according to context) and the relationship is not a linear function but turns out to be U shaped curvilinear (Datta, Rajagopalan, & Rasheed, 1991; Geringer, Tallman, & Olsen, 2000; Narasimhan & Kim, 2002). In this study, we do not attempt to study the curvilinear impact of diversification as our focus is not to identify the threshold point in diversification where its impact on firm performance changes from positive to negative or vice versa. Rather, on the basis of the above arguments on the impact of diversification on long term business performance, we propose:

**Hypothesis 3a.** Diversification (service and international) has a negative impact on a firm's business performance

*2.2.6. Moderating effect of firm efficiency on diversification-business performance linkage*

RBV theory assumes a firm to be a source of distributed knowledge (Tsoukas, 1996). Although, managers assume that such knowledge transfer is seamless between the parent organization and the diversification

partners, but it does not take place always in a real life world. Diversification literature suggests that firms which are successful in such knowledge transfer between parent and partners are also successful in their resource–capabilities–performance transformation. Chatterjee and Wernerfelt (1991) posits that the impact of diversification on performance depends on the resource (knowledge, technology) profile of firms, and firms with superior resource portfolio are likely to have better diversification performance. Song et al. (2005) highlights the role of marketing and technology (operations in our context) capabilities on performance and suggests the differential effects of such resources depend on how a firm transfers knowledge between itself and its subsidiaries. Fang et al. (2007) empirically demonstrate that success in international diversification depends on the firms' capability to transfer knowledge to its subsidiaries. Thus, we conclude, firms with greater allocated resources, lesser cost of operations and superior information processing power have better capability to handle the challenges of diversification. Based on the above argument, we propose:

**Hypothesis 3b.** The negative impact of diversification (service and international) on business performance is less negative for efficient firms rather than the inefficient ones

## 3. Methodology

### 3.1. Description of the data set

We chose the logistics companies in UK specializing in road transport to test our conceptual framework. These companies having the primary UK SIC code as 6024 and provide a wide range of services like outsourced logistics services for manufacturing and retail customers; operate in sectors like industrial, consumer, and food; design, implement and handle supply chain solutions; operate warehouses and vehicles for their customers. The data is retrieved from FAME data base for the year 2005–2006. This is a database which captures information from audited financial statements available in public domain for all listed UK based companies. Initially, we obtained top 200 logistics firms based on their turnover. Out of that, 98 companies did not have complete information. So, in our final study, we chose 102 logistics firms and used their archival data for analysis. The logistics services offered by these companies can be broadly classified into freight forwarding (22%), warehousing (12%), transportation of goods (13%), whereas the majority (53%) offer a mix of all these services. These companies cater to a wide range of industries like automobile, retail, engineering equipment manufacturers, construction; and offer specialized services such as temperature controlled transportation and a host of supply chain management services.

### 3.2. Framework for measuring firm efficiency

RBV theory considers a firm uses its resources (inputs) to generate business performance (outputs) through functional capabilities (process transformation). The higher is the transformative power of the firm; the better is the chance to achieve its financial objectives. A firm is classified as efficient if it is able to maximize its financial performance with its given resource constraints. A firm is classified as inefficient if there are other firms in the industry who can generate the same level of outputs with less of at least one resource. Relative efficiency of firms is measured by the ratio of weighted sum of financial performance measures (outputs) to the weighted sum of resources used (inputs).

In this study, we use data envelopment analysis DEA (Charnes, Cooper, & Rhodes, 1978) as a tool to measure this input–output transformation. DEA framework helps this study in several ways: (i) identify firms that are efficient and inefficient in input–output transformation — this help in benchmarking of firms (ii) estimate the maximum output development potential for inefficient firms relative to the efficient ones — this can measure where and by how much a firm can improve. We use DEA in two stages (i) measure efficiency of firms in terms of their overall resource–performance transformation and classify them into efficient and inefficient groups, (ii) measure the marketing and operations capability of firms in terms of their efficiency in transforming marketing and operations resources (function specific inputs) to marketing and operations objectives (function specific outputs). This is done separately for the efficient and inefficient group of logistics firms. In the next section, we give a brief overview of DEA and then we describe our input–output variables to measure firm efficiency.

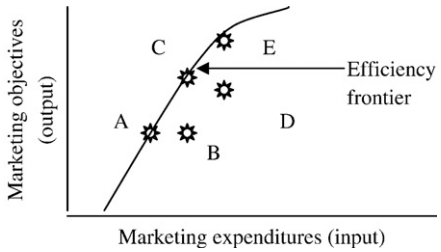


**Fig. 2.** DEA efficiency frontier illustration.

#### 3.2.1. Data envelopment analysis (DEA) — an overview

DEA is an operations research technique to measure relative efficiency of firms (also called decision making units — DMUs) that use multiple inputs to produce multiple outputs. DEA identifies DMUs that produces the largest amounts of outputs by consuming the least amounts of inputs. These DMUs are classified as efficient and belong to the efficiency frontier (Cooper, Seiford, & Tone, 2006). The concept of DEA is explained in Fig. 2. Consider a single input–output hypothetical example of five firms which uses a varying level of marketing expenditures (input) to generate their marketing objectives (output). From Fig. 2, we identify that firms B and D use more resources to generate less outputs compared to C and E. Thus, B and D fall below the efficiency frontier and are classified as inefficient firms. On the other hand, some firms (A, C, and E) maximize their resource-objectives transformation, fall on the efficient frontier, and are classified as efficient firms. There are numerous applications of DEA in marketing particularly to study marketing communication efficiency (Luo & Donthu, 2006), marketing productivity (Donthu, Hershberger, & Osmonbekov, 2005), advertising efficiency (Luo & Donthu, 2001).

#### 3.2.2. Inputs and outputs to measure firm efficiency

Business performance is a multi-dimensional construct. We chose two inputs – *total assets* and *working capital* (see Fig. 3). A logistics firm uses assets like warehouses, trucks, trailers, containers, as well as land and building to manage critical inventories, consolidate freight servicing and improves value added services to their customers. Assets are used by the firm to generate cash flow and increase its value. It also uses working capital which is more like liquid assets to expand and improve business operations. Working capital also signifies the operational efficiency of a firm in terms of how it is able to use its current assets like cash, account receivables, inventories to meet the short term needs. We chose two output measures — *return on assets* and *return on capital employed* which directly reflects how well a logistics firm is able to convert its inputs to generate superior profitability. Return on assets measures profitability of a firm relative to its total assets and indicates earnings of a firm generated from its assets. Return on capital employed measures on how well a firm is able to utilize its capitals to generate revenue. It indicates the efficiency and profitability of a firm's capital investment. Such choice of measures is well supported in DEA literature like to study profitability efficiency of Fortune 500 companies (Zhu, 2000); operational efficiency of third party logistics providers (Min & Joo, 2006). Also, such measures are widely employed by logistics companies (evident from their annual reports) to measure their profitability. We use input oriented constant

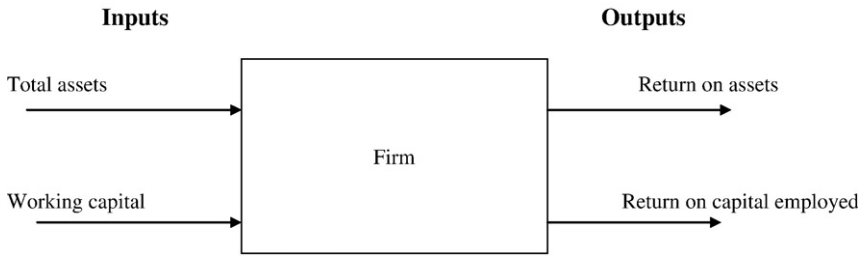


**Fig. 3.** Framework to measure resource–performance efficiency.

return to scale (CRS) DEA model (Cooper et al., 2006) to measure the efficiency of such transformation (see Appendix for detailed formulation).

### 3.3. Measuring marketing capability

Traditionally, marketing literature has always measured marketing capability using subjective survey based indicators, such as knowledge of competitors, effectiveness of advertisement, and managing durable customer relationships (Song, Benedetto et al., 2007; Song, Droge et al., 2005). There is a debate in literature about the accuracy of results which have been derived on the basis of managers' perception. Mezias and Starbuck (2003) concluded that survey studies based on managerial perception data often yield erroneous results as managers' perception about their organization or its environment are often not accurate. So, in this study we decided to use archival financial data for our analysis. Very few studies attempted to measure marketing capability using secondary, archival data (Dutta et al., 1999; Narsimhan et al., 2006). As marketing capability is an integrative process in which a firm uses its resources to achieve its market related needs of business (Vorhies & Morgan, 2005), so we use the input–output framework to measure it and archival financial data is the best way to do it. The "marketing" goal of a firm is to enhance the value of its products/services in the minds of current and future customers. This goal is partly reflected in increase of sales through better understanding of consumer needs, and proper positioning to target customer groups. We thus use *sales* as the output measure. Using sales as an output for marketing activity is also supported in literature (Dutta et al., 1999; Kotabe, Srinivasan, & Aulakh, 2002; Slotegraff, Moorman, & Inman, 2003). This goal is achieved by increasing expenditure in all marketing related activities, such as trade promotion, marketing communication, and customer relationship management. In this study, we assume that increasing sales is the principal motivation of firms to engage in building marketing capability, and consider the costs involved to achieve sales as the marketing resources. We thus use four inputs as measures of marketing resources: *stock of marketing expenditure, intangible resource, relationship expenditure* and *installed customer base*. First, we take the stock of marketing expenditure which is defined as the total amount of money spent by a firm in all its marketing related activities (Narsimhan et al., 2006). This is measured by sales, general and administrative expenses (SGA) and is a proxy for expenses like on market research and sales effort (Dutta et al., 1999). A logistics firm uses such expenditures to offer better incentives to its customers and sales team. Second, we take the intangible resources which reflect a firm's success in building relationship and brand equity (Slotegraff et al., 2003). This is measured by the monetary value of intangible assets as reflected in financial statements. It is a proxy for a firm's brand equity and other intellectual property rights like patents, goodwill for which a firm can charge a price premium. In a competitive business to business environment like logistics, investing in building brand equity in the market is extremely important. Third, we include relationship expenditures which are measured by cost of receivables. It is a proxy for customer relationship effort made by a firm (Dutta et al., 1999) and includes all claims against cash used by a firm to build and maintain customer relationships. Logistics firms use such investments to offer better trade incentives like higher credit margin and period to build customer relationships. Fourth, we use installed customer base as a marketing resource. This is defined as the stock of sales from previous customers (Dutta et al., 1999). A firm uses its existing base of customers to improve its sales through cross-selling and up-selling. It is measured by the growth in sales revenue (Vorhies & Morgan, 2005). It indicates marketing effectiveness by capturing spillover from previous sales. In any industrial setup like logistics, repeat sales from existing customer base is quite important.

So, we use the following marketing frontier function:

$$\text{Sales} = f(\text{stock of marketing expenditure, intangible resources, relationship expenditure, installed customer base}) \quad (1)$$

In the input–output classification, marketing capability of a firm measures how close it is to the sales frontier given a set of resources (see Fig. 4). Thus the closer is the sales value realized by the firm from the sales frontier, the better is its marketing capability. We use input oriented constant return to scale (CRS) DEA model (Cooper et al., 2006) to measure the efficiency of such transformation for both the efficient and the inefficient group of firms. The DEA efficiency score measures marketing capability of each firm. We also measure relative marketing capability of each firm defined as

$$(\text{Rel\_MC})_i = (\text{MC})i \Big/ \left(\sum_{i=1}^{m} (\text{MC})i / m\right) \quad (2)$$

where $(\text{Rel\_MC})_i$ = relative marketing capability of $i$th firm

$(\text{MC})_i$ = marketing capability of the $i$th firm
$m$ = number of firms in each group (efficient and inefficient).

### 3.4. Measuring operations capability

The "operations" goal of a logistics firm is to deliver the goods to the right place in the right time at a minimum cost (Novack & Thomas, 2004). Efficiency of operations functions of a logistics firm through all its principal activities like transportation, inventory control, warehousing, order processing is driven by its objective to reduce cost without compromising on its quality of service (Novack, Rinehart, & Langley, 1995). From the marketing perspective sales maximization is the key performance driver, whereas from the operations perspective cost minimization and efficiency without compromising on quality is the key performance driver (Dutta et al., 1999). Marketing involves customer interface, so the ability of the firm to grow its sales is an indicator of its marketing efficiency. On the other hand, operations function involves production and delivery of products/services, so the ability of the firm to produce and deliver at a minimum cost without compromising on quality is an indicator of operations efficiency (Piercy, 2007). In this study, we assume cost minimization is the business objective of firms from their operations function. Extant literature has measured operations capability using subjective, survey based measures like efficiency in delivery process, technology development capabilities, new product/service development capabilities (Song, Benedetto et al., 2007; Song, Droge et al., 2005).

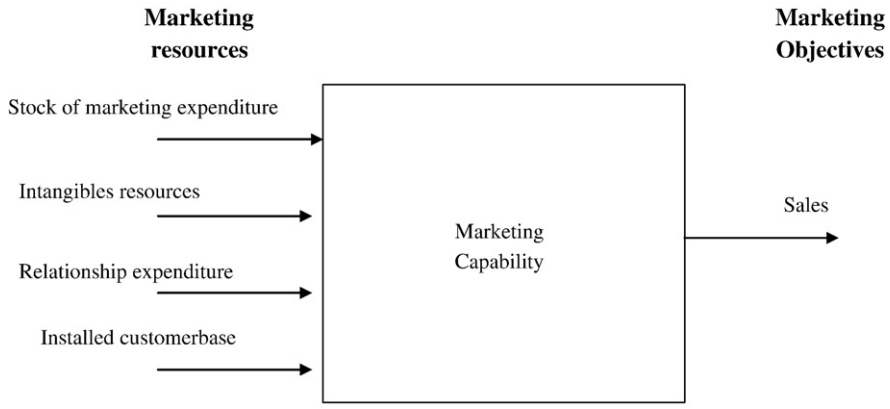


**Fig. 4.** Framework to measure marketing capability.

Logistics studies, on the other hand, has used both soft (perceptual – survey based) and hard measures (archival — financial), as well as engineering measures like asset management, fleet management, fuel efficiency, loading costs, labor costs and storage costs to measure operations capabilities of logistics firms (Caplice & Sheffi, 1995; Mentzer & Konrad, 1991; Novack & Thomas, 2004). Excellent discussion of measures used in logistics performance measurement studies can be found in Chow, Heaver, and Henriksson (1994). In our study, we focus rather on a more generic problem on functional capabilities measurement. Following RBV rationale, we use the input–output framework to measure operations capability of a firm. We use *cost of operations* as the output measure (Dutta et al., 1999; Narsimhan et al., 2006). This is defined as all the costs incurred by the firm to manufacture, create and deliver product/service to its customers. In case of logistics firms, we use cost of sales as a proxy for cost of operations. This includes all direct and indirect expenses incurred by the firm like order processing costs, lead generation costs in order to boost its sales. We use two inputs to measure operations resources: *cost of capital* and *cost of labor*. Logistics industry is capital and labor intensive. It uses capital like warehouses, trucks, and quality manpower like managers, dispatchers, cargo–handlers, drivers to provide service to its customers. So, cost of capital is our first input. This cost of capital is used by the logistics firms to improve on their business infrastructure (like newer fleets, delivery depots) and upgrading their process technology to deliver better service to their customers. We use tangible assets from the financial statements as a proxy for cost of capital (Min & Joo, 2006). Our second input is cost of labor which is defined as the cost of employee's wages and benefits to maintain superior service (Dutta et al., 1999). This labor cost includes the cost of recruiting and retaining high quality employees. We use remuneration (salaries and wages) of employees as a proxy for cost of labor (Min & Joo, 2006). High quality of manpower with tremendous functional and domain knowledge is used as a source of competitive edge by logistics firms. Use of such archival hard financial measures are also supported in productivity literature on logistics firms (see Abrahamsson & Aronsson, 1999 for a review on how financial measures are used along with engineering measures like delivery quality, transit time, capacity utilization and transportation cost per unit).

So, we use the following operations frontier function:

$$\text{Cost of operations} = g(\text{cost of capital},\ \text{cost of labor}) \tag{3}$$

Operations capability is the closeness of the firm to the cost frontier. We use input oriented constant return to scale (CRS) DEA model (Cooper et al., 2006) to measure the efficiency of such transformation for both the efficient and the inefficient group of firms. The DEA efficiency score measures operations capability of each firm (see Fig. 5). We also measure relative operations capability of each firm defined as

$$(\text{Rel\_OC})_i = (\text{OC})i \Big/ \left(\sum_{i=1}^{m} (\text{OC})_i / m\right) \tag{4}$$

where $(\text{Rel\_OC})_i$ = relative operations capability of $i$th firm

$(\text{OC})_i$ = operations capability of the ith firm
$m$ = number of firms in each group (efficient and inefficient).

### 3.5. Measuring performance

Studies on business performance measurement have considered both the financial measures such as sales, profit margin, return on investments (Song, Benedetto et al., 2007; Song, Droge et al., 2005) and non-financial measures like customer orientation, competitor orientation, customer satisfaction, market effectiveness (Olson, Slater, & Hult, 2005; Vorhies & Morgan, 2005) to measure firm performance. In this study, we focus on the financial measure of performance for logistics firms. Specifically, we consider *profitability* as a measure of logistics firms' business performance. We use operating profit as an indicator of the firm's profitability as it best reflects the efficiency of

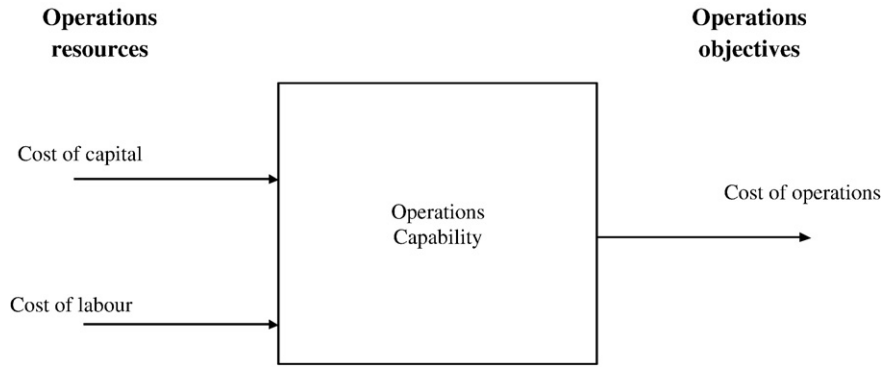


**Fig. 5.** Framework to measure operations capability.

**Table 1**
Variables and their measures.

| | Variables | Measures (in GBP £) |
|---|---|---|
| *Marketing capability* | | |
| Resources | Stock of marketing expenditure | Sales, general and administrative expenses (SGA) |
| | Intangible resources | Intangible assets |
| | Relationship expenditure | Cost of receivables |
| | Installed customer base | Sales growth |
| Objectives | Sales | Turnover |
| *Operations capability* | | |
| Resources | Cost of capital | Tangible assets |
| | Cost of labor | Remuneration |
| Objectives | Cost of operations | Cost of sales |
| Diversification strategy | | |
| Service diversification | Sectoral concentration | Number of sectors |
| International diversification | Foreign market concentration | Number of foreign subsidiaries |
| *Business performance* | Profitability | Operating profit |
| *Efficiency* | | |
| Inputs | Assets | Total assets |
| | Working capital | Actual value |
| Outputs | Return on assets | Actual value (%) |
| | Return on capital employed | Actual value (%) |

the firm in its resource-output transformation (Min & Joo, 2006). We also measure relative performance of each firm defined as

$$(\text{Rel\_Perf})_i = (\text{Perf})i \Big/ \left(\sum_{i=1}^{m} (\text{Perf})i / m\right) \quad (5)$$

where $(\text{Rel\_Perf})_i$ = relative performance of ith firm

$(\text{Perf})_i$ = performance of the $i^{th}$ firm
$m$ = number of firms in each group (efficient and inefficient).

### 3.6. Measuring diversification strategies

Diversification (both product/service and international/geographic) is often measured in strategic management literature by using measures like entropy (Palepu, 1985) or Herfindahl Index (Chakrabarti et al., 2007). Application of such measures requires information on market share (in terms of sales value) of the various products/services offered by the firm or the geographical markets in which the firm operates. In our case, such information on sales figures according to service portfolio or geographical market is not available. So, for *service diversification*, we measured the actual number of sectors like automotive, clothing, food retail, non-food retail, building materials in which the firm operates. We collected this information on individual firm's portfolio or sectoral concentration from their annual reports and websites. For *international diversification*, we use the number of foreign subsidiaries of the firm. The number of global market regions in which a firm operates is indicated by its number of foreign subsidiaries (Narasimhan & Kim, 2002). So, a firm operating in more sectors or having bigger service portfolio is considered to have greater service diversification, and firm having more number of foreign subsidiaries is considered to have greater international diversification. We also measure relative diversification level of each firm defined as:

$$(\text{Rel\_Div})_i = (\text{Div})i \Big/ \left(\sum_{i=1}^{m} (\text{Div})i / m\right) \quad (6)$$

where $(\text{Rel\_Div})_i$ = relative diversification level of ith firm

$(\text{Div})_i$ = diversification level of the ith firm
$m$ = number of firms in each group (efficient and inefficient).

This measure is calculated for both service diversification and international diversification. Since, sales figures of firms for each sector in which they operate or each geographical market in which they operate is not available publicly, so an entropy measure (like ratio of sales in individual sector to total sales) cannot be computed. We rather use the diversification scores as measured by Eq. (6) as a proxy for the diversification entropy as it measures the level of diversification strategy of each firm relative to the industry average.

### 3.7. Hypotheses testing

We estimate the relationship between functional capabilities, diversification strategies, and firm's overall business performance using the following least square regression equation:

$$\text{Rel\_Perf} = \beta_o + \beta_1 \text{Rel\_MC} + \beta_2 \text{Rel\_OC} + \beta_3 \text{Rel\_SERVDIV} + \beta_4 \text{Rel\_INTDIV} + \varepsilon \quad (7)$$

where Rel_Perf = relative performance of firms (measured by relative profitability)

Rel_MC = relative marketing capability
Rel_OC = relative operations capability
Rel_SERVDIV = relative service diversification strategy
Rel_INTDIV = relative international diversification strategy

Since, we use frontier function to estimate the performance of a firm relative to its industry benchmarks, so we use relative figures in the above equation. Table 1 summarizes our choice of functional resources, capabilities, their output objectives, business performance, diversification strategy and the variables to measure firm efficiency with their operationalization. All the variables are measured in pound sterling except the diversification measures which are number of units and the ratios expressed in form of percentage.

## 4. Results

We followed a three-stage approach in our data analysis. In stage one, we use DEA efficiency frontier function to classify the logistics firms into efficient and inefficient group relative to the industry frontier. In the second stage, we again use DEA efficiency frontier function to measure marketing and operations capability of each firm relative to the industry frontier. This is done for both the efficient and the inefficient group of

**Table 2**
Descriptive summary of measures.

| | Overall ($n=102$) | | Efficient ($n=30$) | | Inefficient ($n=72$) | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| *Marketing capability* | 0.54 | 0.26 | 0.58 | 0.28 | 0.53 | 0.22 |
| Stock of marketing expenditure | 16,496.8 | 33,108.30 | 8507.48 | 9765.28 | 19,670.64 | 38,270.88 |
| Intangible resources | 4594.71 | 11,667.49 | 963.79 | 2467.01 | 6037.12 | 13,460.1 |
| Relationship expenditure | 22,036.3 | 40,389.34 | 7287.83 | 3763.99 | 27,855.56 | 46,498.16 |
| Installed customer base | 13,781.8 | 28,272.75 | 7131.552 | 6282.55 | 16,423.68 | 32,880.81 |
| Sales | 139,648.7 | 255,368 | 53,448.17 | 35,875.64 | 172,892.8 | 304,613 |
| *Operations capability* | 0.19 | 0.23 | 0.30 | 0.30 | 0.18 | 0.21 |
| Cost of capital | 28,212.75 | 52,727.62 | 4846.31 | 4183.11 | 37,495.32 | 59,894.94 |
| Cost of labor | 43,894.35 | 97,974.38 | 10,848.21 | 9427.14 | 57,022.27 | 113,208.1 |
| Cost of operations | 120,912.2 | 242,883.6 | 41,637.24 | 31,340.55 | 152,405 | 280,774.7 |
| *Diversification strategy* | | | | | | |
| Sectoral concentration | 3.12 | 3.41 | 2.34 | 4.48 | 5.65 | 3.24 |
| Foreign market concentration | 5.56 | 7.21 | 2.44 | 4.61 | 6.8 | 4.45 |
| *Business performance* | | | | | | |
| Profitability | 4710.02 | 10,064.04 | 5504.27 | 11,664.26 | 2710.69 | 3122.24 |
| *Efficiency* | | | | | | |
| Assets | 91,372,042 | 248,172,272 | 18,563,434 | 14,081,837 | 120,307,267 | 288,680,582 |
| Working capital | 12,479,378 | 31,454,959 | 3,205,503 | 3,587,039 | 16,163,520 | 36,531,118 |
| Return on assets | 7.43 | 7.76 | 14.31 | 10.37 | 4.70 | 4.01 |
| Return on capital employed | 26.57 | 6.22 | 65.82 | 14.91 | 10.98 | 10.55 |

In the overall sample ($n=102$), 48 firms went for product diversification and 78 went for international diversification.
In the efficient group ($n=30$), 16 firms went for product diversification and 16 firms went for international diversification.
In the inefficient group ($n=72$), 32 firms went for product diversification and 62 firms went for international diversification.

firms. In stage three, we do the hypothesis testing by regressing the functional capabilities and diversification strategy on firm's business performance. In this section, we explain the results of each stage of our analysis.

### 4.1. Classification of logistics firms on the basis of their business efficiency

Logistics firms are classified as efficient or inefficient on the basis of their ability to transform available resources to generate superior financial performance. The classification is done by using DEA efficiency scores. We use the cut-off efficiency score of 0.5 (on an efficiency range between 0 and 1). Logistics firms with efficiency score of 0.5 or more are classified as efficient; otherwise they are classified as inefficient. We got 30 out of 102 firms classified as efficient (about 28%); and the remaining 72 firms as inefficient. This corroborates with the logistics industry turnover figures where 26% of the companies control the majority of the market share (Office of National Statistics, 2006). Table 2 gives the summary measures for all firms ($n=102$), efficient firms ($n=30$), and inefficient firms ($n=72$).

### 4.2. Hypotheses testing

Using RBV framework in the backdrop, we test the hypotheses on how a logistics firm uses its resources to generate functional (marketing and operations) capabilities, role of diversification, and how all these constructs lead to performance. We test our hypotheses in two stages. First, we test the impact of marketing, operations capability and diversification strategy (both service and internationalization) on a firm's business performance. We do it for all firms taken together ($n=102$). Second, we test the moderating impact of firm efficiency on the relationship between functional capabilities and diversification on performance. We test this moderating effect by subgroup analysis (Sharma, Durand, & Gur-Arie, 1981). For this, we classify the firms into efficient ($n=30$) and inefficient ($n=72$) and then run ordinary least square regression within each sub-groups. Table 3 summarizes the results.

#### 4.2.1. For the overall industry ($n=102$)

We found adjusted $R^2=0.15$, and as hypothesized, a positive association between marketing capability and business performance ($\beta=0.21$, $p<0.1$); and operations capability and business performance ($\beta=0.11$, $p<0.1$). Service diversification has negative impact on business performance although the result is not statistically significant. Contrary to our expectation, international diversification has positive impact on performance ($\beta=0.17$, $p<0.1$). Thus, we found support for Hypotheses 1a and 2a but Hypothesis 3a is not supported.

**Table 3**
Regression results for business performance as criterion variable.

| | Standardized coefficient | *t*-value | Hypothesis |
|---|---|---|---|
| *Main effect* | | | |
| *Overall ($n=102$)* | | | |
| Marketing capability | 0.21 | 3.09* | H1a: Support |
| Operations capability | 0.11 | 2.08* | H2a: Support |
| Service diversification | −0.07 | −0.76 | H3a: No support |
| International diversification | 0.17 | 2.72* | |
| *Fit statistics* | | | |
| Adjusted $R^2$ | 0.15 | | |
| *F*-value | 4.26* | | |
| *Moderation effect* | | | |
| *Efficient group ($n=30$)* | | | |
| Marketing capability | 0.38 | 3.72* | |
| Operations capability | 0.13 | 2.01* | |
| Service diversification | −0.27 | −1.26 | |
| International diversification | −0.17 | −0.87 | H1b: Support |
| *Fit statistics* | | | |
| Adjusted $R^2$ | 0.23 | | |
| *F*-value | 2.82* | | H2b: Support |
| *Inefficient group ($n=72$)* | | | |
| Marketing capability | 0.22 | 2.85* | H3b: No support |
| Operations capability | 0.14 | 2.24* | |
| Service diversification | −0.08 | −0.72 | |
| International diversification | 0.27 | 2.34* | |
| *Fit Statistics* | | | |
| Adjusted $R^2$ | 0.15 | | |
| *F*-value | 3.08* | | |

*$p<0.1$.

*4.2.2. Test of moderation — for efficient firms (n = 30)*

We found adjusted $R^2 = 0.23$, and as hypothesized a positive association between marketing capability and business performance ($\beta = 0.38$, $p < 0.1$), operations capability and business performance ($\beta = 0.13$, $p < 0.1$). Thus, we find the impact of marketing capability on business performance is more than the impact of operations capability for efficient firms. Both service diversification and international diversification has negative impact on business performance although the results are not statistically significant.

*4.2.3. Test of moderation — for inefficient firms (n = 72)*

We found adjusted $R^2 = 0.15$, and as hypothesized both marketing ($\beta = 0.22$, p<0.1) and operations capability ($\beta = 0.14$, $p < 0.1$) have significant positive impact on a firm's business performance. When we compare the results of the impact of marketing capability on the business performance for the efficient group ($\beta = 0.38$, $p < 0.1$) and inefficient group ($\beta = 0.22$, $p < 0.1$), we find that marketing capability has more impact in case of efficient group of firms. Thus, we find support for Hypothesis 1b. Similarly, when we compare the impact of operations capability on the business performance for the efficient group ($\beta = 0.13$, $p < 0.1$) and inefficient group ($\beta = 0.14$, $p < 0.1$), we find that operations capability has more impact for inefficient group. Thus, we find support for Hypothesis 2b. Service diversification has a negative impact on business performance although the result is not statistically significant. International diversification has significant positive impact on business performance ($\beta = 0.27$, $p < 0.1$). When we compare the relative impact of service diversification for efficient firms ($\beta = -0.27$, not significant) and inefficient firms ($\beta = -0.08$, n.s), we do not find that profitability efficiency of firms to have any moderating effect on diversification and performance linkage. Similarly, when we compare the relative impact of international diversification for efficient firms ($\beta = -0.17$, n.s) and inefficient firms ($\beta = 0.27$, $p < 0.1$), we do not find any moderation effect. Thus, contrary to our expectations, Hypothesis 3b is not supported.

## 5. Discussions, implications, and conclusions

### 5.1. Functional capabilities and performance

Results show overall, marketing capabilities dominate firm's business performance. This is consistent with previous studies like Dutta et al. (1999), Kotabe et al. (2002), Song et al. (2005), Vorhies and Morgan (2005). Marketing capability of a firm particularly, in business to business service sector like logistics industry depends on its ability to understand customer needs and create long term relationships. This is possible if the firm is able to deploy its marketing resources optimally to generate superior customer value using its unique, inimitable marketing capability. In an industrial market setting, marketing assets like stock of marketing expenditures which are the expenses incurred by a firm to improve its sales effort, relationship expenditures to build and maintain trade relationships are extremely crucial. Moreover, the majority of the business is generated through the network of existing customer base and thus the importance of building up brand equity becomes more critical. So, in a highly competitive industry like logistics, better marketing capability lead to competitive advantage for firms and help them to achieve superior business performance.

Our results show that operations capability has a significant impact on a firm's business performance. This reiterates the importance of infrastructure development like fleet upgradation, extension of distribution network, and improvement of technology usage for logistics firms. Thus, superior performance in operations function can enhance logistics firm's ability to increase connectivity with their customers and suppliers, provide more flexibility in operations and improve the value proposition in the entire supply chain. So, we can conclude that an efficient integration of marketing and operations functions leads to improved organizational performance. This is consistent with previous research on the integrative role of these functional capabilities on business performance (Kelly & Flores, 2002).

Our study indicates that marketing capability has more impact on business performance for firms which are efficient. Our results shows for logistics firms which have better resource-performance transformation abilities, marketing capabilities dominate over operations capabilities. Firms with superior marketing capabilities are proactive in understanding changing customer requirements in terms improved service standards. Such firms with their inherent market knowledge offer better value creation for the customers. This corroborates with the "market orientation" literature which suggests that firms with stronger market orientation develops better marketing capabilities, and it positively influence business performance (Jaworski & Kohli, 1993; Narver & Slater, 1990). Market-driven firms have better marketing capabilities than the others and generate superior performance (Vorhies & Morgan, 2005). Superiority of marketing over operations capability is also highlighted in other business to business sectors like high technology industry (Dutta et al., 1999; Narsimhan et al., 2006).

For logistics firm managers, the implication is clear: although marketing capability has a stronger impact on business performance but successful integration of functional capabilities is the key to success. Careful deployment of resources on marketing activities like advertisement, trade promotion , and customer relationship management develop a powerful marketing strategy and investment in developing the infrastructure is necessary to build operations efficiency to meet customer demand. Superior marketing capability is essential for achieving maximum financial performance and improving efficiency. Inefficient logistics firms have relatively larger expenditures for building their operations capabilities (cost of operations/turnover = 0.88) compared to efficient firms (0.77). Since, the impact of functional capabilities on performance differ between firms on the broad range of efficiency spectrum, it has tremendous implication on resource allocation decision. Inefficient firms should invest more resources on building their marketing capabilities so that they can expand their market, communicate with current and potential customers in a better way, and be competitive in the long run. Over reliance on operations capability like building infrastructure cannot give firms the extra edge as marketing capability is found to be the key to success.

### 5.2. Diversification strategies and performance

Our results show overall diversification has a negative impact on logistics firm's performance. This is evident for both the efficient and the inefficient group which suggests that firm input–output transformation efficiency does not moderate the impact of diversification strategy on firm performance. This is consistent with diversification literature which emphasize that not all firms improve their performance through diversification (Chakrabarti et al., 2007; Ramanujam & Varadarajan, 1989). Diversification (both in terms of product/service and geographical territory) require assimilation of extensive knowledge in terms of new product/service development, understanding cultures in the new markets, and transfer of resources between parent and the partner companies. This is consistent with RBV literature which highlights capabilities transfer like business knowledge between parent and partners is a complex process (Chatterjee & Wernerfelt, 1991; Fang et al., 2007). However, our study finds negative impact of service diversification and positive impact of international diversification on business performance under certain context. This is consistent with extant literature (Narasimhan & Kim, 2002; Tallman & Li, 1996). Service diversification requires leveraging firm's strategic resources and functional capabilities across the product/service spectrum. In case of related service diversification, this portfolio expansion remains within the scope of a firm's resource-capabilities and it can achieve economies of scale and better performance. On the other hand, in case of unrelated service diversification, the scope

surpasses management capabilities and raises costs (Geringer et al., 2000). In our study, although we do not measure specifically the relatedness of diversification, it is evident that firms are not able to leverage their resource-capabilities to expand their service portfolio. International diversification, on the other hand, requires understanding of the local business environment in a new geographical market. It requires active participation from local partners, increased local ownership. In competitive industries like logistics, firms face diminishing profit margin. Our results indicate that prudent internationalization strategy help logistics firms to leverage its capabilities and reap the same benefits across markets. Firms diversify into global market to avoid being dependent on supply and demand fluctuations in one national market. Such diversification help the firms to smooth the peaks and troughs in the revenue stream, exploit economies of scale and scope, develop diverse capabilities, and gain cost advantages.

### 5.3. Conclusions

Our study contributes to marketing literature in several ways. First, we empirically verify the theoretical tenets of RBV logic that resources and capabilities produce different performance results depending on the complex process in which a firm integrates the cumulative effect. We capture three key drivers of firm performance, namely marketing capability, operations capability, and diversification strategy together. We offer an integrated framework to find out the relative importance of each of these drivers on overall financial performance. We consider this triangulation approach to be very important as firms are often surrounded by uncertainty and incorrect beliefs about the relative importance of these drivers on long term performance. Second, we use an input–output framework for measuring overall performance and the intangible process transformation nature of firm's functional capabilities which captures the essence of RBV framework where a firm has varying powers to convert its resources and capabilities to superior performance. We propose a methodology based on an optimization technique called data envelopment analysis (DEA). This methodology helps us to classify firms into efficient and inefficient groups on the basis of their resource, capabilities to financial performance transformation. Third, our study gives the managers of logistics firms in both ends of profitability spectrum a measure for their process transformation inefficiencies. Using our methodology, the manager can identify the relative impact of performance parameters and understand the degree of complementarities between them. It provides a benchmarking tool to the managers and gives superior insights to their resource allocation decisions.

This study also has certain limitations. First, we test our hypotheses using archival data as we focus more on the resource–capability–performance framework as suggested by RBV theory. Such secondary data do not provide insights into the actual transformation process on how different organizations have assimilated these constructs into their business process. Further in-depth understanding is only possible through proper survey based research. Thus, measures for resources, capabilities and performance can be further improved by combining managerial perceptions through survey data and secondary financial measures to make them more robust and industry specific. Second, our study is with cross-sectional data. This research can be extended by capturing data over a period of time to understand how a firm acquires its knowledge building capacity and how experiential learning contribute to business performance in a longitudinal scale. Third, in this study we assume a linear relationship between diversification and performance. Strategic management literature on diversification highlights the relationship to be curvilinear. This indicates that the effect of diversification on performance is positive for related diversification and negative for unrelated diversification. So, our measure for diversification can be extended to capture the relatedness aspect of diversification and an assumption of quadratic relationship can help to find out the threshold level for diversification. Last, future research can focus on more functional capabilities of firm like IT, technology and modeling the interactive effects of such capabilities and diversification strategy on firm performance. This can improve the explanatory power of our conceptual framework.

## Appendix. Constant return to scale DEA model

$$
\begin{aligned}
&Min\Theta \\
&\text{subject to} \\
&\textstyle\sum_j \lambda_j x_{ij} \le \Theta x_{i0} \quad i = 1, 2, \ldots m \\
&\textstyle\sum_j \lambda_j y_{rj} \ge y_{r0} \quad r = 1, 2, \ldots s \\
&\lambda_j \ge 0 \quad j \in 1, 2, \ldots n
\end{aligned}
$$

where $x_{ij}$ and $y_{rj}$ are the amount of $i$th input and $r$th output generated by the $j$th firm, $m$ is the number of inputs, $s$ is the number of outputs, and $n$ is the number of firms in consideration. In our case,

(1) For the overall firm efficiency, $m = 2$ (total assets and working capital), $s = 2$ (return on assets and return on working capital), $n = 102$.
(2) For the marketing capability, $m = 4$ (stock of marketing expenditure, intangible resources, relationship expenditures, and installed customer base), $s = 1$ (sales), $n = 30$ (for efficient group), $n = 72$ (for inefficient group).
(3) For the operations capability, $m = 2$ (cost of capital and cost of labour), $s = 1$ (cost of operations, $n = 30$ (for efficient group), $n = 72$ (for inefficient group).

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