The Performance implications of Demand-side Diversification: Evidence from the US Telecommunications Sector, 1990-1996.

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Abstract: This paper contributes to the emerging demand-side perspective in strategy by explaining the demand-side sources of the systematic performance differences (a) between firms that diversify to offer complementary products and those who choose not to diversify, and (b) across and within diversifying firms over time. The US Telecommunications Services sector during 1990-1996 provides a dynamic research setting to test our hypotheses concerning the value-generating effect of shared demand-side strategic assets across the diversifying firms' home- and target-market. We find that the overall quality of demand-side strategic assets of local telephone companies who chose to diversify to offer complementary long-distance services (to their local telephony customers) is higher than those who chose not to diversify. We also find that the variation in market-shares of the diversified local telephone companies in their respective target market(s) for complementary long-distance services is positively influenced by the quality of demand-side strategic assets deployed in the target markets.

Keywords: Demand-side Diversification, Demand-side relatedness, Diversification Performance, Telecommunications

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Our inquiry into the performance benefits of demand-side diversification contributes to the stream of diversification literature that has evolved in response to the 'corporate strategy' question. In the latter, a theoretical explanation of superior *ex-post* performance of related diversifiers rests on *ex-ante* identification of relatedness across the diversified firms' portfolio of businesses in terms of shared strategic assets (e.g., Dierickx and Cool, 1989; Peteraf, 1993; Wernerfelt, 1984). However, the theoretical rationale of performance benefits of related diversification remains under developed due to the missing role of demand-side relatedness. By ignoring the demand-side relatedness the extant logic of relatedness fails to explain the performance benefits of such diversification behavior as is, for instance, motivated by demand-side considerations of exploiting consumer synergies instead of supply-side synergies typically featured in the diversification literature (e.g., Ye, Priem, and Alshwer, 2012).

We address a conceptual gap in the logic of related diversification. The aforementioned features an economizing effect (Teece, 1982; Porter, 1987) and a value creating effect (e.g., Markides and Williamson, 1994, 1996) of sharing supply-side strategic assets – that are broadly applicable but subject to market failure – across related businesses (See Ramanujam and Varadarajan, 1989; Hoskisson and Hitt, 1990; Montgomery, 1994; Palich, Cardinal, and Miller, 2000). Our proposed customer-centric logic of demand-side relatedness, which features the economizing effect and the value generating effect of sharing demand-side strategic assets across related businesses, explains the performance benefits of demand-side diversification[1]. Our

1 In this paper we do not focus on the economizing effects of shared demand-side strategic assets across the portfolio businesses. Although the resource-based view of diversification explains the economizing effects of shared customer-oriented activities and/ or demand-side strategic assets across related businesses, empirical evidence of superior performance of moderately diversified firms mostly relies on supply-side economies. The shared customer-oriented strategic activities and/ or strategic assets featured in the conceptual and empirical literature on diversification include common selling groups (e.g., Rumelt, 1982), advertising (e.g., Chatterjee and Wernerfelt, 1991), brand reputation and customer loyalty (e.g., Wernerfelt, 1991), media expenditures (Markides and Williamson, 1996), and customer know-how (e.g., Tanriverdi and Venkatraman, 2005). However, most examples in the empirical literature on diversification are really 'supply-side' strategic activities and/or assets that contribute towards manufacturing, distribution, or selling. The shared *selling* assets when conceptualized as drivers of post-diversification performance are basically adjuncts to the more fundamental supply-side assets that [possibly] contribute to the diversified firms' superior performance. Finally, even as a few conceptual papers refer to advantages that accrue to firms by serving distinct product-markets or industries that share common customers (e.g., Chatain and Zemsky, 2007; Ye, Priem, and Alshwer, 2012), we did not find any study the provides empirical evidence for the same.

propositions focus on the value generating effect of shared demand-side strategic assets across the portfolio businesses of a diversified firm. Our empirical analysis of the performance benefits of demand-side diversification, which is underpinned by logic of demand-side relatedness, focuses on the sources of systematic performance differences (a) between diversifying and non-diversifying firms over time, and (b) across and within diversifying firms over time.

Two conceptual issues motivate our analysis of the performance outcome of diversification behavior determined by demand-side considerations of exploiting consumer synergies (e.g., Ye, Priem, and Alshwer, 2012) instead of supply-side synergies (e.g., shared technology, supply-chain or distribution channel) typically featured in the diversification literature[2]. First, how do firms that diversify to offer a portfolio of products with positively correlated consumer valuations – but supported by different supply-side capabilities – generate value? Our theoretical explanation of the value generating effect captures the overall growth of the diversifying firms' demand-side strategic assets – shared across the markets for complementary products – in contrast to the growth of supply-side strategic assets featured in the extant literature. Second, if the choice to diversify into markets for complementary product does indeed generate value and contribute to their performance, how do the diversified firms differ in their ability to appropriate the value so generated? Our theoretical explanation of the firm-level variation in performance effects of demand-side diversification focuses on the differences in the diversifying firms' *ex-ante* ability to capture the value so generated by sharing demand-side strategic assets across their home- and target-market.

We conceptualize a firm's demand-side strategic assets to include those that either (a) support its customers' value chain activities, or (b) underpin the linkages between the its own

2 In another paper, which deals with the classic scope question 'why firms diversify', we provide a detailed exposition on demand-side strategic assets and relatedness. In this paper, we restrict our focus to addressing the specific corporate strategy question concerning the performance benefits of demand-side diversification.

value chain activities and its customers' value chain activities. Hence, the primary distinguishing characteristic of a firm's demand-side strategic assets are that they are embedded in a relationship with the firm's current or potential customers. In contrast, supply-side strategic assets include all those assets that underpin a firm's value chain activities. Three types of demand-side strategic assets are discerned in the extant literature: (a) customer-base, (b) customer-knowledge, and (c) customer-relationship. While we identify customer-base as a demand-side strategic resource (e.g., Barney, 1986; Dierickx and Cool, 1989; Markides and Williamson, 1994, 1996; Gupta and Lehmann, 2003, 2005, 2006; Zander and Zander, 2005; Gupta, 2009), we feel that the complexity of customer-knowledge and customer-relationship warrants a broader identity than that is allowed by the definition of a strategic resource[3] (e.g., Abernathy and Clark, 1985; Ratchford, 2001; Adner, 2002; Adner and Levinthal, 2001; Zander and Zander, 2005; Adner and Zemsky, 2006).

Our empirical explanation of the performance implications of firms' choice to diversify on the demand-side – by offering complementary product(s) – focuses on their performance in the home- and target-market. In doing so, it addresses the following gaps. First, a majority of empirical studies focus on explaining the variation in corporate performance either across diversified firms or between non-diversified and diversified firms (e.g., Palich, Cardinal, Miller, 2000; Wan, Hoskisson, Short, and Yiu, 2011; Hashai, 2014). The problem with this approach is that lack of evidence for improvement in overall corporate performance upon diversification could lead to an erroneous conclusion that certain types of diversification do not contribute to firm performance. In reality, improvement in overall corporate performance is only one of the three motivators of firms' choice to diversify. The performance benefits of diversification should

3 Although we make a conceptual distinction between demand-side resources (e.g., customer-base) and demand-side competences (customer-knowledge and customer-relationship) but do not identify the individual effect of each type of strategic asset on the diversifying firms' performance.

also be judged from the diversifying firm's performance in its home- and/or target-industry. Second, a majority of empirical studies on the diversification-performance relationship in the management literature on diversification employ some financial or accounting-based measures of firm performance (e.g., Palich, Cardinal, Miller, 2000; Richard, Devinney, Yip, and Johnson, 2009). This has persisted despite the criticism by many researchers – of financial or accounting-based measures (e.g., Benston, 1985). The quality (rigor) of the output of such research depends upon various factors[4]: (a) data, (b) research design, and (c) estimation techniques employed to estimate the various effects.

It is quite possible that the empirical literature on diversification has ignored the effect of the firms' choice to diversify on the performance in their home- or target-market due to lack of performance data in the two markets. For instance, a major empirical challenge in testing a diversifying firm's ability to leverage its dominance in the home market to gain advantage in a target market is to obtain data to measure the diversifying firms' *ex-post* (e.g., high price) or even *ex ante* (e.g., market-share) market power in the target market. The problem is compounded when the sample is dispersed across several industries.

We address this problem by employing a unique two-industry longitudinal dataset. The data are drawn from two industries that satisfy the definition of a monopoly home industry for product *A* (local telephony) and a competitive target industry for complementary product *B*

4 To a considerable extent the rigor of such studies depends upon the choice of control variables because most accounting or financial market measures of firm performance are actually explained by a multitude of strategic choice variables. When a researcher tries to explain a particular performance variable s/he needs to rule out all alternate explanations. This is absolutely not possible in those diversification papers that rely fully on published datasets (e.g., COMPUSTAT) for their explanatory and dependent variables. Further, the rigor of such studies also depends upon the estimation technique and whether the latter accounts for the endogeneity bias due to the (a) missing explanatory variables, (b) interaction among myriad explanatory variables, and (c) interaction between the explanatory and dependent variables. The missing explanatory variable could include both strategic and non-strategic choices exercised by the diversifying firm that influence other explanatory variables as well as the outcome variable(s). Hence, a diversification researcher should not only account for the effect of missing independent variables on the dependent variable(s) but also the main explanatory variable(s) [that are hypothesized to affect the performance variable].

(long-distance telephony) respectively[5]. The two industries serve overlapping customer-base (for local and long-distance telephony) distributed across several independent geographic sub-markets. We exploit the geographically fragmented nature of the two industries to generate a random sample of monopoly firms in the first industry (local telephony companies) who diversify to offer a complementary product from the second industry (long-distance telephony). Exogenous changes in regulation at two points of time (1984 and 1996) rendered the local and long-distance telephony as distinct industries during 1984-96.

Our unique two-industry dataset allows us to distinguish between related and unrelated diversification. In the former, the diversifying firm offers a complementary product *B* to its own customer-base within its monopoly area of franchise (geographic sub-market) for product *A*. In the latter, the diversifying firm offers a complementary product *B* to customers of product *A* outside its area of franchise (geographic sub-market). In our data, the market structure of the diversifying firms' home market (monopoly local telephony services) remains unchanged – due to regulatory mandate – but that of the target markets (long-distance services) change over time due to entry and post-entry competition. Any change in performance of the diversifying firm is due to its choice to diversify and not due to change in market structure.

Literature: Performance benefits of diversification

The following streams within the diversification literature provide insights into hitherto unexplained issues concerning the performance benefits of diversification. First, the resource-based view of diversification explains the superior performance of moderately diversified firms vis-à-vis single business firms and broadly diversified firms in terms of opportunities for

5 Long-distance and local telephony services are complements and not substitutes because while the price for one service influences the consumption of the other the increase in price of one does not result in an increase in demand for the other (e.g., Hausman, 1995). For the period of interest (1984-1996), the long-distance and local telephone industries were also vertically-related (e.g., Vickers, 1995). Hence, a wire-line long-distance telephone call required coordination from as many as three distinct companies – two local telephone companies at either end and a long-distance company in between them.

profitable applicability of strategic assets in the target-market (e.g., Palich, Cardinal, and Miller, 2000; Wan, Hoskisson, Short, and Yiu, 2011). Second, the theorized market power advantage of unrelated diversification, as explained in the theoretical IO/ Strategy literature (Montgomery, 1985, 1994), focuses on various anti-competitive or collusive mechanisms that broadly diversified firms could employ to create or exploit market power (e.g., Caves, 1981; Sobel, 1984; Saloner, 1987; Bolton and Scharfstein, 1990). Third, the dynamic leverage theory explains how firms leverage monopoly power in home markets to generate market power in markets for complementary products by influencing potential entrants' incentives to enter those markets (e.g., Choi and Stefanadis, 2001). Finally, the emerging demand-side perspective posits two types of performance benefits that accrue to firms who diversify on the demand-side (e.g., Ye, Priem, and Alshwer, 2012).

Our inquiry into the performance benefits of demand-side diversification focuses on value generation due to resource complementarities – a key contributing factor that explains the performance benefits of related diversification[6]. The empirical literature does not provide much evidence of the value creating effect of shared resources and/ or capabilities across 'related' businesses (e.g., Markides and Williamson, 1994, 1996; Tanriverdi and Venkatraman, 2005; Miller, 2006). In fact, the conceptual literature does not yet provide a theoretical explanation of the value creating effect of shared *demand-side* strategic assets. It ignores the value generating effect of diversifying firms' behavior that manifests as (say) the outward shift of demand structure in the home- and target-market. More specifically, it does not explain if and how the

6 Besides addressing the 'scope' question of why firms diversify, the diversification literature in management also addresses the 'corporate strategy' question that inquires into the performance implications of firms' choice to diversify. In response to the 'corporate strategy' question it accounts for the superior performance of moderately diversified firms vis-à-vis single-business and broadly diversified firms in terms of the 'economizing' (Teece, 1982; Porter, 1987) and 'value creation' (e.g., Markides and Williamson, 1994, 1996) effects that accrue to the former by way of sharing broadly applicable resources and/or capabilities – that are subject to market failure – across related businesses. However, the extant explanation of superior profits (say P – C margin) of diversified firms, which focuses on the latter's' strategic factor advantages underlying one or more value chain activities (e.g., Hill, 1988; Hill and Hoskisson, 1987; Chen, Yang, and Lin, 2013), primarily feature the supply-side (e.g., manufacturing or distribution) dimensions of competition (e.g., Adner and Zemsky, 2006).

shared demand-side strategic assets contribute to the diversified firms' ability to influence the demand for their products either in the home or the target market. Does a firm's entry into 'related' markets influence consumers' willingness to purchase its products and/ or allow it to enjoy higher sales vis-à-vis its single-business rivals?

Capturing the value created by exploiting consumer synergies

The emerging demand-side perspective (Adner and Zemsky, 2006; Priem, 2007; refer Priem, Li, and Carr, 2012, for a review), underpinned by the concepts of value-based business strategy (Brandenburger and Stuart, 1996), purports to explain how firms' consumer-focused strategies influence value creation and appropriation. It posits two types of performance benefits that possibly accrue to firms who choose to diversify on the demand-side (e.g., Ye, Priem, and Alshwer, 2012).

First, the explanation of revenue-enhancing effect of demand-side diversification draws on the 'one-stop-shop convenience' argument that explains consumers' willingness-to-purchase from a diversified seller[7] (e.g., Porter, 1990; Klemperer and Padilla, 1997; Nalebuff and Branderburger, 1995; Nalebuff, 2003; Cottrell and Nault, 2004). The convenience of one-stop-shop [for consumers] is explained in terms of both economizing effects (e.g., Klemperer and Padilla, 1997; Nalebuff and Branderburger, 1995; Nalebuff, 2003; Cottrell and Nault, 2004) and value-generating effects (e.g., Spiller and Zelner, 1997; Priem, 2007; Chatain, 2011). The economizing effects [for consumers] are generated due to lower search costs, lower time spent on shopping, lower price due to discounts offered by a single-seller, economies of scope in consumption due to consumer learning effects, etc. The superior value derived by consumers are due to such reasons as superior product quality because of better interface and compatibility

7 The literature also explains that some customers may prefer to purchase their inputs from different sellers to reduce the latter's' bargaining power (e.g., Williamson, 1975). However, this explanation does not necessarily account for the situation wherein the demand for the various inputs may be positively correlated. Additionally, customers may purchase complementary products from different sellers if the interfaces between them are fairly standardized and/or well-developed (e.g.,Farrell and Saloner, 1986) .

between the products (e.g., Spiller and Zelner, 1997), and customers' superior purchase experience due to familiarity with the diversified seller (e.g., Priem, 2007; Chatain, 2011), etc.

Second, the explanation of profit-enhancing effect of demand-side diversification draws on the 'superior customer-value' argument that explains consumers' willingness-to-pay more for a portfolio of complementary products sold by a single diversified seller (e.g., Chatain, 2011). However, the emerging demand-side perspective currently comprises only conceptual papers (e.g., Chatain, 2011; Ye, Priem, and Alsher, 2012). It does not yet provide empirical evidence. Consequently, it provides a fertile area of empirical inquiry into how consumers' willingness to pay a premium for diversified sellers' portfolio of complementary products influence both the choice to diversify and the performance implications.

Theory: Value Generating Effect of shared demand-side strategic assets

The decision by a seller of product *A* to also offer a complementary product *B*, referred to as the decision to diversify on the demand-side, positively influences the value of its demand-side strategic assets shared across the two markets (for *A* and *B*). The post-diversification increase in value of shared demand-side strategic assets, referred to as value-generating effect, can be explained in terms of the outward shift of the aggregate demand curve for the two complementary products *A* and *B*. The outward shift of the demand curve is in turn explained by the concept of indirect network effects wherein the demand for product *A* is positively influenced by the availability of complementary product *B* (e.g., Katz and Shapiro, 1985; Farrell and Saloner, 1986; Tanriverdi and Lee, 2008). First, the availability of a complementary product *B* boosts both the adoption (by new consumers) and consumption (by existing consumers) of product *A* thereby resulting in improvement in both the magnitude and quality of the customer-

base of product *A*. Second, the availability of a complementary product *B* also boosts the overall consumption of the customer-base of product *A* since they now consume both *A* and *B*.

Theoretically, the seller of product *A* is not required to offer the complementary product itself in order to improve the overall magnitude and quality of its customer-base. It could enter into an agreement with a complementor to supply the complements to be consumed by its customer-base of product *A*. In fact, the mere presence of one or more complementors is sufficient for the seller of product *A* to benefit due to the indirect network effect (e.g., Katz and Shapiro, 1985). However, the value so created by ensuring the availability of complements to product A, is not entirely captured by the seller of product A, but shared with the complementors(s). How the seller of product A and its complementor divide up the added-value depends upon the type of their bargaining agreement[8] (e.g., Ye, Priem, and Alshwer, 2012).

A major problem with bargaining agreements [to share value] between sellers and their complementors is that over time both parties would like to increase their share of the overall added-value. It is logical to generalize [the possibility] that if the seller of product *A* chooses not to offer the complementary product *B* on its own, the complementors who do so will capture a significant portion of the overall value generated due to consumption of *A* and *B*. Consequently, if the seller of product *A* does not stand to capture significant value – following its decision to not offer complementary product *B* itself – it would not have any incentive to facilitate value capture by the complementor[9]. In such cases, the improvement of the quality of demand-side strategic assets of supplier of product A should be sub-optimal and lower than what could have

8 The seller of product A (e.g., video game console) can charge a fee from the seller of complementary product *B* (e.g., video game cartridge) to offer inter-operability.

9 It is obvious that the total value generated by ensuring the availability of complementary product *B* to the customers of product *A* – that manifests as the improvement in overall quality of the demand-side strategic assets of seller of product *A* – provides the upper limit of the value that a diversifying firm (seller of product A) can capture. It is logical to expect that its (seller of product A's) share of the value captured will be lower when it allows complementors to offer complementary product B – either working independently or under agreement with the seller of product A –than what it could have captured had it chosen to offer complementary product B itself. In fact, if in some cases the seller of product A deters entry by complementors, that action can be understood as the former's desire to capture the added-value in its entirety instead of sharing it with complementors.

been, if the seller of product *A* also offered the complementary product *B*. In other words, the overall quality of the demand-side strategic resources (customer-base) of firms who choose to also offer a complementary product *B* (to their customer-base of product *A*) will be higher than those who choose not to do so**.** We therefore hypothesize:

Hypothesis 1: The overall quality of the demand-side strategic asset(s) of related diversifiers should be higher than that of non-diversified firms.

The factors that explain the above outcome – improvement in overall quality of strategic assets upon diversification – also explain the variation across the diversified firms' performance in their respective target markets. The performance differences can be explained in terms of the underlying differences in the diversifying firms' (a) unobserved demand-side competences developed in the home-market (*idiosyncratic knowledge of and relationship with its customer-base*), and/ or (b) ability to leverage these unobserved demand-side competences to gain performance benefits in the target market. Our explanation of the performance effect of the aforementioned factors – (a) and (b) – captures the customers' willingness to purchase complementary product *B* from the diversified seller[10].

The willingness of a diversifying firm's' customer-base for product *A* to also purchase a complementary product *B* from it as opposed to its specialized single-business rivals in the target-market for complementary product *B* influences its post-diversification performance in the target-market for complementary product *B*. First, we simply point to the one-stop-shop convenience argument in extant literature (discussed in the review section) that explains the customers' willingness-to-purchase a complementary product *B* in from a diversified seller vis-à-vis that offered by single-business specialized sellers of complementary product *B*.

10 The advantage possessed by the diversifying firms – as explained by (a) and (b) above – refers to their superior ability to acquire and retain customers for complementary product *B* and convince the latter to consume more of good B vis-à-vis their single-business specialized rivals in the market for complementary product *B*. This advantage accrues to the diversified firms because the potential customers in related target market(s) for complementary product *B* are a subset of their own customer-base for product *A*.

Second, we argue that if the seller of product *A* possesses superior customer-knowledge (demand-side competence) concerning heterogeneous customer preferences it can leverage the same to offer idiosyncratic bundles of attributes embodied in a set of complementary products to its customers. This translates into superior value for the consumer and results in increasing the customers' loyalty and imposes switching costs. It would therefore be logical to assume that a firm's superior individual-level customer-knowledge (demand-side competences) enables it to offer a better set of complementary products in terms of price/ features to a customer than its lesser endowed rivals.

Third, we argue that if a seller of product *A* enjoys a strong relationship with its customer-base (demand-side competence) then it is quite likely that it will be able to convince a significant portion of its customer-base to purchase a complementary product *B* from it as opposed to purchasing the same from its single-business or specialized rivals. Hence, firms that draw a high quality customer-base for focal product *A* should also enjoy a high quality of potential customer-base for product *B*. This is because the higher level of demand-side competence that explains superior quality of strategic assets deployed in the home-market for product *A* should also explain [in a causal way] the superior quality of strategic assets deployed in the target market for product *B*. In other words, a firm's ability to induce its customers in the market for focal product *A* [explained by its demand-side competence] should translate into its ability to also convince the customers to purchase the complementary product B from it rather than its specialized single-business rivals.

Hypothesis 2: The performance of related diversifiers is positively influenced by the quality of their demand-side strategic assets deployed in the related target market.

Methods

Phenomenon: Performance of Local Exchange Companies in Long-distance Services Markets

During 1984-1996, the seven Bell LECs (Local Exchange Companies) and their affiliates served about seventy five percent of the local telephone lines[11]. Others (the "non-Bell LECs") were large and small telephone companies, approximately one thousand and three hundred in number, each operating in one or more geographic sub-markets. To illustrate, there were three area codes (251, 256, and 334), four LATAs (Birmingham, Huntsville, Montgomery, and Mobile), and 30 geographical sub-markets in the state of Alabama. Local Exchange Companies (hereafter LECs) controlled access to telephony customers which they provided to long-distance companies (hereafter LDCs) for an access charge[12]. By regulation the access to residential customers in each geographical sub-market was controlled by only one LEC (a monopoly).

The long-distance services industry comprised specialized long-distance carriers such as MCI and Sprint. AT&T was the default long-distance carrier for each geographic sub-market prior to the incumbent LEC upgrading to offer equal access. Even as all LECs were required to provide LDCs with equal access to their local telephony customers, many non-Bell LECs chose to enter the long-distance telephone business, thereby competing with LDCs who were their enterprise customers for access to the local telephony customers (FCC, 1998). As the number of non-Bell LECs offering long-distance services increased steadily (refer to Table 1) the high proportion of non-Bell LECs that chose otherwise remains puzzling. Non-Bell LECs offered long-distance services to their local telephony customers only in some sub-markets.

11 The 1982 consent decree separated the local and long-distance telephone services of AT&T into distinct local (the seven "Regional Bell Operating Companies") and long-distance ("AT&T") companies (see Crandall, 1991). It also prohibited either type of company to offer the other type of service. This regulatory requirement remained effective during 1984-1996 and hence during this period local and long-distance services were provided by firms in two distinct industries (Besen, and Saloner, 1989; Crandall, 1991; Hausman, Tardiff, and Belinfante, 1993; Hausman, 1995; FCC, 1998).

12 A wire-line long-distance telephone call required coordination from as many as three distinct companies – two local telephone companies at either end and a long-distance company in between them.

Statistical Analysis

Model 1: Quality of demand-side strategic assets of diversifiers vs. non-diversifiers

The following equation (1a) represents our theoretical argument that the overall quality of demand-side strategic assets (QualityDemandAssetOverall) of firms that diversify on the demand-side (DemandDiversify = 1) should be superior to that of non-diversifiers (DemandDiversify = 0).

$$\mathbf{QualityDemandAssetOverall_{imt} = \beta_0 + \beta_1 . DemandDiversify_{imt} + Z\gamma + \varepsilon_{imt}} \quad \mathbf{(1a)}$$

We use a proxy variable to measure firms' overall quality of demand-side strategic assets as the total average individual consumption of complementary products *A* and *B*. Our choice of the proxy follows from the reasoning of 'customers as strategic assets', in the sense that higher quality customers are those who consume more of the products offered by the firm. The following equation represents the statistical model employed to test whether the total average individual consumption of product *A* and *B* together will be higher in those sub-markets where sellers of product A also offer product B vis-à-vis those sub-markets where their counterparts do not sell product *B*.

$$\mathbf{TotalDEMperLine_{imt} = \beta_0 + \beta_1\ DemDiversify_{imt}} + \beta_2\, \mathrm{LECNumGA_i} + \beta_3\, \mathrm{LECIndepA_i} + \beta_4\, \mathrm{NumIXCB_{mt}} + \beta_5\, \mathrm{CPL_{mt}} + \varepsilon_{imt} \quad \mathbf{(1b)}$$

The dependent variable $\mathrm{TotalDEMperLine_{imt}}$ (total dial equipment minutes per line) serves as a proxy variable to measure the overall quality of demand-side strategic assets of the local exchange companies in their respective areas of franchise (geographic sub-market, m) during year t. $\mathrm{TotalDEMperLine_{imt}}$ is a continuous variable that measures the average minutes of usage per local telephony line pre-subscribed to the local exchange company in its area of franchise (geographic sub-market, m) during year t. DEMs are the most reliable and accurately available measure of telephone conversation (FCC, 1998).

The main explanatory variable $DemDiversify_{imt}$, employed to test hypothesis 1, is a dummy variable used to measure the firms' choice to diversify on the demand-side ($DemDiversify_{imt} = 1$). It takes a value 1 if a firm i (Local Exchange Company) selling product *A* (local telephone services) in a particular industry (Local telephony) diversifies to offer complementary product *B* (long-distance service) to its customer-base in its area of franchise (the related geographic sub-market m during year t). Table 2 provides the definition and descriptive statistics of all explanatory and control variables in model 1.

Statistics: Tables 3 and 4 provide the statistical results obtained from estimating model 1 that includes the coefficients of the main explanatory variable ($DemDiversify_{imt}$) along with that of a few control variables. We control for the effect of the diversifying firms' geographic scope in its home-industry for product *A* ($LECNumGA_i$), the corporate status of the diversifying firm that exclusively serves the geographic sub-market m ($LECIndepA_i$), the market-size of the related geographic sub-market m for the complementary product *B* at the end of year t, measured as number of pre-subscribed lines ($NumPSLB_{mt}$), the number of firms that offer complementary product *B* at the end of year t, measured as the number of interexchange carriers that offer long-distance services ($NumIXCB_{mt}$), and a proxy for market-attractiveness, measured as cost per loop (CPL_{mt}). We include 53 state [and territory] dummies to control for the effect of variation in state regulations that could possibly influence the effectiveness of LECs choice to diversify. We also include 854 corporate dummies to control for the unobserved fixed firm-effect.

Table 3 provides the estimates of coefficients of variables of the model obtained by G2SLS random-effects IV regression. We treat the explanatory variable $NumPSLB_{mt}$ as endogenous. (An endogenous variable violates the exogeneity requirement of a RE estimator. In such cases, the RE estimator might generate biased estimates of the coefficients of variables.

Hence, we do not present the results of a Random-effect GLS regression.) We instrument the endogenous variable with $LocalTelMktSizeA_{mt}$, which measures the magnitude of the LECs' customer-base for good A (local telephony service) in its area of franchise. $LocalTelMktSizeA_{mt}$ does not directly determine the average individual consumption $TotalDEMperLine_{mt}$ but is highly correlated with the explanatory variable $NUMPSLB_{mt}$. However, the problem with the 2SLS method is that while it allows estimating a model with a sub-set of the explanatory variables being correlated with the idiosyncratic error (ε_{imt}) it does not control for the possible endogeneity bias due to the explanatory variables being correlated with the unobserved sub-market level random effect **(α_m).**

Table 4 provide the estimates of the coefficients of the variables of the estimated by employing the Hausman-Taylor estimator available in Stata[13] (refer Cameron and Trivedi, 2008). This IV estimator addresses our problem of estimating a model with both time-invariant and time-variant endogenous regressors ($NumPSLB_{mt}$ and $LECNumGA_i$). A time-invariant explanatory variable ($LECNumGA_i$) is endogenous to another time-invariant variable ($LECIndepA_i$) that we wish to use as a control variable. This is because independent LECs are expected to have a narrower geographic scope vis-à-vis those who are part of a corporate group. Further, the Hausman Taylor estimator also controls for the endogenity of $NumPSLB_{mt}$ and $NumIXCB_{mt}$. This is because sub-markets characterized by a larger number of customers ($NumPSLB_{mt}$) would logically attract a larger number of firms ($NumIXCB_{mt}$). While columns 1-3 provide estimates from a model that considers $NumPSLB_{mt}$ as endogenous, cols. 4-6 provide estimates from a model that considers both $NumPSLB_{mt}$ and $LECNumGA_i$ as endogenous.

13 We employ Stata's 'xthtaylor' that uses the Hauman-Taylor estimator to fit panel-data random-effects models in which some of the covariates are correlated with the unobserved individual-level random effect. The relaxed assumption that underlies the above estimator is that some of the regressors can be endogenous with the time invariant component of the error but not with the time variant component of the error. The two instrumental variables methods in stata – xtivreg and xthtaylor – solve different problems.

Discussion of Results: The positive sign of the statistically significant coefficient of $DemDiversify_{imt}$ confirms hypothesis 1. This is a very important result because most studies on diversification focus on the supply-side dimensions of value generation. In doing so, they either assume constant/ indifferent demand conditions and do not explain whether diversification influences demand conditions in the target market. In contrast, we show that the average individual consumption goes up in those sub-markets where a diversified firm offers both complements A and B. More specifically, in contrast to most studies we hypothesize and confirm the outward shift of demand curve in those geographic sub-markets where the local telephone companies diversify to also provide long-distance services.

The outward shift of demand curve is due to increase in total consumption by consumers. We define these consumers as demand-side strategic assets and hence following our results argue that demand-side diversification leads to improvement in the quality of the diversifying firms' overall strategic assets. These strategic assets are however deployed across more than one product markets. The next model shows how these strategic assets deployed in a particular product market contribute to the diversifying firm's performance when it enters that market.

Model 2: Performance of diversifying firms in target market(s)

The following equation represents our theoretical argument that the variation in the diversifying firms' performance in their respective target markets (DivPerformance) will be positively influenced by the quality of demand-side strategic assets deployed by these firms in the related target market for complementary product *B* (QualityDemandAssetB).

$$\mathbf{DivPerformance_{imt} = \beta_0 + \beta_1 . QualityDemandAssetB_{imt} + Y\,\alpha + Z\gamma + \varepsilon_{imt}} \quad \mathbf{(2a)}$$

We measure the diversifying firms' performance in their respective target markets in terms of their market-share. The dependent variable, $LECMktShareB_{imt}$, is a continuous variable

that measures in percentage a diversifying Local Exchange Company's (diversifying firm i's) share of the total market-size for long-distance telephone services (complementary product *B*) in its area of franchise (geographic sub-market m) during year t. The market-size, S, for long-distance telephone services is measured as the number of Pre-subscribed long-distance telephone lines (PSL) in geographic sub-market m during year t and is represented as $NumPSLB_{mt}$.

We use a proxy for the main explanatory variable ($QualityDemandAssetB_{imt}$). Following the reasoning of 'customers as strategic assets', the proxy variable $logISDEMperPSLB_{imt}$ represents the average individual consumption of long-distance services (complementary product *B*) by the customer-base of the focal LEC (diversifying firm i). The proxy variable $logISDEMperPSLB_{imt}$ measures the log of the average interstate dial equipment minutes (ISDEM) consumed by a pre-subscribed long-distance telephone line (PSL) in the geographic sub-market m during year t.

$$\mathbf{LECMktShareB_{imt}} = \beta_0 + \mathbf{\beta_1\, logISDEMperPSLB_{imt}} - \beta_2\, LECNumGA_i + \beta_3\, LECIndepA_i - \beta_4\, LECEntryNumGB_i + \beta_5\, DemDiversifyLag_{im} + \beta_6\, NumPSLB_{mt} - \beta_7\, Conc4B_{mt} - \beta_8\, CPL_{mt} - \beta_9 TimeInteropB_{mt} + \varepsilon_{imt} \quad \textbf{(2b)}$$

Model 2 employs several variables to control for the effect of firm- and industry-level factors that could possibly influence the diversifying firms' performance in the target market. (Refer Table 5 for the definition and descriptive statistics of all explanatory and control variables.) First, it employs several variables to control for various firm-level characteristics. These include variables to control for the potential negative effect of the diversifying firms' other horizontal scope decision: (a) geographic scope in home industry ($LECNumGA_i$), (b) geographic scope in the target industry ($LECEntryNumGB_i$). Additionally, it employs variables to control for the effect of corporate status of the diversifying firm, i.e., whether it is a part of larger entity or a

standalone independent company ($LECIndepA_i$), and the delay by the diversifying firm in entering the target market after entry was allowed into the target market ($DemDiversifyLag_{im}$).

Second, it employs variables to control for the geographic sub-market level characteristics that could possibly influence the diversifying firm's performance in the target market for complementary product A in the diversifying firm's area of franchise (geographic sub-market m). These include the effect of (a) market-size of the related target market; $NumPSLB_{mt}$), (b) competitive intensity in the related target market (four-firm concentration ratio, $Conc4B_{mt}$), (c) attractiveness of target market (measured by a proxy, cost per loop, CPL_{mt}), and time elapsed since entry was allowed into the market for complementary good B ($TimeInteropB_{mt}$).

Statistics: Table 6 provides the statistical results obtained from estimating model 2. The presence of two time-invariant variables – $LECNumGA_i$ and $LECEntryNumGB_i$ – implies that we cannot choose a fixed effect (within) regression to estimate model 2. However, the problem in using RE estimators is that they are inconsistent if the effects are fixed. A corporate strategy audience would be very interested in controlling for the fixed firm-effect to understand the performance implications of the hypothesized variables. Hence, we use 854 corporate dummies to control for various unobserved fixed firm-effects. All models include 53 state [and territory] dummies to control for the effect of variation in state regulations that could possibly influence the effectiveness of LECs choice to diversify.

Column 1 provides the estimates of the model using a Random-effect GLS regression. Column 2 provides the estimates of the model using a G2SLS random-effects IV regression. We explained in model 1 that we use the number of local telephony customers in sub-market m at the end of year t ($LocalTelSizeA_{mt}$) to instrument the endogenous variable that measures the number

of long-distance telephony customers in sub-market m at the end of year t ($NumPSLB_{mt}$). We compare the standard errors in the G2SLS IV regression model to that in the Random-effects GLS model and find that the former are not any higher as is generally feared[14]. Column 3 provides the estimates of the model by employing the Hausman-Taylor estimator available in Stata (refer Cameron and Trivedi, 2008).

Discussion of Results: We now discuss the results that explain various effects on the diversifying firms' performance.

Diversifying firm's demand-side strategic assets deployed in the target market. The coefficient of the variable $logISDEMperPSLB_{\mathbf{imt}}$ is statistically significant with an expected positive sign across all statistical regression types (Table 6, col. 1-3). Basically, we find that the LECs' market-share in the long-distance services market is higher in those geographic sub-markets that are characterized by a higher average individual consumption of long-distance services. This allows us to claim support for hypothesis 2, which explains the main effect in model 2. More specifically, this result allows us to claim that the effectiveness of a firm's choice to offer a set of complementary products to its consumers of product *A* is positively influenced by the average individual consumption of the consumers in the market for complementary product *B*. It has important implications for industries which follow the subscription-based model. Firms in such industries can leverage their customers to offer additional products/ services. However, the effectiveness of doing so is also influenced by several other firm- and industry-characteristics.

14 A possible reason is the loss in estimator efficiency due to the instrumental variable(s) not being highly correlated with the endogenous variable(s) being instrumented. Although our instrumental variable is highly correlated with the endogenous variable we still compared the standard errors to a Random-effects GLS model with cluster-robust standard errors that cluster on the geographic sub-market (unit of panel analysis). The Standard errors are clustered on 191 clusters (geographic sub-markets) because the errors are serially correlated.

Diversifying firm's geographic Scope in home industry. Column 1-2 show that the coefficient for the variable $LECNumGA_i$, which measures the geographic scope of the diversifying firm in its home industry (for product *A*), is statistically significant with a negative sign as hypothesized. The implication of this result is that geographically diversified firms are at a disadvantage when they offer additional products/ services to their customer-base. This counterintuitive result can be understood in terms of the geographic-specificity of [diversifying] firms' demand-side learning[15] – that accrues to them while serving their customer-base of product *A*. Geography-specific demand-side learning implies that geographically diversified sellers of product *A* may not necessarily be at an advantage over the geographically focused sellers of product when both types diversify to offer complementary product *A*. In fact, to the contrary it renders the geographically diversified firms at a disadvantage vis-à-vis geographically focused firms in terms of the effectiveness of offering a complementary product to their customers.

This result should hold true in the case of most geographically fragmented industries where consumer preferences vary across the geographic sub-markets and so do the critical success factors. On one hand, the customer-knowledge and customer-relationship lose some of their relevance when transferred to other geographic contexts. On the other hand, it is inefficient for geographically diversified firms to transfer demand-side learning and the resulting knowledge from one geographical sub-market to another in a geographically fragmented industry (e.g., Lippman and Rumelt, 1982). Further, the logic of shared demand-side costs breaks down due to the geographically fragmented nature of the market for good A. Under such conditions, the quality of the customer-knowledge (e.g., about preferences of its actual and potential

15 The context-specificity of demand-side learning implies that the customer-knowledge so accrued to firms and the customer-relationships so developed by firms while serving their customer-base lose some of their relevance when deployed in other contexts.

customers) and customer-relationship developed by a geographically diversified seller of product *A* will be inferior to that of geographically focused sellers of product *A*.

The result in column 1 and 2 is based on our restrictive assumption [explained earlier] that the geographic scope is exogenously determined. We relax this assumption in column 3 to control for the effect of the corporate structure of the diversifying firms ($LECIndepA_i$). The geographic scope of the diversifying firms in their home industry ($LECNumGA_i$) is endogenously determined with the type of corporate structure of the diversifying firms ($LECIndepA_i$). Basically, as explained earlier $LECNumGA_i$ is negatively correlated with $LECIndepA_i$. The Hausman-Taylor estimator allows us to control for the endogeneity of $LECNumGA_i$ with $LECIndepA_i$. By including $LECIndepA_i$ we test whether the effectiveness of the choice of bundling is higher for independent firms. The logic for expecting a positive influence of independence is that because independent firms operate in fewer geographical sub-markets they do not share the inefficiency characterizing the transferability of demand-side learning from one context (geographic sub-market) to another. We therefore expect that the independent firms would perform better than their counterparts who are part of a larger corporate structure. However, adding the endogenous control variable ($LECIndepA_i$) throws up a puzzling result. While the significance of the effect of $LECNumGA_i$ disappears the effect of $LECIndepA_i$ is non-significant and negative. (When we remove the corporate dummies we get expected signs that are non-significant.) The influence of the relationship between corporate and geographic scope on firm performance needs to be further examined.

Diversifying firms' geographic scope in target market. The coefficient for the variable $LECEntryNumGB_i$ is not statistically significant. We therefore fail to confirm a relationship between the number of geographic sub-markets that a firm enters in the target industry and its

performance in the related target market. The variable $LECEntryNumGB_i$ allows us to test the effect of unrelated diversification on the diversifying firm's related target market.

The intuition for the expected negative result followed from the above described expectation of negative effect of the diversifying firms' geographic scope in their home industry. If demand-side competence is highly context specific (in this case geographic sub-markets) then the diversifying firms, which in our case are the LECs, should prefer to restrict their offering of long-distance services to their own customers. Hence, they should not enter other geographical sub-markets where they cannot offer both local and long-distance telephony services. If they do their performance should be lower than their geographically focused counterparts.

Our intuition for the negative effect is contrary to the expected positive effect of scale advantage due to a larger geographic scope in the target-market. A monopoly seller of product *A* may diversify into unrelated geographical sub-markets – besides its area of franchise – to sell product *B* for supply-side reasons. A broad geographic scope in the target industry for complementary product *B* provides the diversifying firm with an option to generate scale in product *B*. A larger scale is required to justify the high cost of acquiring the capacity to offer product *B*. A monopoly seller of product *A* that operates in one or at most a few geographical sub-markets in its home industry may not find it prudent to invest in capacity for product *B* if it restricts itself to only related target geographical sub-markets in the target industry.

The above behavior (of entering a larger number of markets) is in accordance with the market power literature. The latter suggests that the power a diversifying firm brings to a target-market is enhanced by the number of markets that it enters and has nothing to do with the characteristics of the target-market (e.g., Scherer, 1980). Nevertheless, several studies document the deleterious implications of such firm behavior on their overall corporate performance (e.g.,

Schmalensee, 1985; Wernerfelt and Montgomery, 1988; Markides, 1992). However, extant empirical analyses of diversification behavior do not explain whether diversifying firms' simultaneous entry into unrelated target markets influences their performance in the related target-market(s).

The above behavior is however not in accordance with the resource-based logic of related diversification. The latter suggests that a monopoly seller of product *A* should sell product B only to customers in its area of franchise, i.e., its customer-base of product *A* in geographic sub-market m (e.g., Markides, 1992). This is because the diversifying firm does not enjoy the benefits of related diversification in those geographical sub-markets that fall outside of its area of franchise for product *A*. Hence, the performance of a monopoly seller of product A that chooses to enter geographical sub-markets for complementary good B – outside its area of franchise in industry A – should suffer some negative consequences.

The [lack of expected] results can be interpreted as confirming that a diversifying firm's simultaneously entering other geographical sub-markets – after controlling for its size and/ or geographic scope in its home industry – does not really influence performance in the related target market for complementary product *B*. The above analysis controls for the timing of entry into the target market. $\text{DemDiversifyLag}_{im}$ measures the delay in years by a diversifying firm (Local Exchange Company) in entering the market for a complementary good (long-distance services) after converting to equal access. The coefficient is negative and statistically significant as expected. Hence, our analysis is in line with FCC's claim that ILECs which entered the long distance market during the same year that they converted to equal access averaged a higher market share (27%) during the initial year in contrast to carriers that entered the long distance market after (9%) converting to equal access (FCC, 1998).

Target-industry characteristics. Model 2 employs market-level variables that control for the effect of the dynamically evolving structural characteristics of the target market on the diversifying firms' performance. Although the featured variables act more as control variables in this paper, in the larger scheme of diversification literature the results have major implications. This is because extant empirical analyses of diversification performance that focus on internal firm characteristics assume away the influence of structural characteristics.

We test the negative effect of competitive intensity ($Conc4_{mt}$) and market-size ($NumPSLB_{mt}$) respectively in the target market – on the diversifying firm's performance in the target market. We use the four-firm concentration ratio in geographic sub-market m at the end of year t (Conc4mt) as a proxy to measure competitive intensity[16]. The coefficient of the variable $Conc4B_{mt}$ is significant and negative as expected across all regression models (Col. 1- 3) thereby confirming that the gains in market-share are lower in more concentrated markets. The coefficient of the variable $NumPSLB_{mt}$ shows expected sign in all columns but is not statistically significant in any column. $NumPSLB_{mt}$ measures market-size as the number of pre-subscribed lines in each geographic sub-market m at the end of year t.

Robustness Check: Our results are robust to change in specifications. Table 5 shows that a large number of observations show a missing value for the variable $TimeInterop_{mt}$. This reduces the effective sample size available for estimating model 2. We therefore drop $TimeInterop_{mt}$ to estimate model 2 again. (The estimated model uses 191 panels and 510

16 While we do possess data on the number of firms selling long-distance services (product *B*) in geographic sub-market m at the end of year t (NumIXCBmt) there is a problem in using it to control for competitive intensity in the target market for complementary product *B*. Basically, NumIXCBmt is possibly explained by the explanatory variable NumPSLBmt, which measures the magnitude of the customer-base in the related target market for complementary good B (long-distance services). In other words, because NumIXCBmt and NumPSLBmt are possibly endogenously determined, any model that includes these two variables may fail the strict exogeneity assumption required for random-effect estimators. (The strict exogeneity assumption requires all explanatory variables to be exogenous and that they are not correlated with the unobserved error.) We then used the total consumption of telephony minutes in the particular geographic sub-market as an instrument for NumIXCBmt in order to estimate a G2SLS model. TOTDEMmt measures the total dial equipment minutes in the diversifying firm's area of franchise and is correlated with the explanatory variable NUMIXCBmt but uncorrelated with the dependent variable LECMktShareBimt. However, the cofficient of the variable NumIXCBmt was not statistically significant and hence we do not report that result.

observations as opposed to the fuller model that employs only 111 panels and 241 observations.) We find that the main result (for hypothesis 2) holds true for the larger sample. For instance, the coefficient of $logISDEMperPSLB_{mt}$ in column 2 is 6.200434 ($p < 0.05$). It changes only slightly to 6.984138 ($p < 0.01$) when we drop $TimeInterop_{mt}$ to estimate model 2 using the full sample.

DISCUSSIONS AND CONCLUSIONS

We employ a simple demand-side diversification framework, supported by admittedly strong albeit entirely plausible assumptions concerning demand-side relatedness, to guide our empirical inquiry into the effectiveness of firms' choice to diversify into markets for complementary products. (This framework has been developed and presented in other papers.) Our empirical analysis provides insights into two important performance implications of demand-side diversification strategy in a dynamic setting**.**

Difference across Diversifying and non-diversifying firms

We explain why the overall quality of the demand-side strategic assets of related diversifiers is higher than that of non-diversified firms. We argue that when a diversified firm offers two complementary products – that belong to distinct industries – it increases the aggregate demand for the two products more so than if the products were offered by specialized sellers. The firm that so diversifies is, in effect, expanding product demand in anticipation of capturing the incremental rents so generated.

The above explanation provides a demand-side perspective to an important 'corporate strategy' question: do firms that choose to diversify on the demand-side add value to individual businesses? The novelty of our arguments lies in the explication of the effect of diversification on the demand structure, whereas the extant literature either ignores the effect [of diversification]

on demand or possibly assumes constant demand conditions to identify the overall performance benefits that accrue to moderately diversified firms.

Our empirical finding supports our theoretical assertion. We find that the average individual consumption of local and long-distance services is higher in those geographic sub-markets where the serving Local Exchange Company also offers long-distance services. This effect is more than just the indirect network effect that boosts consumption of the basic product due to the availability of a complementary product. The indirect network effect exists irrespective of whether the two complementary products are offered by a single diversified firm or two distinct specialized firms.

The extant literature suggests that a firm's decision to offer a complementary product *B* to its customer-base of product *A* – is influenced by the difference between the revenue realized and cost incurred to provide the complementary product *B* (e.g., Nalebuff, 2003). An important supply-side constraint restricts firms from indiscriminately resorting to demand-side diversification. The cost of offering an additional complement *B* may be very high if the complementary product *B* is based on a very different technology that requires substantial (supply-side) investments. It may therefore not make sense for a firm to offer a complementary product *B* to its customer-base of product *A* if the cost of offering an additional complement B is not covered by the revenue that will accrue to the firm. In contrast, we argue [and provide evidence] that it may make sense for a firm to offer a complementary product *B* – to its customer-base of product *A* – even if the marginal revenue generated by doing so is less than the marginal cost of offering an additional complement *B*. More specifically, demand-side diversification can be recommended in those cases where the boost of demand for its own

product *A* due to the availability and increased consumption of product *B* may offset the supply-side and demand-side costs of entering the target market for complementary product *B*.

Performance difference across diversifying firms

We extend the above line of argument to further explain why the diversifying firms differ in their *ex-ante* ability to capture the value so generated by sharing demand-side strategic assets across the home- and target-markets(s). We argue that diversifying firms (sellers of product *A*) differ in their ability to leverage their home- market-power – underpinned by their demand-side strategic assets – to gain advantage in the target-market (for complementary product *B*). We show how the effectiveness of choice of offering a complementary product is influenced by the quality of the diversifying firm's demand-side strategic assets deployed in the target-market.

The above explanation of why firms differ in their *ex-ante* ability to capture the customer value so created provides a demand-side perspective to another 'corporate strategy' question[17]: Why do firms diversify if it does not contribute to firm value? The novelty of our demand-side [customer-centric] arguments lie in our explanation of the variation in the value-generating effect across diversifying firms in terms of the underlying variation in customers' willingness-to-purchase both products A and B from a diversified seller as opposed to purchasing them from specialized sellers. The above explanation allows us to separate the performance effects in the diversifying firms' home- and target-market. While the improvement of performance in the diversifying home market is due to the indirect network effect that in the target market is due to the diversifying firm's ability to leverage its demand-side strategic resources (customer-base)

17 The diversification discount literature draws on agency theory (Jensen and Meckling 1976) to suggest that in such cases where diversification destroys firm value, the managers do so for private gains (e.g., Lang and Stulz 1994, Berger and Ofek 1995). Yet another theoretical explanation for the lack of consensus focuses on the increased co-ordination costs of a diversified firm (Rawley, 2010). Most theoretical responses [to the lack of consensus] focus on firm-specific factors that possibly negatively influence the performance of diversified firms.

and demand-side competence (idiosyncratic knowledge of its customer-base and the relationship with its customer-base).

Our findings confirm the following about the effectiveness of a firm's choice to offer complementary product *B* to its customer-base of product *A*. First, as expected our primary finding is that the diversifying firm's ability to convince a larger portion of its customer-base (of product *A*) to also purchase complementary product *B* from it as opposed to its specialized rivals is positively influenced by the average individual consumption in the market for complementary product *B*. While a firm's customer-base may influence its decision to enter new product markets its success in the new market is not fully explained in terms of the magnitude of its customer-base. The quality of a firm's customer-base (high average consumption) in the target-market is a primary determinant of the effectiveness of choice to offer complements. However, a diversifying firm's performance in the target market is also influenced by other firm, home- and target-market specific characteristics that continuously evolve in a dynamic context. Second, we find mixed support for the expected negative effect of a diversifying firm's geographic scope in the home industry on its performance in the related target-market. At the very least it implies that a geographically diversified seller of product *A* is not able to leverage its geographic scope in its home-industry to benefit in its target market(s) in the industry for complementary product *B*. Third, as expected the gains in market-share are lower in more concentrated markets. It makes more sense for a firm to offer both *A* and *B* when the market for complementary product *B* is more competitive.

We fail to find empirical support for the following. First, we fail to find support for the market-size effect on the diversifying firm's performance in the target-market. According to a report by FCC (1998), at the end of 1996, which coincides with the end of our period of analysis,

the diversified non-Bell LECS enjoyed over 30% market share in 27% of the smallest geographic sub-markets as opposed to only 10% of the largest study areas. Second, we fail to find support for our counterintuitive conjecture regarding the negative effect of the diversifying firm's geographic scope in the target industry on its market-share in the related geographic sub-market for complementary product *B*. It is moot whether the lack of support either way can be interpreted as support for the lack of effectiveness of unrelated diversification.

Contributions, Limitations, and Future Research

Our theoretical explanation of the 'value-generating effect' of shared demand-side strategic assets contributes to the emerging demand-side perspective within the strategy literature, in general, and to the stream of diversification literature that has evolved in response to the 'corporate strategy' question, in particular. It addresses an important gap in the diversification literature that explains the performance benefits of sharing demand-side strategic assets across businesses that are underpinned by a 'supply-side' logic of relatedness.

Our empirical analysis invokes the aforementioned framework to inquire whether a firm's entry into 'related' product markets allow it to enjoy higher sales vis-à-vis its single-business or broadly diversified rivals. We explain how the shared demand-side resources (customer-base) and demand-side competences (customer-knowledge and customer relationship) positively influence consumers' *willingness to purchase and pay* for the diversified firms' products vis-à-vis those offered by the single-business firms.

At the very least the empirical analysis in this paper provide the cornerstone to support a comprehensive explanation of diversification that could resolve the lack of consensus on the relatedness hypothesis (Palich, Cardinal, and Miller, 2000). By including the hitherto *missing* effect of dynamic structural characteristics of the target market, our empirical analysis addresses

a shortcoming in the diversification literature that possibly contributes to the lack of consensus mentioned above. It would be an exaggeration to state that the relatedness hypothesis does not concern itself with the commonality of structural characteristics across the various markets served by a diversified firm. However, the relatedness hypothesis – as featured in prior studies – does sit on an implicit assumption that if the applications (products and/or services) in two markets require similar supply-side resource configuration then nothing else probably matters.

Our empirical analysis also serves to demonstrate that lack of compelling evidence for improvement in overall corporate performance upon diversification does not rule out performance benefits that accrue to the diversifying firms in their home- or target-markets, which possibly explains their choice to diversify in the first place. In reality, improvement in overall corporate performance is only one of the three motivators of firms' choice to diversify. The performance benefits of diversification should also be judged from the diversifying firm's performance in its (a) home-industry, and/ or (b) target-industry.

Our paper does not cover many theoretical and empirical issues, which require more theory building and constitute interesting areas of follow-up inquiry. First, our paper does not identify – either conceptually or empirically – the individual contribution of three types of shared strategic assets to the post-diversification performance of a firm. Second, our paper does not explain how demand-side diversification contributes to enterprise value. Third, our restricted empirical setting, which is specified by our theoretical assumption of competitive markets for complementary product *B* wherein all suppliers were price-takers, did not allow us to empirically examine the performance benefit of demand-side diversification in other contexts (e.g., horizontally or vertically differentiated markets for complementary product *B*).

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Table 1: Market-share of Local Exchange Companies in Long-Distance Markets

Year	Number of LECs that offered Long-Distance		Number of geographic sub-markets where LECs offered Long-Distance	Long-Distance Lines presubscribed to LECs	Total Long-Distance Lines	% of Long-Distance lines pre-subscribed to LECs
	(1)		(3)	(4)	(5)	(6)
1989	7		21	861,174	4,982,221	17.3
1990	9		25	957,969	5,275,279	18.2
1991	12		37	1,101,824	5,922,057	18.6
1992	18		55	1,422,150	7,989,993	17.8
1993	28		75	1,628,055	10,564,681	15.4
1994	42		101	1,819,772	11,357,655	16
1995	48		141	2,269,976	12,789,604	17.7
1996	66		254	4,020,982	31,016,942	13
Source: FCC Report, 1998						

Table 2 Descriptive Statistics for Variables in Model 1

Variable	Description	N (panel)	n (obs.)	Mean	SD	Min	Max
TotalDEMperLINE$_{imt}$	A proxy for the demand-side strategic assets of LECs (Local Exchange Companies) shared across the related markets. It is measured as the total dial equipment minutes (DEMs) per local telephone line ('000) in geographic sub-market m during year t	**801**	**5302**	**13.095**	**5.7866**	**0**	**79.138**
DemDiversify$_{imt}$	A dummy variable that takes a value 1 if an LEC (firm i) offering product *A* (local telephony services) diversifies to offer complementary product *B* (long-distance services) to its customer-base of product *A* in its area of franchise (geographic sub-market m) during year t	**1192**	**5208**	**0.128**	**0.334**	**0**	**1**
LECNumGA$_i$	A count of the number of geographic sub-markets m served by the diversifying firm i (LEC) and its affiliates in industry for product *A* (local telephony services).	**1438**	**9714**	**18.8561**	**33.358**	**1**	**114**
LECIndepA$_i$	A dummy variable that takes a value 1 if the diversifying firm i (LEC) is an independent entity, i.e., it is not a part of any corporate group. The other types (IndepA =0) are owned by a corporate entity or are commonly controlled along with their affiliates by a third entity.	**1438**	**9714**	**0.509**	**0.499**	**0**	**1**
NumIXCB$_{mt}$	A count of the number of long-distance telephone companies that serve a related geographical sub-market m in industry B (long-distance telecom svcs.) where the LEC diversifies to offer complementary good B (long-distance svcs.).	**1192**	**5208**	**12.736**	**10.159**	**1**	**152**
NumPSLB$_{mt}$	A count variable that measures the market-size in the related target market for complementary product *B* (long-distance svcs.) in the diversifying firm's area of franchise (geographic sub-market m) in industry B. It is the number of long-distance telephone lines pre-subscribed during year t in geographical sub-market m measured at the end of year t.	**1192**	**5208**	**35746.7**	**169026**	**35**	**3566494**
LocalTelMkSizeA$_{mt}$	Number of local telephone lines in a geographical sub-market m during year t	**1438**	**9689**	**23957.3**	**135650**	**5**	**3698731**
CPL$_{mt}$	A proxy for the relative attractiveness of geographical sub-markets for entry by firms that seek to sell complements to the local telephony service. CPL is a continuous variable that measures the common line costs per loop, which is the cost of providing local telephone services, and hence the attractiveness of a sub-market decreases in the increase in CPL.	**1438**	**9658**	**384.785**	**253.89**	**97.09**	**7088.02**